The Economics of Low Power Television
An Anthology

Mark Nadel
Eli M. Noam

Columbia Institute for Tele-Information
Graduate School of Business
809 Uris Hall
Columbia University
New York, New York 10027
(212) 854-4222

THE ECONOMICS OF LOW POWER TELEVISION (LPTV): AN ANTHOLOGY

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Federal Communications Commission
Broadcast Bureau
Washington, DC 20554

REPORT AND RECOMMENDATIONS

IN THE LOW POWER TELEVISION INQUIRY

(BC Docket No. 78-253)

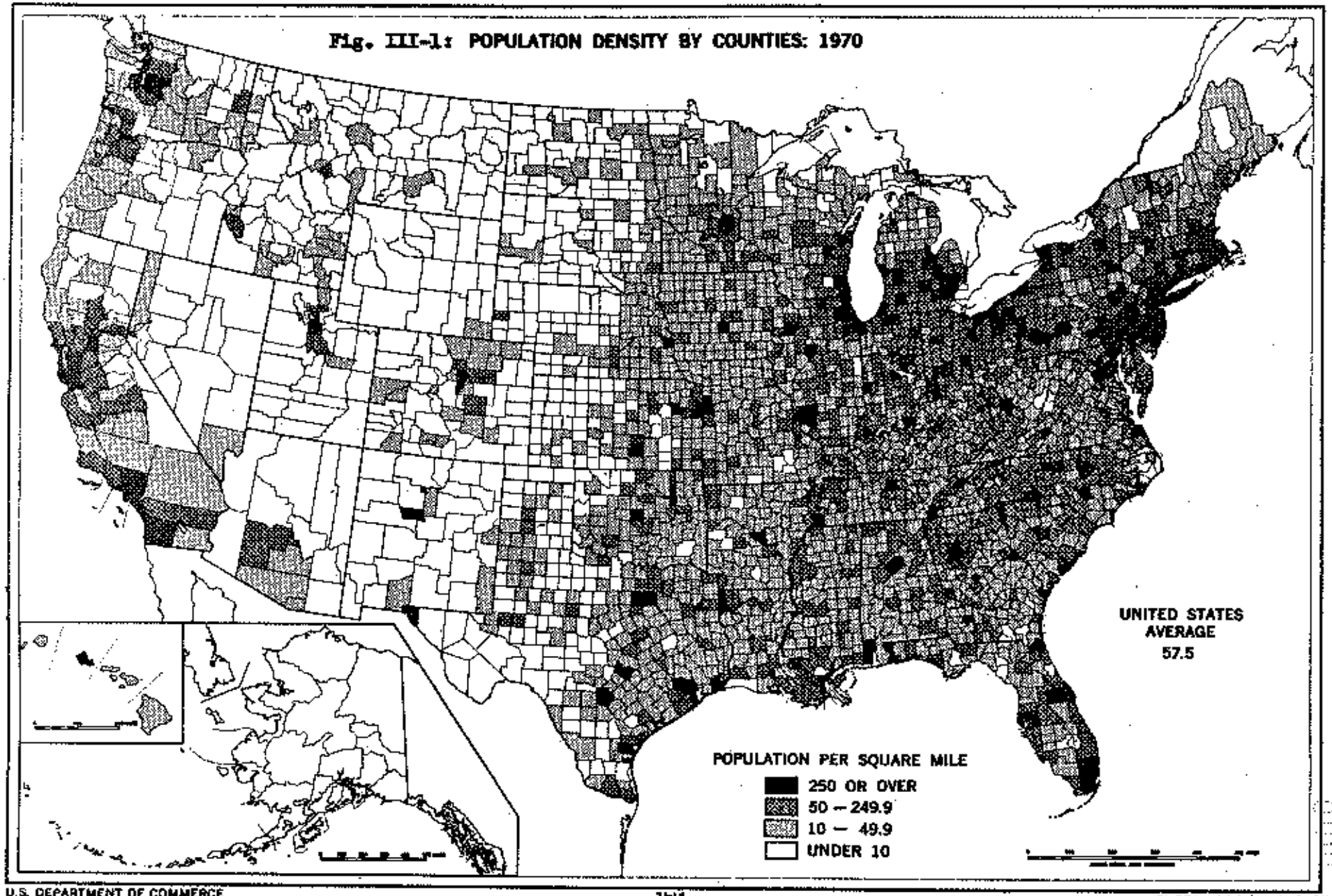
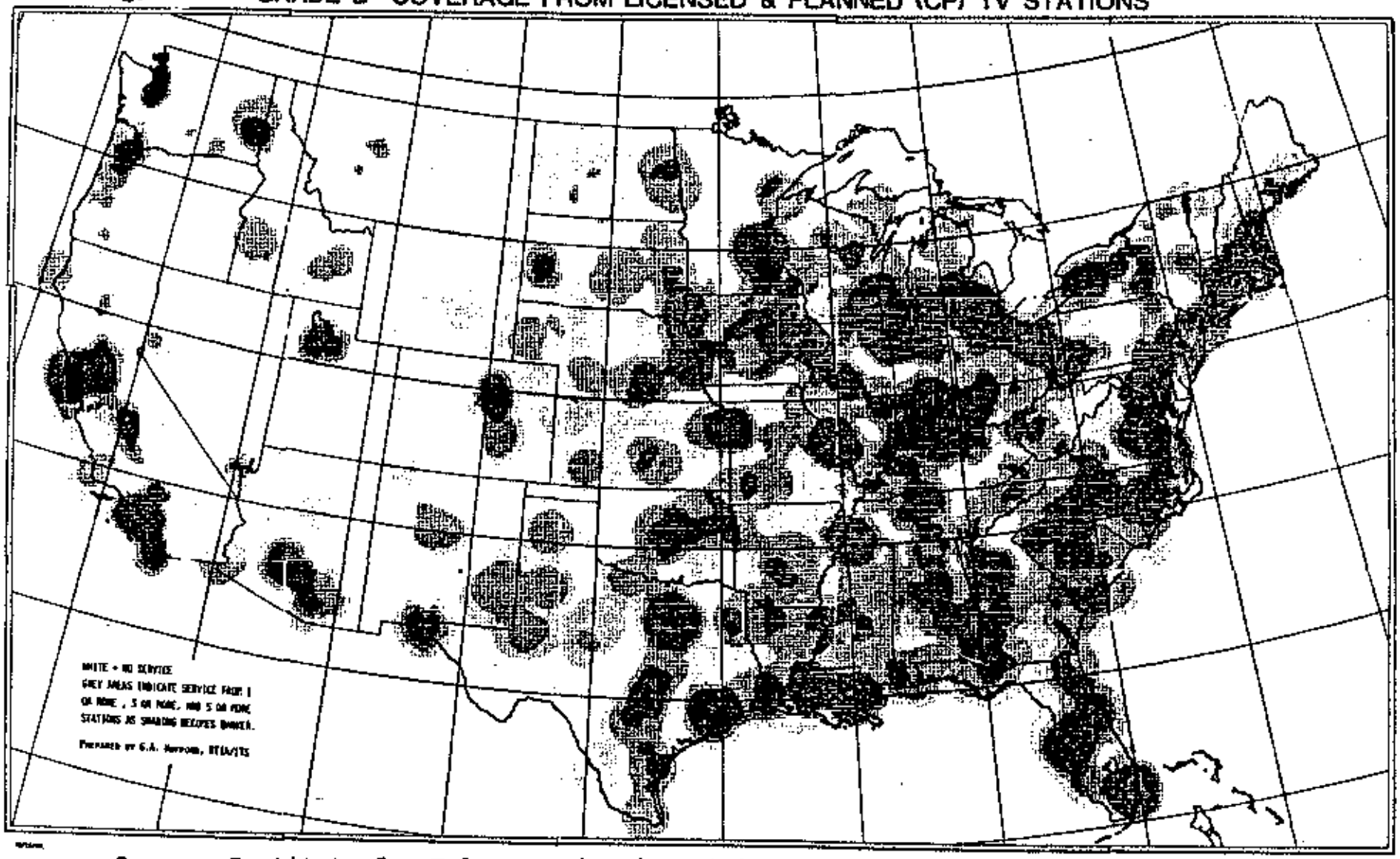


Fig. III-1: POPULATION DENSITY BY COUNTIES: 1970
UNITED STATES AVERAGE 57.5
POPULATION PER SQUARE MILE
250 OR OVER
50 — 249.9
10 — 49.9
UNDER 10
U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

Fig. III-2: GRADE B COVERAGE FROM LICENSED & PLANNED (CP) TV STATIONS



Source: Institute for Telecommunications Sciences
U.S. Dept. of Commerce, 1978.

c. Indirect Evidence.

(1) Growth in, and lack of channels for, Full service Stations.

101. We begin this part of the study with an overview of the growth of VHF and UHF service for the period 1950 to 1979. When the Commission adopted the Sixth Report and Order in the television proceeding in 1952 it allocated 1,962 television channels to 883 communities. 48/ Of these assignments, 731 channels were assigned to the VHF band and 1,231 channels to the UHF band. The priorities established in the allocation scheme reflected the Commission's concern for interference avoidance and distributional equity as well as the limited technological alternatives available at the time. Under these priorities, larger communities were assigned more TV channels than smaller communities. The following table sets forth these assignments as stated in the Sixth Report and Order:

Number of channel Allotments by Population Class of Central City. Source: Fig. III-3 at 6.

Population of Central City	Number of Channels.
1,000,000 and above	6 to 10
250,000 -1,000,000	4 to 6
50,000 - 250,000	2 to 4
Under 50,000	1 to 2

In this way the major urban areas, cities with a population of 1,000,000 or more, were assigned six to ten channels while smaller, sparsely settled communities with populations of under 50,000 were allocated only one or two channels.

102. Over the years the concentration of actual service in the largest markets has become even more pronounced than the emphasis in the Table of Assignments itself. Table III-8 shows that as of December 31, 1979, applications were pending for 72 new UHF commercial channels in the top 100 markets and 86 UHF commercial channels were vacant and not applied for. In markets 101-200 applications were pending for 14 new UHF commercial channels and 90 channels were vacant and not applied for. Of the 61 vacant and not applied for VHF commercial channels none was located in the top 100 markets and only six were located in the top 200 markets. The remaining 55 VHF commercial channels were located outside the the top 200 markets. Across all markets only 10 applications were pending for new VHF commercial channels.

48/ Sixth Report and Order, 41 FCC 148 (1952) at 169, para. 68.

Table [illegible]: Use of Television Channels Summarized as of December 31, 1979

Channel Status	Market Designations a/																		Commonwealth and Possessions 610-626	
	1-50		51-100		Total 1-100		101-150		151-200		Total 101-200		Total 1-200		201-609		Total U.S. b/			
	V	U	V	U	V	U	V	U	V	U	V	U	V	U	V	U	V	U	V	U
Commercial Channels																				
Total Allocated c/	157	190	108	143	265	333	112	95	65	78	177	173	442	506	136	142	578	648	12	23
Licensed d/	157	79	107	53	264	132	109	31	57	19	166	50	430	182	70	25	500	207	10	1
Construction Permit e/	--	31	1	12	1	43	1	10	2	9	3	19	4	62	3	7	7	69	1	--
Application	--	48	--	24	--	72	--	11	2	3	2	14	2	86	8	20	10	106	--	1
Vacant	--	32	--	54	--	86	2	43	4	47	6	90	6	176	55	90	61	266	1	22
Non-Commercial Channels																				
Total Allocated c/	31	99	17	76	48	175	21	56	15	46	36	102	84	277	52	293	136	570	6	8
Licensed d/	28	55	17	35	45	90	17	21	10	11	27	32	72	122	34	47	106	169	4	--
Construction Permit e/	1	2	--	3	1	5	2	2	--	--	2	2	3	7	2	5	5	12	--	--
Application	1	2	--	3	1	5	--	3	1	2	--	5	1	10	--	5	2	15	--	--
Vacant	1	40	--	35	1	75	2	30	5	33	7	63	8	138	15	236	23	374	2	8

a/ The market designation are those used in the FCC industry market reports of television broadcast financial data. The markets numbered 1-212 are in approximate Arbitron rank by ADI television households, 1978. Additional markets numbered 213-609 are listed alphabetically by states; the markets in Alaska and Hawaii are included in this group. The markets in Guam, Puerto Rico and the Virgin Islands are numbered 610-626.

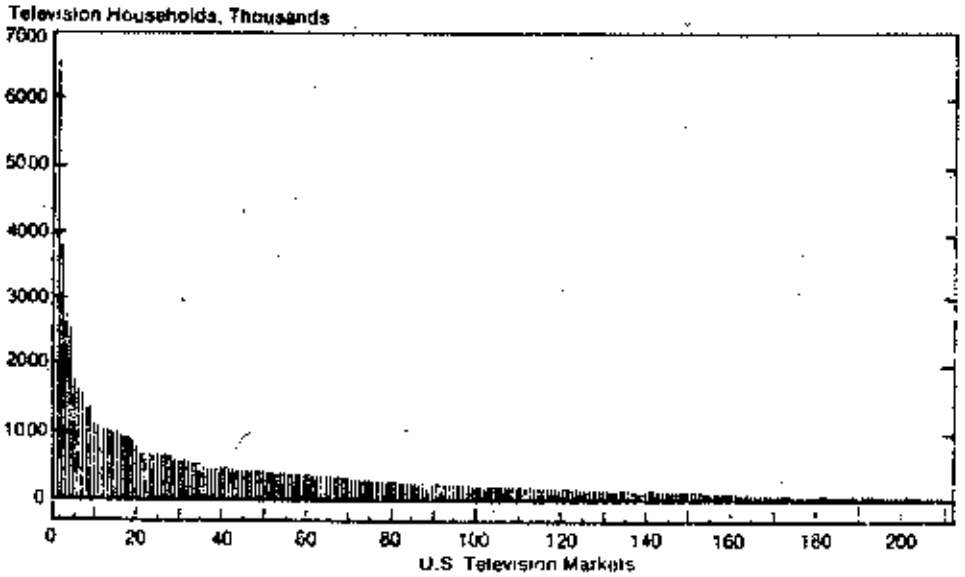
b/ Excludes 24 UHF Channels assigned for land mobile use and not available until further FCC action.

c/ VHF and UHF Channels allocated for commercial use but reserved or used for non-commercial use are included with non-commercial channels. UHF channels assigned for land mobile use and not available until further action by the Commission are excluded.

d/ May include stations licensed but not on the air.

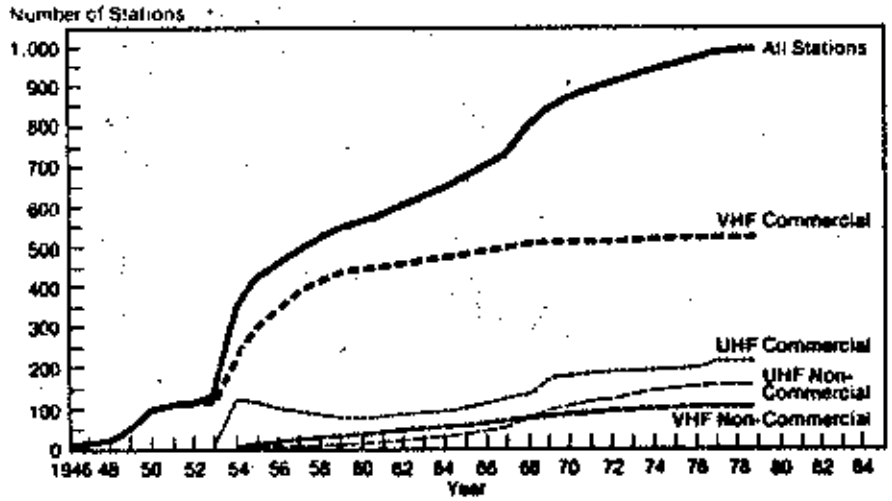
e/ May include stations not licensed but on the air with program test authority.

Fig. III-3: Distribution of Television Households in U.S. Television Markets



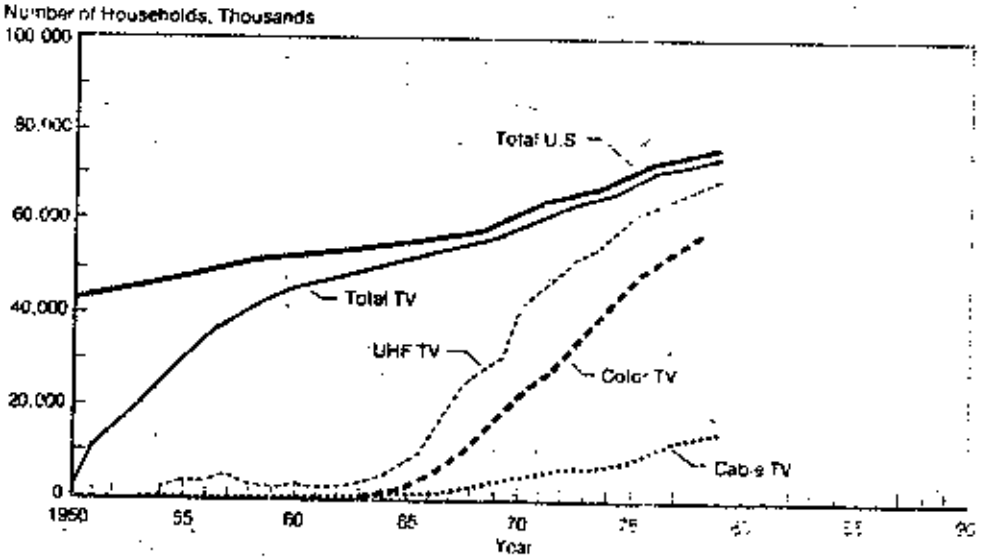
Source: In the matter of "Cable Television Syndicated Program Exclusivity Rules", Docket No. 20988, RM-2721 and "Inquiry into the Economic Relationship Between Television Broadcasting and Cable Television", Docket No. 21284, RM-2919, RM-3324, RM-3346 at 10.

Fig. III-4: VHF and UHF On-Air Television Stations, 1946-1979
(As of January 1 Each Year)



Source: Supra Fig. III-2 at 7.

Fig. III-5: Growth of Television: UHF, Color, Cable TV, Total TV, and Total U.S. Households, 1950-1979



Source: Supra Fig. III-2 at 9.

the limited number of VHF assignments originally allocated in 1952. Once VHF had reached the limit of its ability to add stations under the Commission's rules, continued unmet demand for services led to exploitable and economically attractive opportunities in the UHF band. Figure III-5 also demonstrates the rapid growth in UHF broadcast coverage after 1965, when the effect of the All Channel Receiver Act of 1962 began to make competition by UHF in intermixed markets a live possibility. 51/ Proposals to allow the short spacing of VHF stations of less than full effective radiated power would relax the current lack of available frequencies in signal congested areas. Some additional service would result in fringe areas around the larger urban areas. However, "VHF drop-ins" cannot be expected to remove the unmet demand for service either within the large urban areas or in low population density areas, because the potential growth in the 12 VHF channels will be inherently limited regardless of how efficiently those 12 channels can be used nation-wide.

(2) Rate of Return of Full Service Stations.

105. Industries that exhibit a history of both high and increasing rates of return on invested capital generally are thought to be candidates for additional investments. 52/ We do not have current data on the rate of return for VHF and UHF stations; however, Tables III-9 and III-10 provide some indirect measures of the profit picture of broadcast stations in 1974 and 1977. 53/ We hesitate to place too much emphasis on this data because of the format in which it is collected, yet the trend is so pervasive that it, too, suggests the desirability of additional television services. First, we observe that UHF stations are on average less profitable than VHF stations (the percentage of stations reporting large profits is smaller for U's than

51/ The largest urban areas already experience saturation of the available UHF spectrum.

52/ Investment decisions are guided by the returns to be expected from each investment alternative available at the time that the investment decision is being made. The investor seeking to maximize wealth would use information on both the level and direction of movements of profits as signals regarding where to construct additional facilities. A good introductory discussion of these concepts can be found in T.E. Copeland and J.F. Weston, Financial Theory and Corporate Policy (1979) at chap 2 and 3.

53/ Noll et al, supra note 36 at 16-17, present some evidence on rates of return for 1969 and 1970. They found that, on average, stations earned 73% before taxes on the book value of tangible assets in 1969 and 54% on tangible assets in 1970. These results must be heavily qualified but do suggest high rates of return relative to other industries. Further evidence of high rates of return is suggested by the high and rapid increase in the sale prices of both UHF and VHF stations. The sale price represents the present discounted value of the expected future earnings of the licensee. Much of the future earnings can be attributed to the value of the license.

TABLE III-9: Number of Television Stations Reporting Profit or Loss by Amount of Profit of Loss.

SOURCE: FCC TV Broadcast Financial Data 1977, 1974. Table 7 (1977); Table 7 revised (1974)

	1977						1974					
	TOTAL		NETWORK AFFILIATED		INDEPENDENT		TOTAL		NETWORK AFFILIATED		INDEPENDENT	
	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF
TOTAL NUMBER OF STATIONS REPORTING	458	173	429	117	29	56	464	467	433	112	31	55
NUMBER OF STATIONS REPORTING PROFITS	422	127	397	89	25	38	395	80	378	64	17	16
PROFITABLE STATIONS AS PERCENT OF TOTAL	92.1	73.4	92.5	76.1	86.2	67.9	85.1	47.9	87.3	57.1	54.8	29.1
NUMBER OF STATIONS REPORTING PROFITS OF												
$5,000,000 OR OVER	49	1	42		7	1	23		23			
3,000,000 - 5,000,000	48	4	43		5	4	24		24			
1,500,000 - 3,000,000	79	9	72	1	7	8	62	1	56		6	1
1,000,000 - 1,500,000	51	6	51	2		4	36	1	34	1	2	
600,000 - 1,000,000	50	18	49	14	1	4	50	7	46	4	4	3
400,000 - 600,000	43	20	41	15	2	5	39	5	38	3	1	2
200,000 - 400,000	38	20	36	17	2	3	68	20	66	18	2	2
100,000 - 200,000	31	17	30	13	1	4	48	13	47	12	1	1
50,000 - 100,000	12	14	12	13		1	22	13	21	10	1	3
25,000 - 50,000	12	10	12	8		2	7	8	7	6		2
LESS THAN 25,000	9	8	9	6		2	16	12	16	19		2

Table III-9 Continued

NUMBER OF STATIONS REPORTING LOSSES	36	46	32	28	4	18	69	87	55	48	14	39
UNPROFITABLE STATIONS AS PERCENT OF TOTAL	7.9	26.6	7.5	23.9	13.8	32.1	14.9	52.1	12.7	42.9	45.2	70.9
NUMBER OF STATIONS REPORTING LOSSES OF:												
LESS THAN $10,000	5	2	5	1		1	4	3	4	3		
10,000 - 25,000	1	5	1	4		1	4	5	4	2		
25,000 - 50,000	4	3	3	3	1		13	11	13	10		1
50,000 - 100,000	3	13	3	8		5	9	14	7	7	2	7
100,000 - 200,000	9	11	8	6	1	5	13	22	8	11	5	11
400,000 - 400,000	7	6	7	4		2	15	17	15	12		5
400,000 AND OVER	7	6	5	2	4		11	15	4	3	7	12

* STATIONS OPERATING FULL YEAR ONLY EXCLUDING SATELLITE STATIONS

Profits are before federal income tax.

Table III-10: Number of Television Stations Reporting Profit or Loss by Amount of Profit or Loss for Small Markets

Source: Supra Table 9, at Table 19 (1977), Table 21 revised (1974)

	1977						1974					
	TOTAL		NETWORK AFFILIATED		INDEPENDENT		TOTAL		NETWORK AFFILIATED		INDEPENDENT	
	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF	VHF	UHF
TOTAL NUMBER OF STATIONS REPORTING	197	66	187	60	10	6	202	60	191	54	11	6
NUMBER OF STATIONS REPORTING PROFITS	166	45	160	42	6	3	152	26	148	26	4	
PROFITABLE STATIONS AS PERCENT OF TOTAL	84.3	68.2	85.6	70.0	60.0	50.0	85.2	43.3	77.5	48.1	36.4	
NUMBER OF STATIONS REPORTING PROFITS OF												
$5,000,000 OR OVER												
3,000,000 - 5,000,000												
1,500,000 - 3,000,000	5		4		1		1		1			
1,000,000 - 1,500,000	10		10				1		1			
600,000 - 1,000,000	29	2	28	2	1		12		12			
400,000 - 600,000	31	5	30	5	1		17		17			
200,000 - 400,000	33	7	31	7	2		17		17			
100,000 - 200,000	27	10	26	9	1	1	39	4	37	4	2	
50,000 - 100,000	11	8	11	8			43	6	42	6	1	
25,000 - 50,000	12	7	12	6	1	19	6	18	6	1		
LESS THAN 25,000	8	6	8	5		1	14	6	14	6		
NUMBER OF STATIONS REPORTING LOSSES	31	21	27	18	4	3	50	34	43	28	7	6
UNPROFITABLE STATIONS AS PERCENT OF TOTAL	15.7	31.8	14.0	30.0	40.0	50.0	24.8	56.7	22.5	51.9	63.6	100.0

Table III-10: Continued

NUMBER OF STATIONS REPORTING LOSSES OF:														
LESS THAN $10,000	5	1	5			1	4	1	4	1				
10,000 - 25,000	1	4	1	3		1	4	4	4	2			2	
25,000 - 50,000	3	3	2	3	1	10	9	10	9					
50,000 - 100,000	3	5	3	5			9	5	7	4		2	1	
100,000 - 200,000	7	5	6	5	1		9	7	6	6		3	1	
400,000 - 400,000	5	1	5	1			9	7	9	6			1	
400,000 AND OVER	7.	2	5	1	2	1	5	1	3			2	1	

* STATIONS OPERATING FULL YEAR ONLY EXCLUDING SATELLITE STATIONS

Profits are before federal income tax.

for V's) and the ratio of UHF stations reporting profits is smaller than for VHF stations. Second, by both measures -- aggregate value of profits and number of stations reporting profits -- we observe both UHF and VHF stations improved considerably from 1974 to 1977. This is particularly true of UHF stations, where only 48% were profitable in 1974 while 73% were profitable in 1977.

106. Tables III-9 and III-10 also reveal that on average the most profitable stations both UHF and VHF are found in the largest 100 markets. If we reexamine Table III-5 we find that the top 100 markets also have very few frequency assignments available for potential licensees (1-VHF and 86-UHF). Further examination of our frequency study suggests those UHF station assignments that still are available are rapidly being licensed and that they are in the smallest of the top 50 ADI's. 54/ Together, these data suggest the existence of unmet demand for TV service in the larger urban areas.

107. A study recently published by Gary Fournier of the Network Inquiry Special Staff found several results that confirm the qualitative analysis performed here. 55/ Fournier found that "VHF stations performed better than UHF stations in the same markets," whether measured by rate of return or by station sale prices (which is just the present value of expected future returns); "network affiliated stations perform significantly better than do independents"; and market size influences station performance. 56/ A key point to be made with regard to Fournier's results is that entry barriers affect station profits. In particular, stations in markets that have no vacant frequency allocations typically have relatively large audiences per station. Because the expected audience influences advertising revenues, we immediately see the link between audience size and station profits. 57/ Hence, if the entry barrier were to be relaxed (i.e. new entry allowed) we would expect to observe more stations in those markets with relatively large audiences per station (all else equal). The likely outcome of additional

54/ Supra, paragraph 102.

55/ Gary Fournier "The Determinants of Television Station Profitability" Network Inquiry Special Staff, FCC (June 1980).

56/ Id. at 125.

57/ Id. at 127-128. This analysis assumes that the profits are not competed away by engaging in rivalrous behavior such as purchasing more expensive programming, physical facilities or legal services to protect their license. In fact, Fournier found that some rivalrous behavior does exist and that this results in profits that are lower than would be the case otherwise; id at 129. If the rivalrous behavior results in better programming, the viewers in those communities likely will benefit.

stations would be a wider diversity of programming and an overall increase in net benefits to society. 58/

58/ These indicators directly suggest only the profitability of providing additional service. It is important to note, however, that entrepreneurs are unlikely to find these additional investments in TV attractive if there is little expectation that viewers desire the additional programming. In the case of commercial television, advertisers would eventually tire of the cost of advertising time if few additional viewers are attracted to the new services. At the same time, television station programming costs are likely to increase rapidly due to efforts to attract the essentially fixed audience. The combination of reduced advertising revenues and increased programming costs should reduce station profits and ultimately reduce the incentive to invest in this industry. Even if the audience remains essentially fixed, however, benefits accrue to the viewer through higher quality programs and increased responsiveness of programming; both of which were designed to cannibalize viewers from other stations.

2. Summary

111. The evidence presented above provides substantial support for the conclusion that considerable unmet demand for TV service exists in the U.S. In rural areas of the country the demand is both for basic service and diversity of service. If basic service, as a policy matter, is defined to be only one or two signals we find that many individuals are without a basic service. If this definition is expanded to include a more comprehensive choice of stations the number of individuals without a basic service increases even more. Beyond the provision of basic services, there is evidence to suggest that individuals demand greater diversity of programming. This is seen both in the development of premium channel services and in expressions of

demand for programming oriented toward minority groups (whether ethnic, religious or special interest group). We can examine the unmet demand problem in rural and urban settings separately.

112. Rural areas often are plagued by both low population density and by difficult terrain (from the standpoint of propagation of TV signals over-the-air). Both of these influences make it financially difficult for advertiser-supported, over-the-air service to develop. Both cable and translator services have aided significantly in overcoming this problem, but, there are limits on their ability to meet demand in these areas. Cable is hampered by the cost of providing its service in very low density areas. Translators are more cost effective but suffer from financing and regulatory constraints that act to impede their full development.

113. Urban populations typically have a number of services from which to choose. So the question of whether these individuals are receiving a basic service is largely irrelevant. However, urban populations generally contain highly diverse audiences who demand diverse programming. The major limits on the ability to provide more diversity (primarily through more stations) are the lack of available spectrum and the inability of relatively small groups (yet groups with intense perference for the minority program) to finance programming oriented toward them.

114. The problem of spectrum availability is being met partially through expansion of cable and MDS service. Again the ability of these services to meet the needs of urban areas are constrained. Cable installations in large urban areas are impeded by cost of installation in cities, willingness to pay for relatively small additions to service, and political muddles. MDS also is spectrum constrained and current application trends suggest that this spectrum will soon be filled. 63/

115. Low power television broadcast stations can provide new alternatives in both rural and urban areas. This service can go a long way toward relieving the unmet demand documented above. What is needed is additional flexibility in the form of relaxed regulation of the low power television service. The next section demonstrates how a less stringent regulatory environment could accomplish cost reductions and additional diversity in programming. Part IV provides detailed analysis of the specific regulatory changes that we recommend to that end.

63/ This assumes no expansion of the number of channels allocated to this service, but see note 59, supra.

F. Cost of Low Power Television Service

116. The previous section examined the evidence currently available regarding the demand for television services in the U.S. This section evaluates the cost of providing those services under varying sets of assumptions. We also discuss the mechanisms available to pay for them. 64/ The issue of payment is a crucial one, for two reasons: First, in rural areas there typically do not appear to be enough potential purchasers of local advertising time to sustain a full service station. Second, most current translator services are financed by government, quasi-government or nonprofit private organizations. These organizations generally are severely limited in their ability to allocate funds for services. In some instances they may be subject to a statutory ceiling. Without a means of excluding non-contributing members of the community there is a significantly reduced incentive to pay.

117. The goal of this analysis of cost and financing is to demonstrate the gains in service from our recommendations measured both as greater number of stations and a greater diversity of programming for any given station. We first examine the cost of constructing, equipping, and operating a small full service television station, under current regulatory constraints. These costs are then compared with alternative cost projections for low power stations, based upon existing translator service and low power television experiments.

1. The Small Full Service Station.

118. The Interagency Report on Rural Communications concluded in 1977 that "low power, cheaper broadcast stations for rural areas and originating translators should be considered as major options in providing local origination in rural counties." 65/ In planning a regulatory framework for the nation's television system in the early 1950's, the Commission had placed great importance on television "localism." Indeed, the Commission's second highest priority in devising the Television Table of Assignments was to make available a first local service in as many communities as possible. The report in the "Cable Economic Inquiry" pointed out that the Commission had assigned 1,962 TV channels in 883 communities; one-third of which were intended for noncommercial broadcasting. That study also indicated that 86% of the nation's 73.9 million television households were located within the top 100 market areas; one-third being located within the top ten markets. These areas have populations of sufficient size to support the high capital and operating expenses associated with the conventional full service television broadcast stations. However, these costs evidently were beyond the reach of many of the communities that comprise the small market areas. Of the 628 channel assignments for commercial use in markets below the top 100, 241 remained vacant as of December 31, 1979. 66/ For the smallest market category, Numbers 201-609, 145 (52%) of 278 commercial assignments then were

64/ Our recommendations for permitting low-power subscription television are fully described in Part IV-D.

65/ OTP study supra note 11 at VI-8.

66/ See Table III-8.

vacant. These consisted of 55 vacant VHF channels and 90 vacant UHF channels. This is despite the lack of any evidence that citizens in rural areas have a lower preference for TV service than citizens in urban areas.

119. There is no secret as to why most rural communities do not have a local television station. The costs of constructing and operating a conventional "full service" television station are high. The public record in this Inquiry gives an indication of these costs. The cost estimates to be presented are based upon analyses performed in 1977 and 1978. Because of inflation these estimates could be still higher today. According to an engineering study performed in 1977 and submitted by the Ohio Educational Television Commission, "a typical UHF transmitting plant for a major city area today uses a 50 kilowatt transmitter and a 36 dB gain antenna to achieve an effective radiated power level on the order of 1000 kilowatts." 67/ We have reproduced in Table III-11 the cost estimates given in the study, by Oscar Reed, for the construction of typical broadcast facilities at two levels of transmitter power. Installation costs of 10% were assumed in these estimates.

120. The comments of the Corporation for Public Broadcasting (CPB), indicate that the construction costs, in 1978, of a conventional UHF broadcast station "with reasonable facilities would be approximately $1.9 million." 68/ The CPB estimate does not include the costs of land or "building shell." Additional costs for studio equipment were not included. In another engineering study performed in January 1979 and submitted by A. D. Ring & Associates, two suppliers of production facilities were contacted to estimate the equipment and associated costs "needed for a minimum level of local origination" on a station meeting all FCC rules. The study stated that a minimum equipment investment of about $400,000 was needed and that "a station using these facilities would not be able to execute anything beyond the most fundamental production techniques, to cover events such as local high school basketball games requiring multiple cameras or to produce programs technically suitable for network distribution." It also pointed out that such facilities are "below the minimum standards established by PBS for broadcast stations." 69/ The A. D. Ring study was submitted by the Association of Maximum Service Telecasters (AMST), in order to demonstrate the high cost of production facilities for low-power, full service TV stations, which AMST contends may not be economically viable. We have reproduced a listing of the equipment and related costs suggested in the A. D. Ring study (See Table III-12).

67/ See the comments of Oscar Reed on behalf of the Ohio Educational Television Commission at Appendix 1, p. 11.

68/ Comments of the Corporation for Public Broadcasting, engineering statement at 2.

69/ See the comments of A. D. Ring and Co., on behalf of the Association of Maximum Service Telecasters, Inc. at pp. 8-9.

Table III-11: Cost Estimates for Two Small TV Transmitters Meeting all FCC Technical Standards, 1977.

Source: Comments of Oscar Reed, on behalf of the Ohio Educational Television Commission at Appendix 1, p. 16-17.

Item	30 kwatt plant	60 kwatt plant
Transmitter	$330,000	$449,000
Tower (1000 feet)	175,000	200,000
Antenna */	100,000	150,000
Transmission Lines	75,000	100,000
Building & Appurtenances	100,000	125,000
Input & Monitoring	30,000	35,000
Remote Control Equipment	30,000	35,000
Misc. and Contingencies	42,000	55,000
Total Cost **/	$882,000	$1,149,000

*/ The 30 kilowatt station would use a "moderate" antenna gain while the 60 kilowatt station would use a "fairly high gain antenna."

**/ Based up on costs in 1977.

Table III-12: Equipment Needed for Minimum Level of Local Origination Meeting All FCC Technical Standards, 1978. 1/

Source: Comments of A.D. Ring and Co., on behalf of the Association of Maximum Service Telecasters at 9-10.

	Cost
Two multipurpose television cameras with accessories	$ 46,000
Two film islands (film and slide projectors multiplexer, film camera)	$ 90,000
One (used, reconditioned) 2" quad video tape recorder tape recorder	$ 50,000
There editing videotape recorders/players	$ 17,000
One portable videotape recorder	$ 9,600
One video switcher for production	$ 10,000
One video switcher for on-air	$ 20,000
One time base corrector	$ 25,000
Minors and text equipment	$ 42,500
Video and pulse distribution equipment	$ 8,000
Two sync generators and associated equipment	$ 4,000
Audio equipment	$ 12,000
Lighting equipment	$ 3,000
Studio-transmitter link	$ 22,000
Mobile van 2/	$ 12,000
Other equipment, (intercom, racks, control console, etc.)	$ 8,000
TOTAL COST.....	$379,100

1/ These facilities do not include the costs of installation (estimated at approximately $40,000) or the cost of one transmitter, transmission line, antenna or tower. For a 5 kilowatt (transmitter) VHF station with a 300 foot tower, the transmission plant costs would be approximately $200,000. For a UHF station with similar facilities. these costs would be approximately the same.

2/ Microwave facilities to enable live remotes would cost an additional $16,000.

121. The operating costs of a conventional broadcast station also are sizeable. Two major expense items are electrical power and the replacement of final amplifier high-power klystron tubes. The annual electrical power costs associated with 30 kilowatt and 60 kilowatt UHF transmitting plants were estimated at $24,000 and $48,000 respectively (in 1977 dollars). At the assumed power levels, annual tube replacement costs could have run as high as $21,000 to $31,000 (again, in 1977 dollars). 70/

122. CPB indicated that, in contrast to their proposed mini TV station that would not employ fulltime first class licensed operators, "a conventional television station with a small production facility would be expected to employ a chief engineer and about 12 other technicians to effectively run the station for 18 hours per day, seven days per week." 71/ The Commission's rules require attendance by a qualified operator during the operation of a full service television broadcast station. 72/ In addition to technical personnel, the typical television also would employ staff for local news and for sales.

123. Costs for television programming also are large. According to the comments of the National Association of Broadcasters (based upon NAB's 1978 Television Financial Report), "the typical program expense for a UHF independent with revenues under three million was $686,800. For the middle 50% range of such stations, program expenses varied from a low of $192,900 to a high of $886,800." 73/ NAB stated that the typical program expenses for small market network affiliated stations were $203,000; i.e., for stations programming only 30-40% of the broadcast day. In arguing against the economic viability of low-power TV stations, NAB pointed out that:

> because syndicated programming very likely would be too costly or unavailable to low-power stations, the bulk of their programming would be locally produced programming. This sort of programming is expensive, but not terribly lucrative. With the exception of local news programming, which only recently has become a profitable venture for local stations, locally produced programming has generally been a "loss leader" for broadcast television stations. Clearly, the high production cost of such programming coupled with the limited audience

70/ Supra, note 67 at 34-35.

71/ Supra note 68, engineering statement at 16.

72/ The Commission's operator requirements recently have been relaxed to permit certain routine operations to be performed by operators holding any class of radiotelephone operator's license--previously requiring a first-class license, see discussion of operators in Part IV. B., paras 261-275.

73/ Comments of the National Association of Broadcasters at 18.

> potential of a low-power station paints a bleak financial outlook for any such venture. 74/

Assuming the typical plant, staffing, and technical standards for full service television broadcast stations, NAB' comments are well taken, though it assumed no possibility for STV.

124. On the other hand, the cost for the low power station of programming not originated by the station consists mainly of the rebroadcast rights. Once the program has been produced the main cost to the seller is the distribution cost, and these costs can be lowered through the use of devices such as bicycling arrangements, 75/ reuse, or multiple distribution systems, such as satellites. For a station in a community of 2000-5000 viewers, or even less, the rights to at least some program fare are likely to cost very little. Ultimately the producer must cover all costs and earn at least a competitive return or else must forego further production. However, in larger markets where there are a number of stations to bid for the product, a higher price is probable and is the source of virtually all of the program's revenue. In the small market where revenues are constrained, any price in excess of the distribution costs should satisfy the holders of the program rights.

125. The Commission's rules provide for the authorization of television broadcast stations at effective radiated power as low as 100 watts. 76/ However, as indicated by the comments of the National Translator Association, "there are fourteen stations with effective radiated power of less than 15 kilowatts in the contiguous United States. Of these, three are part of organized state educational television networks, three are strictly satellites of high power stations, and one is low power only because of height limitations. Thus, there are only seven stations which might be considered in the low power category." 77/ NTIA cites a study in 1978 by Kessler Associates which estimates the equipment and installation cost of a 100 watt UHF

74/ Id at 19.

75/ Bicycling refers to an arrangement whereby the program is placed on a videocassette and mailed to the first station in a chain. That station shows the program then mails the cassette to the second station, and so on through the chain. The last station returns the cassette to the point of origin.

76/ Sec. 73.614 of the Rules.

77/ Comments of the National Translator Association at 19. Each of these stations meets all FCC technical standards although they broadcast at low ERP's.

transmitter facility at $43,574 (at an antenna height of 100 feet). 78/ Under Part 73, Subpart E, of the Commission's Rules, a television broadcast station, regardless of power, must comply strictly with technical and operational standards. These standards have been established to ensure a continuously excellent quality of television picture and related audio, and to ensure that stations meet the ascertained public interest needs of the viewers they serve. Accompanying these standards are the compliance costs which include the cost of equipment operation and license applications. These costs can be prohibitive to stations attempting to operate in smaller communities, particularly in regions of the country having few if any cities and a characteristically low population density.

126. NTIA also surveyed small full service stations in an effort to determine the feasibility of stations in communities serving less densely populated areas. 79/ Each of the stations met FCC rules and regulations and all were either profitable or "viable" (only three commented on their profitability and each of these indicated that they were profitable in 1978). Estimates of replacement costs of their plant and equipment ranged from $400,000 to $719,000. The smallest of the stations (VHF, network affiliation, 9 kw output and "ADI" of 9000 households) relied on some volunteer labor and a paid staff, each of which served several functions. For example, the station engineer also read the news report. 80/ This station relied almost entirely on local and regional advertising, received no payments from the networks, and paid all distribution costs associated with the network clearances (approximately $1,800 per month). The other reporting network affiliates received both network payments and substantial revenues from national advertising. All five stations produced locally originated programming. The lesson to be gleaned from this is that even small stations require substantial investment in plant and equipment to operate under current standards and require communities (or viewer groups) larger in many cases than those to which this inquiry has been addressed. The comparison is striking

78/ Comments of National Telecommunications and Information Administration at Appendix D.

79/ All but one of the stations were VHF network affiliates. The UHF independent earned about half its revenues from religious groups that purchased time for religious oriented programming. The stations ranged in size from 9 to 60 Kw and served communities ranging from 9,000 to 77,000 households. See Reply Comments of the NTIA at Appendix B.

80/ He would set up the camera and focus it on the "news desk." He would then leave the camera unattended, walk around to the front of it and proceed to read the news.

between these six stations, and the 180 UHF and 61 VHF assignments outside the top 100 markets, vacant and unapplied for. 81/

127. The comments of the National Broadcasting Company include a set of calculations intended to illustrate the difficulties that a low power TV station would have in generating advertising revenues to meet programming expenses. The NBC calculations consider the potential of an hour of prime time programming in a hypothetical community of 15,000 households (the average number of viewing households for Arbitron Markets 190-200). NBC concludes that, assuming "the best possible circumstances -- that all of the viewers in that community who would predictably be watching television, would watch the program in question; and that advertisers paying a normal rate for the audience reached had purchased 80% of the commercial time available ... this station generated only $230 to pay for a full hour of programming". 82/

128. In summary, conventional full service TV broadcast stations, as presently regulated by the Commission, have not been viable in many rural communities that are in need of local television service, either at relatively high or low levels of operating power. Television stations must generate sufficient revenues to meet operating costs and costs of capital. Commercial stations normally obtain reveneus from advertising. As a recent study by Alan Pearce points out, "broadcasters are essentially delivering audiences to advertisers. The bigger the audiences, the more advertisers will be prepared to pay for commercials to be inserted in the broadcasters' programs." 83/ As a result, full service stations have been unable to survive in many rural areas, and the assignments reserved there often lie vacant and unapplied for.

2. Low Power Television Alternatives: Costs, Financing and Gains in Service.

129. Provision of a signal of very high technical quality is a goal of current regulatory policy and is required of licensed operators of full service stations. We agree that consumers would prefer higher over lower quality signals if their needs were met in all other ways at the same cost. However, it is possible that industry performance and consumer well being are compromised by current regulatory requirements. To obtain high quality signals broadcasters must incur costs. These additional, mandated costs may preclude the development of some stations that would be financially viable if lesser standards were allowed. If we are able to realize a gain of additional

81/ See Table III-8.

82/ Comments of the National Broadcasting company at 17-18. The computations leading to the $230 per hour figure are detailed in the NBC filing at 18 and will not be reproduced here.

83/ Pearce, A. "Translators and Low Power Television" report prepared for FCC October 1978 at 1.

signals and presumably of more program variety while still providing acceptable technical quality signals, then society gains. At the very least the consumer would have a choice as to the preferred mix of variety and quality. 84/

130. The analysis of the cost of building and operating even small full service television stations graphically illustrates the problem faced by private entrepreneurs in bringing services to small, often widely dispersed groups. Although people are willing to pay a substantial proportion of their incomes to obtain service, it would be beyond the means of most communities of small size to support those services given the cost of a full service station. For this reason, we recommend an approach that is aimed at reducing the cost of serving the small or specialized communities who want but cannot now finance the desired services.

131. There are no systematic analyses of the costs of providing services under conditions comparable to our recommendations for the low power service. However, there are some studies that are the result of experiments in the provision of services utilizing more relaxed standards than currently are maintained by the Commission for full service operations. We first examine cost estimates for a small studio, full service system that could be expected to operate in a very relaxed regulatory environment. We then examine three experiments, one each in Alaska, Northern Canada, and New York State to determine a range of costs for some highly simplified service options.

132. The cost estimates reported here, in some instances, date back several years, and none of the conditions is exactly on a par with our recommendations. Consequently, it is likely that the costs generally would be higher than suggested here, though much lower than for full service television broadcast stations.

a. The Pearce and EMCEE Corporation Estimates.

133. In 1978 the Commission sponsored a report on "Translators and Low Power Television Stations." 85/ The author, Alan Pearce, presented estimates of the cost of providing both translator and local origination broadcast facilities. For the translator service Pearce assumed a 10 watt VHF transmitter or a 100 watt UHF transmitter. He selected these outputs because, he claimed, they provide comparable coverage both in terms of quality of

84/ Our recommendations for the technical plan of low power stations are intended to assure that the service provided will be satisfactory. To that extent, we urge that a basic minimum of quality control be retained as a Commission goal. The recommendations also are designed to foster the maximum of new services, short of the creation of objectionable interference. See Part IV B.

85/ Supra. Note 83.

signal and spatial coverage. Table III-13 summarizes his estimates of capital and operating costs for both one and five-channel service. The latter was assumed to include the three networks, one independent and one public broadcasting station.

134. Pearce then examined the cost of providing a local origination option to a small community. This mini-broadcast station was expected to meet current FCC regulations, including the transmit waveform, and operator requirements. Table III-14 provides an estimate of the cost of equipment needed for a 100-watt station. In addition he assumed there were costs associated with securing the license and studio costs estimated as a minimum of $5,000. Operating costs were estimated to run a minimum of $2,000 per month 86/, and likely to be higher. Finally, were the costs of programming, which Pearce did not even attempt to estimate though they could be substantial.

135. Clearly, even with the small transmitter size and minimal studio equipment, the cost of local origination that met current FCC standards was high. The Pearce estimates, except for translator services, confirmed what the vacancies in the Table of Assignments also suggested, that a commercial over-the-air broadcast service is unsupportable in small communities under the current regulatory environment.

136. In a recent interview with Steve Koppelman of EMCEE Corp., we obtained data on the estimated cost of translator systems assuming various channel and power configurations. Table III-15 summarizes this data. No building or antenna tower costs are included nor did he estimate the cost of adding a capability for local origination beyond the cost of adding a modulator to one translator channel (approximately $4,000 if the translator input circuitry is not removed). These estimates are based on the use of new EMCEE translators and Bogner antennas. We must point out that similar equipment is available at lower cost either from other suppliers or from the used equipment market. The range of costs can be seen easily by comparing the Pearce data (Table III-10) with the EMCEE data (Table III-15).

137. We make no claims for the quality of the equipment used in either study but feel it is important to note that the community contemplating a translator system has a choice of suppliers. Even using the more expensive installation, it seems that the equipment costs would be within the reach of most small communities. This is even more distinct if local origination requires no more than the addition of a modulator (cost $4,000 or less) to one translator channel and purchase of a video-cassette with camera and record features (cost approximately $1,200-1,500), or purchase of a satellite receive only antenna system at $8,000 to $10,000.

86/ Id at 24.

Table III-13: Summary Cost Table: Provision of Translator Signals, 1978.

Source: Pearce, Alan "Translators and Low Power Television Stations" for FCC, October 1978 at 17.

Fixed Costs	VHF	UHF
Basic one-signal service	$ 2,500 to 3,000	$12,000
Housing shack	2,000-3,000	2,000-3,000
Total Fixed Costs	$ 6,000	$15,000
Variable Costs		
Maintenance, electricity, insurance, etc.	$ 1,000 per annum	$ 1,700 per annum
Fixed Costs		
Five signal service	$12,000	$63,000
Housing shack	3,000	3,000
Total Fixed Costs	$15,000	$66,000
Variable Costs		
Maintenance, electricity, insurance, etc.	$ 3,500 per annum	$ 4,000 per annum

TABLE 1

Total Over the Air Television Coverage by Number of Stations, Number of Markets, and Number of Television Households[a]

Number of Stations	Number of Markets	Cumulative Number of Markets	Number of Television Households	Percentage of Television Households	Cumulative Percentage of Television Households	Household Access Units[b]
17	2	2	10550.9	12.9	12.9	179365.3
16	2	4	4344.8	5.3	18.2	69516.8
14	1	5	1878.6	2.3	20.5	26300.4
11	1	6	1465.8	1.8	22.3	16123.8
10	2	8	4362.9	5.4	27.7	43269.0
9	11	19	8687.0	10.7	38.4	78183.0
8	10	29	7151.7	8.8	47.2	57213.6
7	14	43	7215.9	8.9	56.1	50511.3
6	22	65	9724.5	11.9	68.0	58347.0
5	32	97	10100.0	12.4	80.4	50500.0
4	37	134	8967.2	11.0	91.4	35868.0
3	30	164	4288.1	5.3	96.7	12864.3
2	29	191	1833.6	2.2	98.9	3667.2
1	20	211	925.5	1.1	100.0	925.5
			81496.5			683016.0

OURCES: Arbitron Television, Television Markets and Rankings Guide 1981-1982 Arbitron Company, 1981).

TABLE III-14: Equipment Cost Estimate of a Low Power Television Station, 1978

Source: Pearce, Alan "Translators and Low Power Television" for FCC, October 1978 at 25:

Transmission Equipment:	Cost
100 watt translator (UHF output, VHF input) combined with modulator meeting FCC specifications for FM microwave transmission	$ 9,670.00
UHF directional antenna	370.00
100 foot antenna tower (medium windload)	1,400.00
Installation of tower	3,132.00
7/8 inch transmission line, 200 ft at $3.70 a foot (Cost includes 30 percent allowance for connectors, hangers, and other installation hardware)	740.00
Installation of transmission line at $2.50 a foot ...	500.00
TOTAL	$15,292.00 */

Studio Equipment:

1 Video switcher
1 Live Camera
2 Videotape records
  1 record and playback
  1 playback only
1 Picture monitor
2 Microphones
1 Audio mixer
1 Film island
1 Waveform monitor
1 Time base corrector
1 Sync generator
Portable lighting

$40,000.00 **/

TOTAL TRANSMISSION AND STUDIO EQUIPMENT COSTS $55,292.00 ***/

*/ This figure does not include the cost of monitoring equipment for detecting parameter failures.

**/ With this equipment the station would have local programming capability as well as the ability to run tapes and films. This compliment of equipment does not, however, guarantee compliance with all FCC technical quality standards. For a more detailed discussion of this point see Part IV B. at paras 250-260.

***/ Excluding studio costs.

Table III-15: UHF Translator Equipment Cost Estimates, 1980

Source: Interview with Steve Koppelman, Vice-president EMCEE Corp.

		1 CH.	2 CH.	3 CH.	4 CH.	5 CH.
	10 W, UHF Translator	$12,000	$24,000	$36,000	$48,000	$60,000
	Multiplexer	--	2,200	3,000	3,000	6,200
(1)	Transmission Line 1/	2,000	2,000	2,000	4,000	4,000
	Transmit Antenna 2/ Gain X10 Omni	10,000	10,000	10,000	20,000	20,000
	TOTAL EQUIPMENT COST	24,000	38,200	51,000	75,000	90,200
	Yearly Electrical Cost	130	260	390	520	650
	Yearly Maintenance Cost	1,800	2,000	2,200	2,400	2,600
	100 W, UHF Translator	$18,000	$36,000	$54,000	$72,000	$90,000
	Multiplexer	--	2,200	3,000	3,000	6,200
(1)	Transmission Line 1/	2,000	2,000	2,000	4,000	4,000
	Transmit Antenna 2/ Gain X10 Omni	10,000	10,000	10,000	20,000	20,000
	TOTAL EQUIPMENT COST	30,000	50,200	69,000	99,000	120,200
	Yearly Electrical	520	1,040	1,560	2,080	2,600
	Yearly Maintenance	2,400	2,800	3,360	3,840	4,320
	1000 W, UHF Translator	$70,000	$140,000	$210,000	$280,000	$350,000
	Multiplexer	—	5,000	7,000	7,000	12,000
(1)	Transmission Line 1/	2,000	2,000	2,000	4,000	4,000
	Transmit Antenna 2/ Gain X10 Omni	10,000	15,000	15,000	30,000	30,000
	TOTAL EQUIPMENT COST	82,000	162,000	234,000	321,000	396,000
	Yearly Electrical Cost	2,600	5,200	7,800	10,400	13,000
	Yearly Maintenance Cost	7,200	12,200	17,200	22,200	27,200

1/ Transmission Line costs based on 200' length (at $9 per foot).

2/ Limited to 3 Ch. per antenna. (The antenna is rated at 3 kW; therefore for a 1 kW system it is necessary to go to a medium power antenna with the addition of a second channel).

TABLE 3

Nationwide Access to Households By Leading Video Firms

		Broadcasting			Cable		Total Access			
							Homes Passed		Basic Subscribers	
Rank	Company	Number of Stations	Television Households in ADI Markets	Net Weekly Circulation	Homes Passed	Basic Cable Subscribers	Number of Households	National Share	Number of Households	National Share
1	ABC	5	17139.4	16247.0			17139.4	2.2	16247.0	3.9
2	Metromedia, Inc.	7	16968.7	17035.0			16968.7	2.2	17035.0	4.0
3	CBS, Inc.	5	16929.1	16021.0	44.8	19.1	16973.1	2.2	16040.1	3.8
4	RCA (NBC)	5	16383.6	15100.0			16383.6	2.1	15100.0	3.6
5	Westinghouse	6	8917.6	9642.0	3196.5	1650.4	12114.1	1.6	11292.4	2.7
6	RKO General	3	11121.1	9361.0			11121.1	1.4	9361.0	2.2
7	Field Communications Corp.	5	10852.9	8287.0	35.0	13.0	10887.9	1.4	8300.0	2.0
8	Tribune Co.	3	10253.9	10385.0	254.3	105.9	10508.2	1.4	10490.9	2.5
9	Storer Broadcasting	7	7801.2	7853.0	1732.3	836.0	9533.5	1.2	8689.0	2.1
10	Cox Broadcasting Corp.	6	6372.9	6326.0	1865.3	1114.1	8238.2	1.1	7440.1	1.8
11	Gaylord Broadcasting Co.	7	7323.9	6955.0			7323.9	0.9	6955.0	1.6
12	Taft Broadcasting Co.	7	6920.4	6778.0			6920.4	0.9	6778.0	1.6
13	Capital Cities Communications	6	5962.5	6435.0	500.2	301.7	6462.7	0.8	6736.7	1.6
14	Times Mirror Co.	7	3973.1	4363.0	1110.5	641.4	5083.6	0.7	5004.4	1.2

TABLE 3 Continued

Nationwide Access to Households By Leading Video Firms

		Broadcasting			Cable		Total Access			
							Homes Passed		Basic Subscribers	
Rank	Company	Number of Stations	Television Households in ADI Markets	Net Weekly Circulation	Homes Passed	Basic Cable Subscribers	Number of Households	National Share	Number of Households	National Share
15	Golden West Broadcasters	2	4673.1	3974.0			4673.1	0.6	3974.0	0.9
16	Gannett Co., Inc.	7	4408.6	4356.0			4408.6	0.6	4356.0	1.0
17	Scripps-Howard	6	4156.4	4677.0			4156.4	0.5	4677.0	1.1
18	Time Inc.	1	565.9	612.0	3468.5	1806.6	4034.4	0.5	2418.6	0.6
19	Corinthian Broadcasting Corp.	6	4012.7	4072.0			4012.7	0.5	4072.0	1.0
20	Hearst Stations	5	3935.7	4749.0			3935.7	0.5	4749.0	1.1
21	Washington Post Co.	4	3921.7	4396.0			3921.7	0.5	4396.0	1.0
22	Outlet Co.	5	3030.3	3633.0			3030.3	0.4	3633.0	0.9
23	Tele-Communications Inc.				2571.6	1432.2	2571.6	0.3	1432.2	0.3
24	General Electric	3	1988.0	1478.0	493.7	287.0	2481.7	0.3	1765.0	0.4
25	Liberty Communications[a]	6	2031.8	7840.0	423.1	201.3	2454.9	0.3	985.3	0.2
26	Viacom International	2	1242.4	1005.0	1111.6	550.6	2354.0	0.3	1555.6	0.4
27	Bonneville International Corp.[b]	2	1600.1	1593.0	13.0	8.3	1613.1	0.2	1601.3	0.4
28	Warner Communications				1464.3	834.8	1464.3	0.2	834.8	0.2

TABLE 3 Continued

Nationwide Access to Households By Leading Video Firms

		Broadcasting		Cable			Total Access			
							Homes Passed		Basic Subscribers	
Rank	Company	Number of Stations	Television Households in ADI Markets	Net Weekly Circulation	Homes Passed	Basic Cable Subscribers	Number of Households	National Share	Number of Households	National Share
29	Continental Cablevision				1071.4	448.5	1071.4	0.1	448.5	0.1
30	Rogers UA Cablesystems				1028.3	532.7	1028.3	0.1	532.7	0.1
31	Newhouse				884.0	559.4	884.0	0.1	559.4	0.1
32	United Cable				832.1	453.2	832.1	0.1	453.2	0.1
33	Sammons Communications				637.6	440.1	637.6	0.1	440.1	0.1
34	Cablevision Systems Devel.				541.7	218.7	541.7	0.1	218.7	0.003
35	Telecable Corp.				520.5	298.4	520.5	0.1	298.4	0.005
36	Heritage Communications				465.9	227.8	465.9	0.1	227.8	0.003
37	Comcast Corp.				412.4	217.2	412.4	0.1	217.2	0.003

TABLE 5

Numbers of Competitive Local Media Markets and Television Households in Them Under Alternative Competitiveness Criteria and Product Market Definitions

Assumed Number of Voices in the Market	2	6	10	15
Broadcast TV Only	98.9/191	68.0/65	27.7/8	18.2/6
Broadcast TV plus One	100.0/211	80.4/97	38.4/19	20.5/5
Broadcast TV plus Two	100.0/211	91.4/134	47.2/29	20.5/5
Broadcast TV plus Three	100.0/211	96.7/164	56.1/43	20.5/5
Broadcast TV plus Four	100.0/211	98.9/191	68.0/65	22.3/6
Broadcast TV plus Five	100.0/211	100.0/211	80.4/97	27.7/8

SOURCES: Calculated from table 1

NOTES: In each entry, the upper figure is the percentage of television households contained in competitive markets; the lower entry is the number of competitive markets.

The first row assumes only broadcast television is in the market.

The second row is relevant if all households in the market can receive one pay service (MDS, STV, or Cable) or video cassettes and discs are counted as one voice or newspapers are counted as one voice or radio is counted as one voice.

The third row is relevant if any two of the four possible additional voices are included, or if there are two different radio voices.

Similar combinations can be assembled for the fourth, fifth, and sixth rows. Thus, the sixth row, Broadcast TV plus Five, would be relevant for markets with one newspaper voice, one pay video voice, and three radio voices. A compilation by the National Association of Broadcasters shows that every one of the top 50 markets has at least six radio stations, and most have many more. The compilation also shows that the 75th, 100th, and 125th and 150th markets have 9, 8, 13 and 9 stations respectively. See National Association of Broadcasters, New Technologies Affecting Radio and Television Broadcasting (November 1981).

MEASUREMENT OF CONCENTRATION IN HOME VIDEO MARKETS

A Staff Report by

Jonathan D. Levy and Florence O. Setzer

Office of Plans and Policy

Federal Communications Commission

Washington, D.C. 20554

December 23, 1982

Table IV.10 Equipment Needed For Minimum Level of Local Origination

(as presented in the Comments of the Association of Maximum Service Telecasters)

Item	Cost
Two multipurpose television cameras with accessories	$46,000
Two film islands (film and slide projectors, multiplexer, film camera)	$90,000
One Uused, reconditioned) 2" quad video tape recorder	$50,000
Three editing videotape recorders/players	$17,000
One portable videotape recorder	$ 9,600
One video switcher for production	$10,000
One video switcher for on-air	$20,000
One time base corrector	$25,000
Monitors and test equipment	$42,500
Video and pulse distribution equipment	$ 8,000
Two sync generators and associated equipment	$ 4,000
Audio equipment	$12,000
Lighting equipment	$ 3,000
Studio-transmitter link	$22,000
* Mobile van	$12,000
Other equipment (intercom, racks, control console, etc.)	$ 8,000
Total	$378,600

* Microwave facilities to enable live remotes would cost an additional $16,000.

Source: The above table appears as TABLE I of the engineering study of A.D. Ring & Associates, appended to the Comments of the Association of Maximum Service Telecasters in BC-78-253 (August 1978), at p. 9.

TABLE 8-6. PROJECTED OVER-THE-AIR PAY TELEVISION HOUSEHOLDS
1981-82 THROUGH 1989-90
(HOUSEHOLD FIGURES IN THOUSANDS)

	U.S.	STV		MDS		OBS		Other--Non-Scheduled(5)		SMATV		LPTV		Total Over-the-Air Pay Television	
Year	TV Households(1)	House-holds(2)	Pene-tration	House-holds(3)	Pene-tration	House-holds(4)	Pene-tration	House-holds	Pene-tration	House-holds(6)	Penetration	House-holds(7)	Pene-tration	House-holds	Pene-tration
1981-82	81,937	1,319	1.6%	530	.6%	--	--	--	--	50	.06%	--	--	1,899	2.3%
1982-83	83,739	1,400	1.7	570	.7	--	--	--	--	100	.1	5	.01	2,075	2.5%
1983-84	85,200	1,600	1.9	870	1.0	170	.2%	80	.1%	300	.4	20	.02	3,040	3.6
1984-85	86,700	1,700	2.0	1,170	1.3	900	1.0	310	.4	400	.5	50	.1	4,530	5.2
1985-86	88,200	1,800	2.0	1,400	1.6	1,200	1.4	690	.8	500	.6	100	.1	5,690	6.5
1986-87	89,800	1,700	1.9	1,700	1.9	1,700	1.9	1,100	1.2	500	.6	200	.2	6,900	7.7
1987-88	91,400	1,600	1.8	2,000	2.2	2,500	2.7	1,400	1.5	500	.5	300	.3	8,300	9.1
1988-89	93,000	1,400	1.5	2,200	2.4	3,700	4.0	1,650	1.8	500	.5	600	.6	10,050	10.8
1989-90	94,700	1,200	1.3	2,300	2.4	5,400	5.7	1,850	2.0	500	.5	1,000	1.1	12,250	12.9

Sources:

(1) U.S. TV households for 1981-82 and 1982-83 are from A.C. Nielsen, U.S. Television Household Estimates, various issues. Projected TV households for 1984-85 and 1989-90 are A.C. Nielsen projections as of January 1. Remaining years are BBC estimates based on a constant percentage increase per year.

(2)(3)(4)(6)(7) STV households for 1981-82 and 1982-83 are from Paul Kagan & Associates, Pay TV Newsletter, April and October 1982 respectively. MDS television households for 1981-82 and 1982-83 are from Paul Kagan & Associates, MDS Data Book, October 1982. DBS, SMATV and LPTV television households are BBC estimates.

(5) These are "equivalent households" used for methodological purposes. Total households using these modes could be many times higher. However, given the ability of the household to self-schedule this programming, the expected impact on network viewing will likely be much less than in pay TV households. In addition, many VCR and disc users will also take a pay television service. To avoid double counting and to account for the different patterns of uses, BBC used an "equivalent" figure substantially below the total number of households using cassettes and discs.

AN ANALYSIS OF THE TELEVISION PROGRAMMING MARKET

- Prepared for -

American Broadcasting Companies, Inc.

- Prepared by -

Browne, Bortz & Coddington
155 South Madison Street, Suite 230
Denver, Colorado 80209

January 1983

TABLE B-6. PROJECTED OVER-THE-AIR PAY TELEVISION HOUSEHOLDS
1981-82 THROUGH 1989-90
(HOUSEHOLD FIGURES IN THOUSANDS)

	U.S.	STV		MDS		DBS		Other--Non-Scheduled(5)		SMATV		LPTV		Total Over-the-Air Pay Television	
Year	TV Households(1)	House-holds(2)	Pene-tration	House-holds(3)	Pene-tration	House-holds(4)	Pene-tration	House-holds	Pene-tration	House-holds(6)	Penetration	House-holds(7)	Pene-tration	House-holds	Pene-tration
1981-82	81,937	1,319	1.6%	530	.6%	--	--	--	--	50	.06%	--	--	1,899	2.3%
1982-83	83,739	1,400	1.7	570	.7	--	--	--	--	100	.1	5	.01	2,075	2.5%
1983-84	85,200	1,600	1.9	870	1.0	170	.2%	80	.1%	300	.4	20	.02	3,040	3.6
1984-85	86,700	1,700	2.0	1,170	1.3	900	1.0	310	.4	400	.5	50	.1	4,530	5.2
1985-86	88,200	1,800	2.0	1,400	1.6	1,200	1.4	690	.8	500	.6	100	.1	5,690	6.5
1986-87	89,800	1,700	1.9	1,700	1.9	1,700	1.9	1,100	1.2	500	.6	200	.2	6,900	7.7
1987-88	91,400	1,600	1.8	2,000	2.2	2,500	2.7	1,400	1.5	500	.5	300	.3	8,300	9.1
1988-89	93,000	1,400	1.5	2,200	2.4	3,700	4.0	1,650	1.8	500	.5	600	.6	10,050	10.8
1989-90	94,700	1,200	1.3	2,300	2.4	5,400	5.7	1,850	2.0	500	.5	1,000	1.1	12,250	12.9

Sources:

(1) U.S. TV households for 1981-82 and 1982-83 are from A.C. Nielsen, U.S. Television Household Estimates, various issues. Projected TV households for 1984-85 and 1989-90 are A.C. Nielsen projections as of January 1. Remaining years are BBC estimates based on a constant percentage increase per year.

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(6)(7) MDS television households for 1981-82 and 1982-83 are from Paul Kagan & Associates, MDS Data Book, October 1982. DBS, SMATV and LPTV television households are BBC estimates.

(5) These are "equivalent households" used for methodological purposes. Total households using these modes could be many times higher. However, given the ability of the household to self-schedule this programming, the expected impact on network viewing will likely be much less than in pay TV households. In addition, many VCR and disc users will also take a pay television service. To avoid double counting and to account for the different patterns of uses, BBC used an "equivalent" figure substantially below the total number of households using cassettes and discs.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of 47 CFR § 73.658(j); the Syndication and Financial Interest Rule	)	BC Docket No. 82-345
	)	
	)	

To: The Commission

COMMENTS OF CBS INC.

VOLUME I

Of Counsel:

David Boies
Stuart W. Gold
L. Donald Prutzman, Jr.
CRAVATH, SWAINE & MOORE

Richard E. Wiley, P.C.
Lawrence W. Secrest, III, P.C.
Patricia M. Reilly
KIRKLAND & ELLIS

Joel Rosenbloom
Thomas J. Sugrue
David M. Frankford
WILMER, CUTLER & PICKERING

George Vradenburg III
Vice President and
Deputy General Counsel

CBS Inc.
51 West 52 Street
New York, New York 10019

January 26, 1983

TABLE 2

Availability and Use Of Electronic Mass Media (Millions): 1970-1990

	1970	1975	1980	1982	1986	1990
Number of TV Households	59	70	78	83	90	97
Basic Cable						
Homes with Access	9	20	35	45	75	82
Subscribers	5	11	19	28	41	58
Pay Cable						
Homes with Access	-	4	26	42*	70*	76*
Subscriptions	-	.5	9	23	46	65
STV & MDS						
Homes with Access	-	3	22	35	49	59
Subscribers	-	NA	1	3	6	8
Low Power TV						
Homes with Access	-	-	-	NA	.4	10
Subscribers	-	-	-	NA	.36	.8
Direct Broadcast Satellite						
Homes with Access	-	-	-	-	72	97
Subscribers	-	-	-	-	2	11

* In 1982, 93% of the television households passed by basic cable had access to at least one pay cable service. Assuming that the basic-to-pay ratio remains constant through 1990 (a conservative estimate given the anticipated expansion in channel capacities, see supra note 106), pay cable will be available to 70 million households in 1986 and to 76 million households in 1990.

TABLE 2 (Continued)

Availability and Use Of Electronic Mass Media (Millions): 1970-1990

	1970	1975	1980	1982	1986	1990
Videocassette Recorders						
Homes with Access	-	70	78	83	90	97
Owners		.3	2	5	13	15
Videodisc Players						
Homes with Access	-	-	78	83	90	97
Owners	-	-	.02	.3	3	7
Videogames						
Homes with Access	-	70	78	83	90	97
Owners	-	NA	11	15	22	29

NA = Not Available

Sources: Donaldson, Lufkin & Jenrette, Industry Viewpoint: Cable '82 at 7, 9, 35 (Oct. 1982); Paul Kagan Assocs., Inc., Cable TV Databook 36, 51 (1982); Media Science Newsletter, June 1-15, 1982, at 2; Doyle Dane Bernbach, Inc., The Media Scene: What Will It Look Like? 11 (1982); Television Digest, Inc., Television Factbook, Services Vol., at 79-a, 83-a (1981-82 Ed.); Titsch Publishing, Inc., Cablefile 93 (1982); Paul Kagan Assocs., Inc., MDS Databook 13 (Oct. 1982)

Table prepared by Alan Pearce, Ph.D., January 18, 1983

TABLE 10

Number of LPTV Channels Applied for in Major Cities in the Top 50 ADI Markets: December 1982

Number of Channels*	Cumulative Number of Top 50 Markets
29	1
27	3
25	5
24	7
23	13
22	15
21	17
20	19
19	21
18	25
17	28
16	32
15	34
14	35
13	37
12	38
11	41
10	43
9	46
8	47
7	48
6	49
3	50

* The number of channels listed has been adjusted to eliminate mutually exclusive applications. For two reasons, the number of channels listed may be underestimated because the number of mutually exclusive applications within each ADI may be overestimated. First, it was assumed that all applications for the same or adjacent channels within each ADI were necessarily mutually exclusive. Second, Berry Best Services lists license applications by the city or town where the station would be located. Arbitron Television's City Book was used to assign cities and towns to ADIs. This listing is not exhaustive, and many locations from the Berry Best listing could not be assigned to any ADI. To the extent some of the cities and towns which were not listed in the City Book are in a top-50 ADI, the number of channels applied for in those markets will be underestimated.

Source: Berry Best Services, Ltd., Low Power Applicant List (Dec. 1982)

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of 47 CFR §73.658(j); the Financial Interest and Syndication Rules	)	BC Docket No. 82-345

COMMENTS OF
NATIONAL BROADCASTING COMPANY, INC.

Bernard G. Segal
Jerome J. Shestack
Peter S. Greenberg
Deena Jo Schneider

Attorneys for National
Broadcasting Company, Inc.

Schnader, Harrison, Segal & Lewis
1719 Packard Building
Philadelphia, Pennsylvania 19102

Corydon B. Dunham
Stephen F. Stander
National Broadcasting Company, Inc.
30 Rockefeller Plaza
New York, New York 10020

Howard Monderer
National Broadcasting Company, Inc.
1825 K Street, N.W.
Washington, D.C. 20006

Of Counsel.

January 26, 1983.

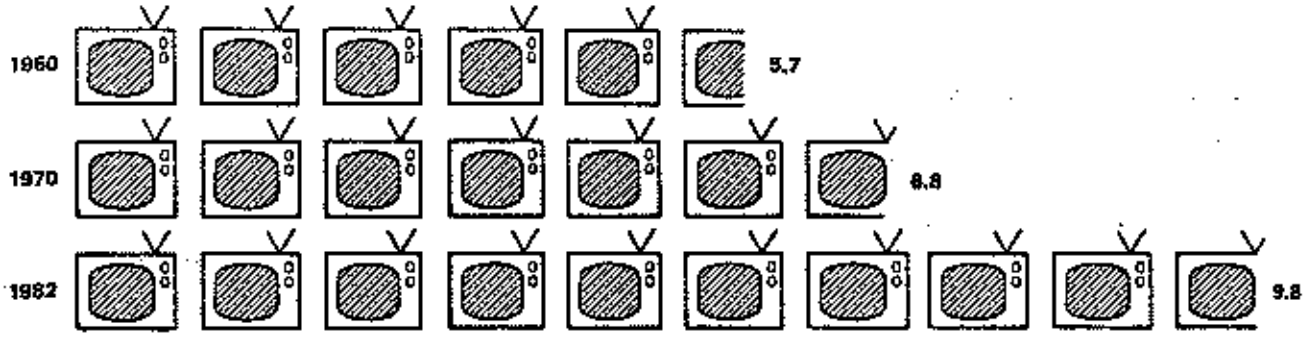
EXAMPLES OF STRONG MARKET DEMAND FOR PAY PER VIEW

Event	Date	Total Revenues
Leonard-Hearns fight	9/81	$ 8 million
The Rolling Stones Concert	12/81	$ 2 million
Holmes-Cooney fight	6/82	$ 9 million
Star Wars	9/82	$10 million
Sophisticated Ladies	11/82	$ 1 million
Hearns-Benitez fight	12/82	$ 4 million
The Who concert	12/82	$ 1 million

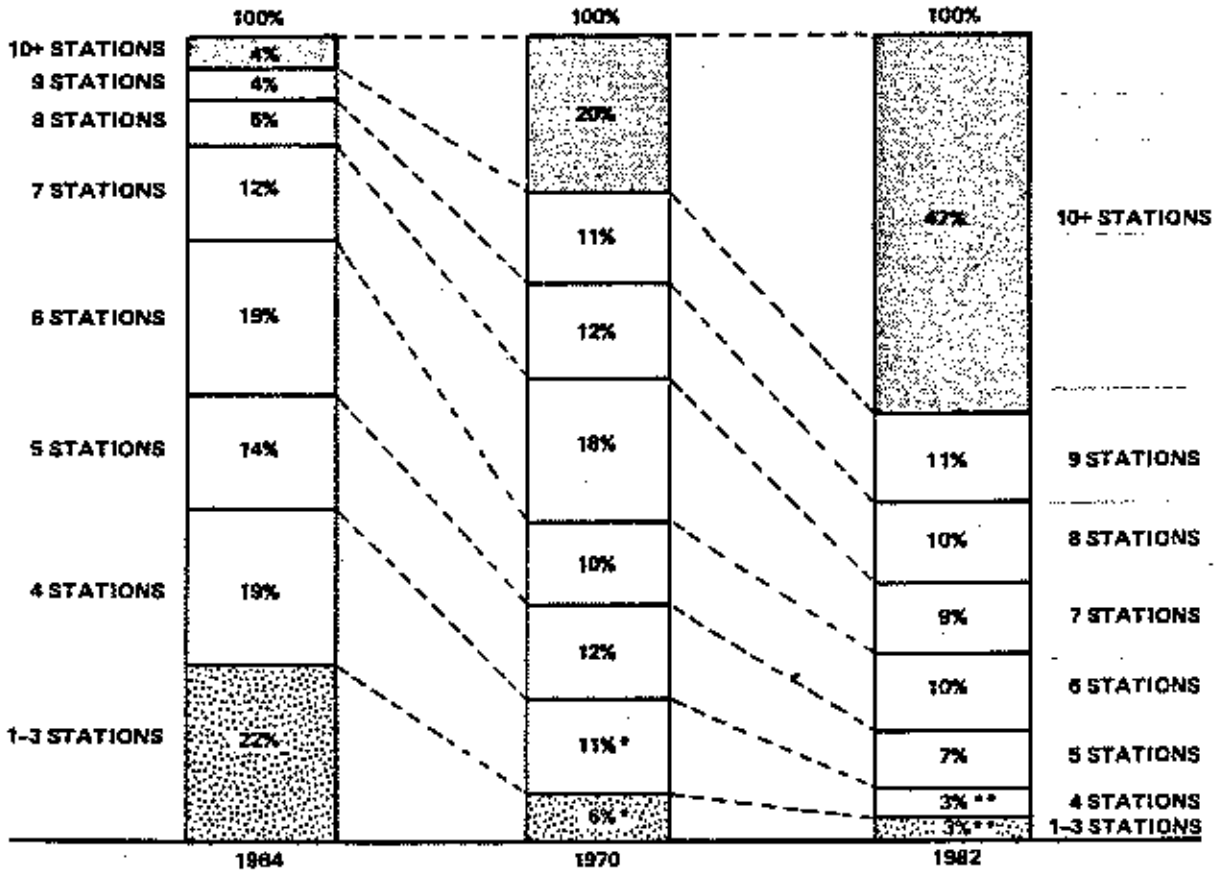
Sources: Variety, Sept. 23, 1981, p. 42 (Leonard-Hearns); Satellite News, Jan. 4, 1982, p. 7 (The Rolling Stones); Advertising Age, Electronic Media Edition, June 4, 1982, p. 12 (Holmes-Cooney); CableVision, Nov. 22, 1982, p. 51 (Star Wars); The New York Times, Nov. 20, 1982, p. 49 (Sophisticated Ladies); Multichannel News, Dec. 13, 1982, p. 1 (Hearns-Benitez); Paul Kagan Associates, Pay TV Newsletter, Jan. 10, 1983, p. 6 (The Who).

INCREASE IN RECEIVABLE BROADCAST STATIONS

AVERAGE NUMBER OF BROADCAST STATIONS RECEIVABLE PER TV HOME



PERCENTAGE OF TV HOMES ABLE TO RECEIVE SPECIFIC NUMBERS OF BROADCAST STATIONS

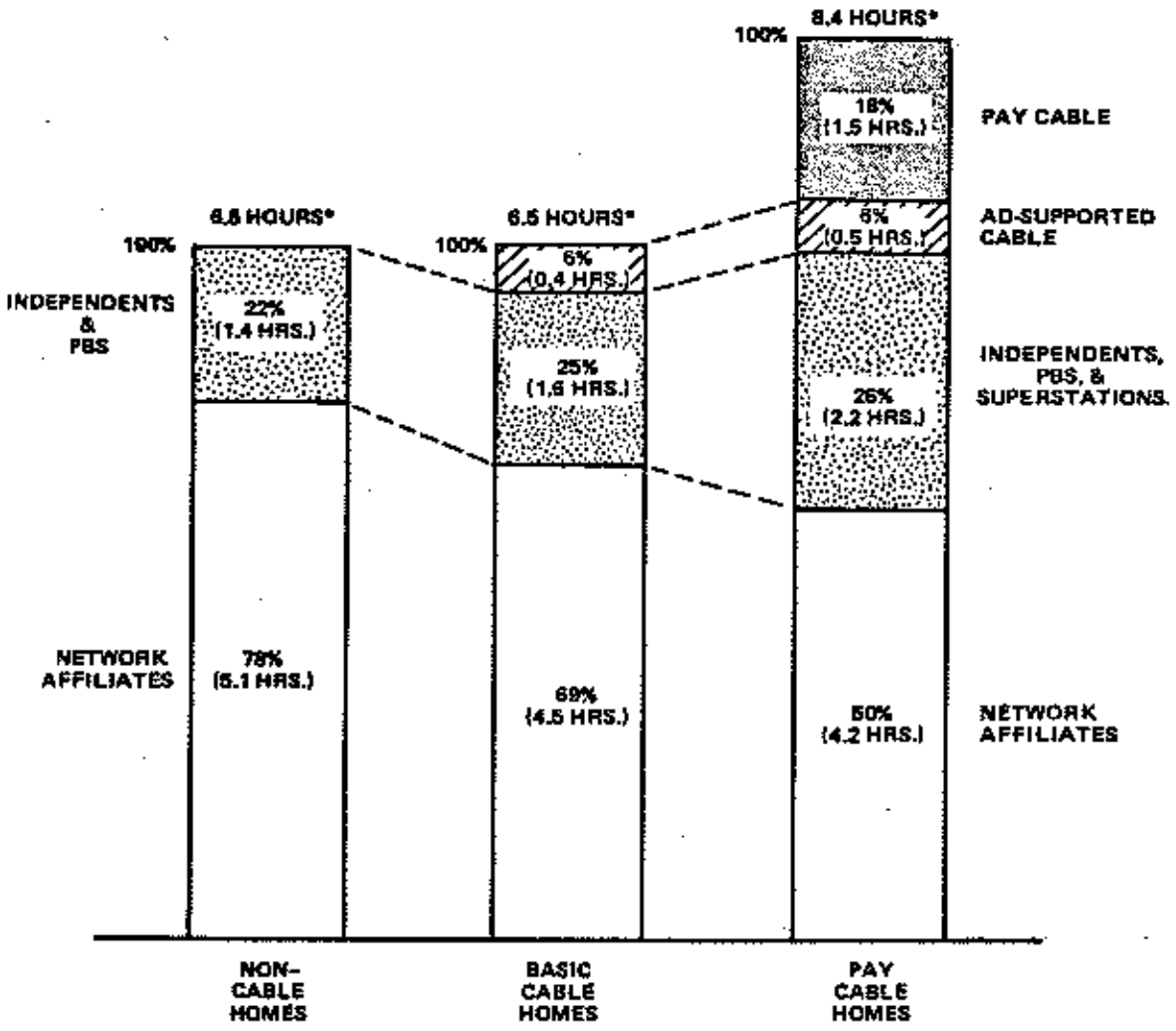


* 1972 data.

** 1982 data for 1—4 stations evenly split between 1–3 and 4.

Source: Nielsen Television Index sample. "Stations" include distant signals and "superstations" imported via microwave and satellite as well as stations whose signals are received over the air.

FRAGMENTATION OF TELEVISION VIEWING AUDIENCE



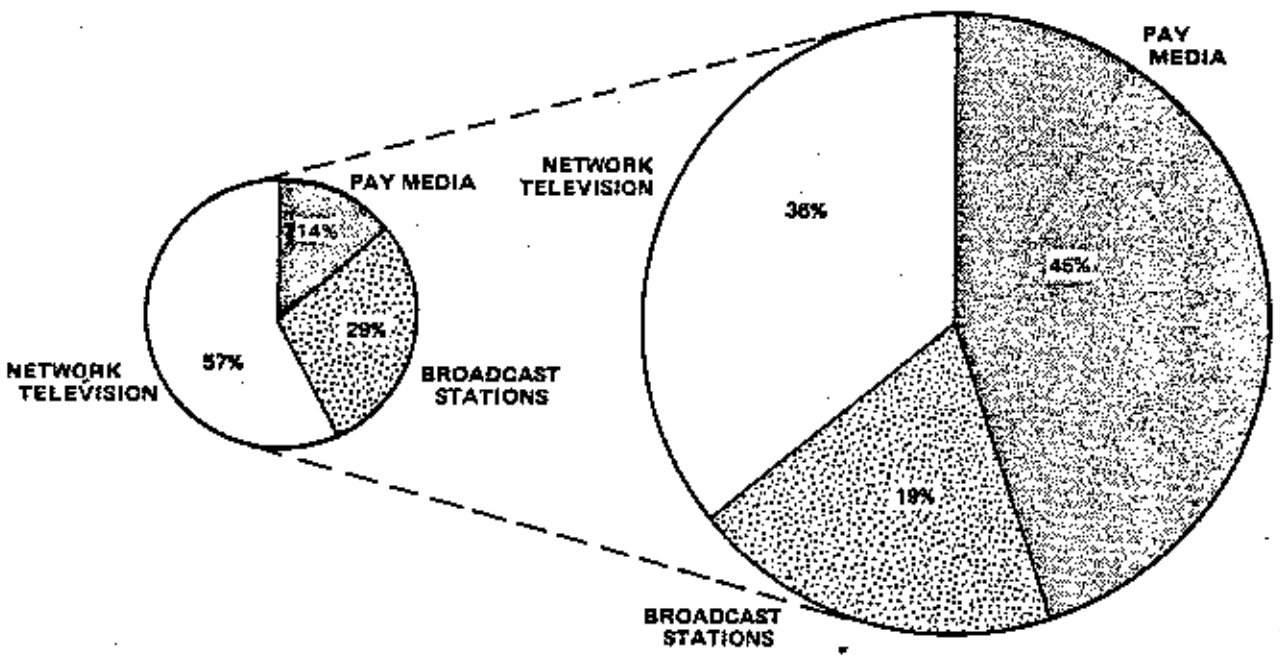
*Average number of hours watched daily.

Source: Nielsen Television Index, Cable TV Status Reports, Nov. 1981, Feb. 1982, May 1982, July 1982.

THE GROWTH OF PAY MEDIA PROGRAMMING EXPENDITURES

SEGMENTATION OF TOTAL HOME VIDEO PROGRAMMING EXPENDITURES

Percent Change 1982–1990	
Pay media programming expenditures	980%



Source: Booz, Allen & Hamilton Inc. estimates, expressed in current dollars.

FCC BC DOCKET No. 82-345

AMENDMENT OF THE COMMISSION'S SYNDICATION AND FINANCIAL INTEREST RULE

THE COMMERCIAL TELEVISION INDUSTRY: PUBLIC POLICY AND MARKET DEVELOPMENT

A Report on the Development and Growth of Commercial Television,
New Competition, and the Policy Goals
of Efficiency and Diversity

Prepared By:

WALTER G. BOLTER, Ph.D., C.P.A.

BOLTER & NILSSON,

Consultants

Bethesda, Maryland

January, 1983

CHART 59

Fully Expanded Growth Projections For Existing and New Video Technologies For The Top Five Commercial Television Markets: 1986*

1981 Rank	Market	Cable T.V. 1986	Cable T.V. Long Term Antcp.	MDS 1986	MDS Long Term Antcp.	UHF & VHF 1986	UHF & VHF Long Term Antcp.	DBS 1986	DBS Long Term Antcp.	Low Power TV 1986	Low Power TV Long Term Antcp.
1	New York:										
	Channels	39	39+	4	5-10	14	15	3+	3+	22	22
	% homes passed	42%	100%	--	--	--	--	--	--	--	--
2	Los Angls.:										
	Channels	21	21+	7	5-10	19	20	3+	3+	29	29
	% homes passed	47%	100%	--	--	--	--	--	--	--	--
3	Chicago:										
	Channels	39	39+	5	5-10	14	13	3+	3+	18	18
	% homes passed	38%	100%	--	--	--	--	--	--	--	--
4	Philadel.:										
	Channels	25	25+	4	5-10	11	13	3+	3+	12	12
	% homes passed	61%	100%	--	--	--	--	--	--	--	--
5	Boston:										
	Channels	25	25+	3	5-10	9	9	3+	3+	12	12
	% homes passed	31%	100%	--	--	--	--	--	--	--	--

*1986 are actual and currently applied for figures. Homes passed are based on ADI television households; cable channels are weighted averages for the franchised systems; cable 1986 homes passed figures assume current cable franchised systems will pass 100% of homes in their areas; anticipated figures assume all households will take cable if available. 1986 figures for other technologies count through 1981 applied for applications and suppliers stated intentions. Anticipated figures are based on the following: MDS (Docket 80-112 figures), VHF and UHF (total allocated channels), and DBS (same as 1986).

Sources: National Association of Broadcasters, *New Technologies Affecting Radio and Television Broadcasting*, 1981; Bolter & Nilsson estimates, ©, 1983.

CHART 60

Fully Expanded Growth Projections For Existing and New Technologies For Smaller Commercial Television Markets: 1986*

1981 Rank	Market	Cable T.V. 1986	Cable T.V. Long Term Antcp.	MDS 1986	MDS Long Term Antcp.	UHF & VHF 1986	UHF & VHF Long Term Antcp.	DBS 1986	DBS Long Term Antcp.	Low Power TV 1986	Low Power TV Long Term Antcp.
67	Sprgfld, Il.:										
	Channels	21	21+	4	5-10	6	11	3+	3+	2	2
	% homes passed	61%	100%	--	--	--	--	--	--	--	--
119	Waco:										
	Channels	12	12+	2	5-10	4	6	3+	3+	8	8
	% homes passed	62%	100%	--	--	--	--	--	--	--	--
138	Odessa:										
	Channels	13	13+	2	5-10	4	7	3+	3+	3	3
	% homes passed	69%	100%	--	--	--	--	--	--	--	--
144	Eugene.:										
	Channels	12	12+	3	5-10	3	4	3+	3+	3	3
	% homes passed	81%	100%	--	--	--	--	--	--	--	--

*1986 are actual and currently applied for figures. Homes passed are based on ADI television households; cable channels are weighted averages for the franchised systems; cable 1986 homes passed figures assume current cable franchised systems will pass 100% of homes in their areas; anticipated figures assume all households will take cable if available. 1986 figures for other technologies count through 1981 applied for applications and suppliers stated intentions. Anticipated figures are based on the following: MDS (Docket 80-112 figures), VHF and UHF (total allocated channels), and DBS (same as 1986).

Sources: National Association of Broadcasters, *New Technologies Affecting Radio and Television Broadcasting*, 1981; Bolter & Nilsson estimates, ©, 1983.

PLANNING COMMUNITY APPLICATIONS OF LOW POWER TELEVISION

A Report Prepared For

THE BENTON FOUNDATION

and

CORPORATION FOR PUBLIC BROADCASTING

1983

Prepared By

JOHN CAREY

THE ORIGINS OF LPTV

LPTV is an outgrowth from television translator stations which have been in operation since the late 1940s. A television "translator" receives a distant TV signal from another station and retransmits it simultaneously on a different channel. This enables a wider audience to receive the distant station. An LPTV station is set up much like a translator except that it can originate programming as well as retransmit the signal of another station.

By the mid 1950s, nearly 1000 translator stations were operating in the U.S., mostly in rural parts of the Western states. They were setup by local interests: rotary clubs, school districts, TV repair stores, and local government agencies. The motivation to establish translator stations was quite simple. Communities with few or no television signals in their area wanted to gain access to programming.

These early translator stations were "extra legal" in FCC terms. That is, they were setup without a license from the FCC. By the mid 1950s efforts were begun to license translators and establish a set of rules for their operation. Translators were restricted to 14 upper UHF channels (70-83) and power output was limited to 10 watts. These rules did not stop illegal operators. Moreover, court actions and political pressure led the FCC to change translator rules a number of times and to issue many waivers on a case by case basis.

Among the waivers which the FCC granted to translator operators, one can find the seeds which led to much current interest in low power program origination. In 1966, the Board of Cooperative Educational Services (BOCES) a translator operator in New York State received a waiver to tape incoming programs from various stations and rebroadcast them later in a mixed format. This broke the barrier in relation to simultaneous rebroadcast of a single, distant station. Subsequently, in 1973, the Alaska Educational Broadcasting Commission (AEBC) and Corporation for Public Broadcasting received a waiver to construct low power "mini-TV stations" in Alaskan villages. Since the stations were not planning to rebroadcast off-the-air signals, the FCC considered them "miniature" television stations. These stations evolved into a large network of LPTV stations serving rural Alaska. Then, in 1974, the Roundup TV Tax District in Roundup, Montana, was authorized to use a translator station for rebroadcasting programs which were received directly from a satellite - rather than a distant TV station. Collectively, these translator stations put into place the evolutionary forces which have led to low power TV.

In Fall 1982, more than 4,000 translator stations (in the traditional sense) operate in the U.S. Approximately 65% of these operate on VHF channels and 35% on UHF. In addition, more than 200 low power stations are operating. The greatest concentration of LPTV stations is in Alaska, and nearly all are

in rural areas.

In addition, more than 7,000 applications for LPTV licenses have been filed at the FCC. Each of these potential stations as well as existing translator and LPTV stations are governed by the final FCC rules which were released in April 1982. Chapter 2 discusses these rules.

Coverage 32133

The coverage of a low power station will depend in large part upon the power of the station, the type of transmitting antenna used, and the height of the antenna over the surrounding area.

The FCC limits the transmitter power output of LPTV stations to 1000 watts for UHF channels, 10 watts for VHF channels not on the Table of Assignments, and 100 watts for VHF channels on the Table of Assignments. None of the Table of Assignment Channels are available in major cities, but some are available in rural areas. The difference in power levels does not give a particular advantage to UHF since higher frequencies require more power to achieve the same coverage as lower frequency channels with less power.

No limits are placed on the height of an antenna. However, significant costs are associated with building a tall tower. For this reason, there is a strong incentive to share a tower with an existing station, or, locate a small tower on a tall building or nearby mountain. Table 2 illustrates how antenna height can affect station coverage when all other factors remain constant.

TABLE 2.

Effect of Antenna Height (Above Average Terrain) on Station Coverage.

Signal Strength UHF (ERP)	Antenna Height (Feet) Above Average Terrain	Approx. Station Coverage (Grade B Contour)
1000 watts	100	5 Miles
	300	8.5
	500	12
	1000	16

The type of antenna used can also have a strong impact upon the reach of a station. The transmitting antenna has the potential to concentrate the signal, thereby "multiplying" the transmitter power output to a higher value. This multiplication ability is called "gain." For example, using a transmitting antenna with a gain of 10 together with a 1000 watt transmitter yields a station power of 10,000 watts (or, 10 kilowatts). This power - the product of transmitter power output, potential line loss, and the antenna gain is referred to as effective radiated power (ERP). It is the ERP that is generally discussed when one speaks of station "power." ERP and antenna height are the two factors which most directly influence station coverage.

Table 3 illustrates how transmitter power output, antenna gain and antenna height can affect the reach of a station.

TABLE 3.

Illustrative Low Power TV
Station Coverage

VHF (Channels 2-13)	Antenna Gain	ERP	Transmitter Height Above Aver. Terrain	Approx. Useful Station Coverage
1 watt	5	5	100	3.5 miles
1 watt	5	5	500	8.0
10 watts	5	50	100	6.2
10 watts	5	50	500	14.0
UHF (Channels 14-69)				
100 watts	15	1500	100	6.5
100 watts	15	1500	500	12.5
1000 watts	15	15000	100	10.0
1000 watts	15	15000	500	21.0

Source: CPB

COSTS OF TRANSMISSION FACILITIES

Minimal transmission equipment must include a transmitter, transmission antenna, and transmission line. Approximate costs for such equipment are outlined in Table 4.

TABLE 4.

Cost Estimates For
Transmitters, Antennas & Transmission Line

Transmitters

Band	Power Output (watts)	Approx. Cost
VHF	10	$ 10,000
VHF	100	20,000
UHF	100	20,000
UHF	1000	75,000

Antennas

Band	Power Gain	Approx. Cost
VHF	5	$ 1,000
VHF	10	5,000
UHF	5	4,000
UHF	15	10,000

Transmission Line: price varies from $ 2-9 a foot depending on the power output of the transmitter. Thus, a 200' transmission line linking the transmitter and antenna will cost $400 - 1800.

Source: CPB and EMCEE Corp.

The figures in Table 4 will vary in relation to the manufacturer and additional characteristics of the component,

e.g. directional antennas are more expensive than omni-directional antennas.

In addition to these basic components, an LPTV transmission system may require a tower and a shack to house the transmitter. A 100' tower will cost approximately $ 4,500 installed, while a 200' tower will cost approximately $ 12,000 installed. A simple shack to house the transmitter may be built for $ 2,000.

The costs of transmission add-ons, i.e. microwave send and receive facilities, and satellite receive dishes, are outlined in Table 5.

TABLE 5.

Microwave and Satellite Equipment

Item	Approx. Cost
Studio microwave transmitter and receive dish	$ 25,000
Remote microwave transmission facility	16,000
3-4 meter satellite dish	12,000
5 meter satellite dish	25,000

Source: Cablevision

In addition to these fixed costs, the transmission system must bear yearly costs of electricity and maintenance. An LPTV operator should estimate $ 3,000 - 10,000 per year for electricity and maintenance of the transmission system. The figure will vary

in relation to power output, amount and age of equipment, and availability of volunteer help to mainain equipment.

STUDIO EQUIPMENT

In order to originate programming on LPTV, a studio is required. This can range from a $ 600 videocassette playback unit connected to a $ 2,000 modulator up to a several million dollar studio complex. In some instances, an LPTV studio with local origination may indeed consist of a simple videocassette playback unit, e.g. if the station is affiliated with a local community college which already has a production studio.

For planning purposes, it will be assumed that an LPTV operator does require a studio to produce programs. Table 6 presents 3 "levels" of studios and 2 levels of remote production units. The descriptions in the Table broadly outline what the studios or production units can do. Appendix B at the end of this report presents a detailed list of equipment for each of the studios and remote units.

TABLE 6.

Alternative Studios & Remote Production Units

Level	Description	Approx. Cost
Studio 1	A small but complete studio with 2 color cameras, video switcher, character generator and simple editing capability.	$ 60,000
Studio 2	A larger and more versatile studio than the one above, with stronger editing capabilities.	125,000

TABLE 6.
(Cont.)

Studio 3	A full production studio with 3 high quality color cameras, full editing capability and post production facilities.	$ 240,000
Remote Unit 1	A single camera, professional recording unit suitable for news reporting and other simple on-the-scene coverage.	12,000
Remote Unit 2	A complete remote production unit with 2 cameras and facilities to televise a sporting event or other live action scenes.	125,000

Note: In order for either remote production unit to relay programming "live" back to the studio, a $ 16,000 microwave link must be added to the package.

Source: Warner Amex

The packages in Table 6 do not exhaust the possibilities for studio configurations. One could easily double or triple these costs for more elaborate studios. Further, it is possible to piece together a bare bones studio for $ 15,000 - 25,000.

PAY TV EQUIPMENT COSTS

In order to operate as a subscription television service, a station requires a $ 15,000 encoder. The STV box which is required in each home, in order to unscramble the picture, costs $ 115 each. Usually, these must be purchased in lots of 100 or more. An STV operator may sell the box to subscribers or lease

000001

it as part of the monthly subscription fee.

If an STV operator wants added security in the system, making it more difficult for someone to pirate the signal, an additional $ 40,000 in station equipment is required. Also, the price of the home box will rise to approximately $ 185.

ADDING UP THE COSTS

In attempting to piece together the total cost of an LPTV station, it becomes clear that there is a broad range of options and hence a broad range in costs. It is possible to choose all of the "bells and whistles" and arrive at a model LPTV station which equals the cost of a full service station (the FCC estimates that a conventional full service station with modest facilities costs 2-3 million dollars, exclusive of the land or building). In this report, it is assumed that most LPTV operators seek to build a station which is well below the cost of a full service station.

The chart in Table 7 outlines a range in costs for each of the equipment components described in this chapter. It is important to note that one can exceed the range in each instance and reduce the low estimate in a few instances.

TABLE 7.

LPTV Equipment and Facilities Costs

(Dollar Figures in Thousands)

Item	(Level 1) Low Range	(Level 2) Mid Range	(Level 3) Upper Range
Transmission Equipment	12	27	85
Tower	4	12	30
Studio Equipment	60	125	240
Remote Production Unit	12	125	
Microwave Links	16	25	
Satellite Receive Dish	12	25	
Pay TV Encoder	15	55	

It is possible to use this chart along with the more detailed discussion earlier to arrive at a "ballpark" estimate of the cost for equipment and facilities. For example, an LPTV station with a mid range transmission system (27K), no tower cost, a small studio (60K), and a 5 meter satellite dish will cost approximately $ 112,000 for equipment. This does not include costs associated with a building to house the transmitter and studio, or any ongoing costs of operation (i.e. electricity and maintenance).

Below, four hypothetical examples of community LPTV stations are described, along with an estimate of the equipment costs

for each:

Example 1. A town with 3,000 homes concentrated in a relatively small geographic area wishes to construct a translator station to pick up a distant PBS station and rebroadcast it to their community. They plan no local origination.

Cost Estimate: $ 12,000

Example 2. A state college with existing production facilities seeks to build an LPTV station for the college community and the surrounding town of 15,000 homes. They plan local origination, using existing facilities, and require a satellite dish to receive programming from a national ETV network.

Cost Estimate: $ 57,000

Example 3. A community with 30,000 homes has two population concentrations separated by a mountain. They seek to build 2 stations. One station will provide local origination for the entire community. The second station will serve merely as a translator to rebroadcast the signal from the main station.

Cost Estimate: $ 195,000

Example 4: A community with 50,000 homes seeks to build an LPTV station which can provide a significant amount of local origination, including some live, remote coverage of high school sports. They also intend to provide a pay TV service (a satellite fed movie channel) during evening hours.

Cost Estimate: $ 560,000

Construction and Operating Costs

The FCC application form which was in effect when the survey was conducted had some confusing features. Among them was a request for the applicant to estimate construction costs and initial operating costs. Some applicants estimated construction costs plus 3 months operating costs while others provided first year operating costs. Curiously, the estimates are quite similar. Table 13 aggregates the two sets of figures.

TABLE 13.

Nonprofit Applications
Estimated Construction & Operating Costs

% of Stations	Est. Constr. & Oper. Costs (3-12 months)
60	$ 100,000 or less
35	100-200,000
5	200,000 or more

LPTV STATION MODELS

This chapter 1/ reviews briefly the major organizational features of an LPTV station; 2/ integrates selected features and options into four practical station models; 3/ discusses potential advantages and disadvantages associated with forms of content and sources of programming; 4/ provides an overview of staff requirements in station operation; and, 5/ reviews a few existing LPTV stations and local cable-based community channels whose organizational structures may offer guidance to the LPTV planner.

MAJOR ORGANIZATIONAL FEATURES

Stand-alone/Multichannel/Network

The first noteworthy feature of an LPTV operation is the number of stations it encompasses and the relationship among those stations. There are three general options - which are not completely exclusive.

- o A single, stand-alone station. This form of station may obtain programming from a satellite or a nearby university, but the operation and transmission are independent of other stations.
- o A multichannel, stand-alone operation. This form of station broadcasts 2-5 channels of programming from the same site. Under FCC rules, there are no limits on the number of channels which an LPTV operator may seek in one area. A multichannel operation may function like a small cable system, offering a few channels of basic and pay services. The cost of multichannel transmission is far less than the cost of transmitting the same number of channels separately. For example,

a single channel VHF transmitter costs approximately $ 12,000, while a 4-5 channel VHF transmitter costs approximately $ 25,000.

- A local, state or national network. A number of groups propose to form a national network of 10-100 LPTV stations, with programming fed by satellite to affiliates. This is a very large scale endeavor. Full time lease of a satellite "transponder" (a channel on the satellite) costs several million dollars per year. By leasing the transponder for a few hours per day, the cost may be reduced to 1 or 2 million dollars per year. Costs can be reduced still further if a group uses only off-hours satellite time. In this case, each station would record the satellite feed during the night, for broadcast the next day.

  A second option is a statewide network, with individual stations linked by microwave or, in some instances, a satellite. In addition, many applicants have proposed a local network or "cluster" of stations in an area. Generally, the local network is formed because the population is spread over a greater area than can be reached by one station. Thus, two or more stations (at different sites) are used to reach the larger community. Figure 2 on page 37 illustrates this.

Program Sources (Transmission)

In designing a station, careful consideration must be directed towards how programming arrives at a station in order to be broadcast. The ways programs "move" from their source to the station may be grouped under five categories. Most stations will employ more than one of these methods. These ways of "moving" programming were discussed earlier from a technical point of view. Here they are assessed from a business and market planning perspective.

- Broadcast retransmission. Existing translator stations use an antenna to receive a normal over-the-air signal from a distant station. The signal is then amplified and retransmitted. Costs associated with such option are generally low (e.g. $ 100) unless the antenna must be located on a tower other than the station's transmission tower or at a distance from the transmission site.

- Satellite Receiver. A satellite receive dish enables the station to receive signals from a satellite. The cost of a satellite receiver will vary from $ 12,000 - 25,000 depending upon the quality of the signal which is acceptable, location of the station within the "footprint" or transmission beam of a satellite, and amount of interference in a particular area. If an LPTV station wishes to pickup signals from more than one satellite, costs will rise 10-50%.

  Satellite "uplinks" enabling a station to transmit signals up to a satellite are very expensive and beyond the means of individual LPTV stations. A group which intends to operate an LPTV network (with satellite transmission) will need to lease the facilities of an existing satellite uplink and find a way to "move" their programming to the uplink facility.

- Microwave transmission and reception. Microwave transmission provides a means to transmit programming from a remote studio to a transmitter; an on-the-scene reporter to a studio or transmitter; and from one station to another station. Microwave transmission is "line of sight." The path from transmitter to receiver cannot be blocked. Thus, intermediate links are sometimes necessary to move the signal around an obstruction. The cost of each send/receive point varies between $ 15,000 - 25,000. If a special tower must be built for the microwave dish, costs will rise.

- Land lines. Video transmission can be sent over special land lines, available from AT&T. This form of transmission is very expensive and likely to be beyond the means of LPTV operators.

- Mail. Many prerecorded programs are sent to stations in regular mail service or one of the overnight package delivery services. This form of program transportation is often called "Bicycling."

- Local origination. Live in-studio programming and the playback of locally recorded materials do not require special transmission to the station. However, costs are associated with the traffic management of local prerecorded materials, particularly if the programming comes from a variety of local sources.

Clearly, the selection of ways to move programming from its source to the station is closely related to the choice of content and existing sources for programming. If a station wishes to use a satellite service, it will require a satellite receive dish. However, it is vital to consider the cost, availability and operational implications of moving programming in a given way, at the earliest planning stages when basic content issues are under consideration. In addition, planning activities should include an assessment of existing transmission systems in the area where the station is to be located. Often, considerable savings can be realized if the station can share an existing facility with another group rather than build a new one.

Ownership

The ownership patterns for nonprofit LPTV may differ somewhat from the current pattern of public television station ownership. Table 16 outlines the ownership pattern for existing public television stations.

TABLE 16.

Public Television Station Ownership

Ownership Group	Licenses % of Total	Stations % of Total
Community	39	26
University	34	27
State Authority	15	40
Local Authority	12	7

Source: CPB

LPTV will include all of the groups currently involved in public television plus a number of small, private nonprofit groups, e.g. those who have become involved in community cable channels. In addition, LPTV lends itself under current FCC rules to joint ventures between a nonprofit agency and a commercial entity, as well as a consortium of nonprofit agencies.

A private, nonprofit group seeking to operate an LPTV station may wish to investigate the strengths which can be provided by a joint venture with one or more of the following local groups:

PBS Affiliate	Newspaper
2 or 4 year College	Cable Operator
Civic Associations	TV Repair Shop
Village or Town Agencies	Radio Station
State Agencies	Commercial TV Station

A PBS affiliate can help an LPTV operator by providing or joining in the production of local programming, and by securing access to PBS programming which might not otherwise be available to an LPTV operator. It may also be possible for the LPTV station and the PBS affiliate to share studio facilities.

A number of PBS stations have applied for an LPTV license. In addition, many public television stations (e.g. KCTS in Seattle, Nebraska ETV Network, KPBS in Spokan and WSKJ in Knoxville) have developed a second channel for cable and/or secondary distribution channels such as ITFS and LPTV.

Local colleges, civic associations and government agencies may assist with funding, provide volunteer staff, and build support within the community. Many of the best models for such relationships can be found in community cable channels.

In many communities, the local newspaper is a strong potential partner since it already functions as a supplier of local news and information. Moreover, it can handle advertising and billing (for an STV operation) for the LPTV operator. A local radio station, cable operator and commercial TV station can provide some of these resources as well.

FOUR STATION MODELS

It may be helpful to combine some of the options just discussed into model LPTV stations. The four models below are presented as practical examples for review and analysis, not as ideal or recommended ways to organize an LPTV operation.

1. An existing translator station currently retransmits the signal of a nearby PBS affiliate. The translator is owned by a public authority in the area[12]. Working in conjunction with a consortium of local groups - the library, League of Women Voters, and the Kiwanis Club - they build a Level 1 Studio (see page 42). The studio is financed in part by the same public authority which built the translator station, and by the local groups who join the LPTV consortium. The new LPTV station continues to retransmit the PBS affiliate and, in addition, provides 30 minutes of local news each night. While they begin with a small amount of local origination, they have built a capability to grow over time. Cost Estimate: $ 60,000

12. Most translator stations (83%) are owned by a government agency, public authority or civic association. Comparatively few are privately owned.

2. A 4 year college with an existing media department and studio facilities decides to build an LPTV station to serve the local community, provide training for their students, and enhance the college's educational outreach program. They build a moderate power transmission system but do not require any new studio facilities. In addition, they install a satellite receive dish and arrange to broadcast some telecourses which are provided by a national ETV network. The station is funded entirely by the college and run by students with professional supervision. The content of the station is predominantly educational, with some local news and talk shows on community issues. Cost Estimate: $ 57,000

3. A private nonprofit group builds an LPTV station with a Level 1 studio and a satellite receive dish. They seek to provide a mixture of daytime educational programming, national and local news, and entertainment. They secure funding through a series of state and foundation grants, along with a bank loan.

   The station transmits an educational satellite service during the day, a national satellite news service from 5-6pm, local origination news from 6-7pm, and a satellite movie channel from 7-midnight. The satellite movie channel is scrambled, with subscribers paying $ 20 per month for the service. In order to operate this STV service, the nonprofit group forms a profit making subsidiary with a local TV repair service. The TV repair service installs and maintains the home equipment while the nonprofit group handles the billing. Cost Estimate: $ 185,000

4. A local PBS affiliate forms a partnership with a newspaper in order to provide an LPTV channel in the same area where the PBS affiliate currently broadcasts. The LPTV channel shares studio facilities with the full service public television station. With these facilities, they provide a strong local origination service: news, talk shows and sports, along with some syndicated entertainment programming. In addition, some channel time is leased to local groups. All of the programming contains advertising. The station is built with capital from the newspaper and a profit making subsidiary of the PBS affiliate. Cost Estimate: $ 115,000

STAFF AND OPERATING COSTS

Clearly, the costs of staff and operations will vary in relation to the size and complexity of a station, as well as the amount of volunteer help. However, it is possible to derive ballpark estimates.

Operating Costs - Transmission

It is reasonable to estimate $ 3-10,000 per year for electricity and maintenance of transmission equipment at a single channel LPTV station. A 10 watt VHF station is likely to approach the low end of this estimate, while a 1000 UHF station is likely to approach the high end.

Staff and Program Operations

Until many LPTV stations are operating and data are collected about them, it may be useful to analyze the staff and operating costs of community cable channels. A CTIC (Cable

Television Information Center) survey of several cable based community channels found that they created a range of 30-40 hours of programming per week with a paid staff of 2-5 persons plus volunteers who ranged in number from 2-10 persons.

Reports from individual channels reveal a large range in operating budgets. Table 17 provides a few examples.

TABLE 17.

Programming Budgets of Community Cable Channels

Channel or Group	Annual Budget For Program Operations	Hrs. Per Week Programming
Community Video Center San Diego, Calif.	$ 12,000	N.A.
TKR Cable Warren, New Jersey	$ 200,000	9
WELM East Lansing, Michigan	$ 80,000	41

Source: Cablevision

It is useful to examine one operating budget more closely. Table 18 outlines the monthly operating budget of Fayetteville Open Channel, a community cable channel in Fayetteville, Arkansas. Some of the figures have been rounded off and grouped together for presentation purposes.

TABLE 18.

Monthly Operating Budget
Fayetteville Open Channel

Salaries	$ 2,000	
Office Supplies	55	
Postage	30	
Rent	450	
Utilities	80	
Printing	40	
Insurance	200	
Telephone	160	
Miscellaneous	100	
	$ 3,115	Monthly Total
	$ 37,380	Annual Budget

Source: Fayetteville Open Channel

Working in the mid range of community channel operating budgets listed in Tables 17 and 18, it is possible to derive a ballpark estimate of the operating budget for a nonprofit LPTV station which produces a moderate amount of local origination per week with a combination of paid and volunteer staff. Table 19 presents two estimates.

TABLE 19.

Estimated Annual Operating Budget
LPTV With Moderate Local Origination

Item	Lower Mid Range	Upper Mid Range
Electricity and Equip. Maintenance	$ 4,000	7,000
Staff and Program Operations	38,000	80,000
Equipment Amortization & Program Materials	10,000	20,000
Totals	$ 52,000	107,000

TABLE 22.

Scenario For Advertising Revenues
10 Station LPTV Network

Scenario

A 10 station network of LPTV stations provides educational programming during the day with no advertising. During the evening, 7-11 pm, the network carries a general entertainment channel from one of the existing satellite services. The LPTV network does not have to pay for the programming since it contains commercials. As part of their contract with the satellite service, the LPTV network is allowed to insert 4 minutes of commercials per hour in the programming. This advertising time is sold by a national sales firm which represents the LPTV network. The network charges advertisers a premium price of $ 6 per thousand households watching their stations.

The average market size for each of the stations is 25,000 households (since only rural areas and small markets are likely to receive licenses in 1982-84). Half of these markets have cable and half do not. In the cable markets, 10% of households watch the LPTV station at any given time, while 20% are watching in non-cable markets. This yields an average viewership of 15% of households for the network as a whole.

- With 15% viewership in a 25,000 hshld market and a rate of $ 6 per thousand, the price for a 30 second spot on each station would be $ 22.50
- At $ 22.50 per spot and 32 spots per evening, the potential gross revenues for the 10 station network would be $ 2,628,000 per year.
- In year 1, it is estimated that they could sell approximately 30% of this commercial time, yielding gross revenues of $ 788,400
- From these gross revenues, the sales representative's commission and the ad agency commissions must be subtracted, as well as the costs associated with spot traffic management and logging. This yields $ 443,475
- Other costs include amortization of spot insertion equipment, research to demonstrate audience reach in each market, and a promotion campaign to sell national

advertising time. With minimal expenditures in each of these areas, the net profit for the network would be $ 236,333.

- Estimated profit per station in year 1 = $ 23,633

The LPTV network scenario could yield more profits, particularly in years 2-5 of the service. However, it is also possible to construct a scenario in which the service loses money from its advertising efforts in the first five years of operation. For example, if the LPTV network created its own programming and leased satellite time in order to reach the network affiliates, they would incur significant costs beyond those described in Table 22. While they would be able to sell more commercial time, it would be difficult for revenues to match costs.

Local Cable Model For Advertising Revenues

A second way to approach LPTV advertising is by adapting an economic model from local cable channels which advertise. A helpful example is TCI Cable in Orangetown, New York. TCI consists of two nearby cable systems with a total subscriber base of 18,500. TCI employs 1 1/2 sales people and a half time technician who handles the insertion equipment. Their advertising customers are predominantly local, e.g. local car dealers, travel agents, and lawyers. TCI does not produce commercials. Commercial production is handled by another local group which charges $ 450 for a simple, 30 second spot.

TCI inserts local spots in satellite delivered services, e.g.

ESPN (a sports channel) and CNN (a cable news channel). They offer three packages to local advertisers. The advertiser's 30 second spot will be played:

36 times during one month for $ 900

20 times during one month for $ 600

10 times during one month for $ 350

These packages are sold in three month contracts. Thus, a lawyer who purchased the second package would have his/her spot played 60 times over a three month period, for $ 1800. Using this approach, TCI generates $ 160,000 per year in gross advertising revenues.

This revenue model may be adapted to an LPTV station. Among the advantages of a local advertising approach are: reduced need for audience research and reduced need for formal mechanisms to assure that spots are being played.

Table 23 adapts a local cable advertising model to LPTV. The adaptation is made for an independent LPTV operator. As in Table 22, the assumptions in this scenario are explained for the reader, who may substitute other assumptions and generate alternative revenue estimates.

TABLE 23.

Scenario For Advertising Revenues
Independent LPTV Station

Scenario

An independent LPTV station provides educational programming during the day with no advertising. During the evening, 7-11 pm, the station carries a satellite news channel. In accordance with their contract, the local LPTV station can insert 4 minutes of commercials per hour. This advertising time is sold locally by 1 1/2 sales people. In addition, a part time technician manages the insertion of commercials.

The station reaches 25,000 households in a rural community with no cable. There is one competitive over-the-air station in the same market. During prime time, 20% of households watch the LPTV station. The station offers a variety of package plans for spot time. These plans average $ 25 per play.

- With 32 spots per evening at a rate of $ 25 per play, the potential gross revenue per year would be $ 292,000.
- If 30% of this commercial time were sold in year one, the gross revenue would be $ 87,600.
- From this gross figure, the salaries and overhead associated with salespersons and technician must be subtracted. Further, costs associated with amortization of insertion equipment and a small promotion campaign will reduce the profits.
- Estimated profit for the station in year 1 = $ 33,386

As in Table 22, it is possible to calculate ways in which net revenues for local advertising would be greater or smaller. However, it appears that a local advertising approach is less likely to lose money, since costs can be controlled more readily. Further, if the local station becomes involved in the production of commercials as well as selling spot time, addition revenues might be realized.

Newspaper Model

A third advertising revenue estimate may be constructed by adapting a newspaper model to LPTV. In this scenario, the LPTV operator might form a partnership with the local newspaper. All advertising would be handled by the newspaper and consist of simple character generated text ads. The newspaper could manage the text ads as a supplement to their normal print ad business. Further, the newspaper would use its existing sales force and billing department. Table 24 outlines a potential revenue stream based upon this scenario.

TABLE 24.

Scenario For Advertising Revenues
LPTV Station & Newspaper Joint Venture

Scenario

An independent LPTV station provides educational programming during the day with no advertising. During the evening, 7-11 pm, the station carries a satellite service. The station can insert 4 minutes of commercials per hour. These consist entirely of text ads which are sold and created by the local newspaper. In addition, the station broadcasts a special half hour classified ad show (consisting entirely of classified ads) from 8-8:30 in the morning. The station reaches 25,000 households in a rural, non-cable market.

The newspaper offers a variety of packages to advertisers. These average $ 6 per "play" of the text ad. Each text ad is displayed for 20 seconds.

- The station can play 138 text ads per day. At $ 6 per play, this could yield a potential gross revenue of $ 302,220 per year.
- Since the newspaper has an existing base of customers and considerable experience in selling classified ad space, it is estimated that they might sell 40% of the advertising space in year 1. This would yield $ 120,888 gross revenues in year 1.

- From these estimated revenues, the cost of two typists (to create the text commercials) and a part time technician (to manage insertion equipment) must be subtracted. In addition, the amortized costs of the character generator equipment and insertion facilities at the station must be deducted.

- Estimated profit in year 1 = $ 56,531. This revenue would be shared by the newspaper and LPTV station.

In this scenario, an LPTV station might realize smaller revenues than in a local cable model. At the same time, there is less risk for the LPTV operator and no requirement to develop special skills, i.e. selling advertising space. For the newspaper, it also represents a small revenue potential. At the same time, it has relatively small financial risks associated with it. The newspaper can utilize its existing sales and billing personnel, while other costs may be controlled, in relation to volume of sales.

Pay TV

Many analyses of over-the air pay TV (STV) suggest that it is not likely to be profitable in markets with fewer than 125,000 households. Even in such markets, it is unlikely to turn a profit if there is competition from a cable system. There are many reasons why STV requires larger markets in order to be profitable, including the high costs associated with a sales force, promotion, and full service broadcasting.

MDS (Multipoint Distribution Service) is a cheaper way to operate an over-the-air pay channel. However, MDS market studies tend to set a minimum of 40,000 households in a (non-cable) market for MDS to be profitable.

It appears that an LPTV channel can be profitable in markets with fewer than 40,000 households, if sales and promotion costs are kept at moderate levels. In these small markets, the presence or absence of cable is likely to be crucial to the viability of an LPTV pay channel. In addition, the timing of DBS will be very important. If DBS is available to a rural market before the LPTV station is built, it will be very difficult for the low power pay channel to compete.

Table 25 outlines a revenue scenario for an LPTV pay channel in a market with 30,000 households. The scenario examines a market with and without cable. It does not integrate potential competition from DBS. Further, the analysis aims at year three of such a service. It is assumed that the service would lose money in years 1 and 2, when the customer base would be smaller.

This analysis does not treat pay LPTV in major markets. Although the bulk of all LPTV applicants seek to offer a pay LPTV channel in large markets, the rationale for such a service is elusive. Chapters 4 and 5 of this report discussed the competition in those markets.

TABLE 25.

Pay LPTV in a 30,000 Household Market
Scenario For Year 3 Revenues

Scenario

An LPTV station offers educational programming during the day to all homes in a market. During the evening, the station scrambles its signal and offers a pay movie channel. Subscribers are charged $ 20 per month for the service. This includes the service and lease of the equipment necessary to unscramble the signal.

Fixed Monthly Costs Per Subscriber

Program Cost (40% of subscription fee)	8.00
Decoder lease and repair contract	5.00
Program Guide	.75
	13.75

Net Revenues per subscriber, per month = $ 6.25

	Cable Market	Non-Cable Market
Est. # Subs	2,100	6,000
Est. Revenues per month	$ 13,125	$ 37,500
Monthly Station Costs		
Advertising & Promotion	3,000	3,000
Sales & Technical Personnel	8,000	12,000
STV Equipment, amortized over 7 years	1,000	1,000

TABLE 25
(Cont.)

	Cable Market	Non-Cable Market
Overhead	1,500	1,500
Total Station Costs per month	13,500	17,500
Est. Net Profit per month	$ -375	$ 20,000

Leased Channel Space

Channel space can be leased in a number of ways. These are reviewed below along with some general pricing guidelines and, where appropriate, revenue estimates.

- Leased access for programming. A station may lease channel time to a group which seeks to present program materials. Where this is made available, e.g. on some cable systems, charges are usually nominal in order to encourage nonprofit public service uses of the channel. A station might charge $ 25-50 per half hour for leased access.

- Leased channel for a third party pay TV operator. An LPTV group could lease the entire channel during the evening to a pay TV operator. A basis for pricing can be adapted from MDS. In a town of 40,000 households, it is reasonable to charge $ 3500 per month plus 65¢ per subscriber to the pay service. If the pay TV service achieved 6,000 subscribers, this would yield $ 7,400 per month to the LPTV licensee.

- Shared channel leasing. An LPTV group which seeks to use the channel in the evening, e.g. to bring a distant PBS station's signal into the community, could offer the channel in the daytime to a consortium of public users,

e.g. the school district, a private college, and a hospital. In this form of leasing, the station would attempt to meet its yearly operating costs through the leasing charge. For example, a station with a yearly operating budget of $ 60,000 might charge $ 15,000 per year to each member of a 4 party public consortium. The consortium would then allocate daytime use of the channel among its members.

Leased Facilities and Auxiliary Services

- Leased production facilities. An LPTV station with a studio may be able to lease the studio production facilities. Pricing on an hourly basis would likely run $ 50-250 per hour, depending upon the studio's capabilities. In some instances, the overhead and management costs associated with hourly leasing of studio facilities will exceed potential revenues. Under these circumstances, an LPTV operator may consider a long term studio sharing arrangement with an appropriate group. For example, some LPTV operators could lease their studio 3-4 hours per day to a local community college which would use it for television production classes and preparation of course-related audio/visual materials. Here, the station would charge a yearly fee and attempt to recover a percentage of operating costs.

- Video teleconferencing drop. LPTV stations with a satellite receive dish may be able to realize a small amount of revenue by serving as a local "drop" for a national video teleconferencing service. Typically, a local receive point for such a conference charges $ 300-400 per hour for use of the studio and satellite receive dish.

- SCA lease. In a small market, the leasing charge for an SCA channel is approximately $ 300 per month. A radio paging service or Muzak are the most likely commercial groups to lease an SCA channel.

- VBI lease. In the period 1984-85, some national groups as well as local newspapers may seek to lease the vertical blanking interval (VBI) of independent stations throughout the country in order to provide a teletext service. While there is no precedent for leasing charges, it is reasonable to assume that it would have the same value as an SCA subchannel, i.e. $ 300 per month.

- Local teleconferences. Under certain conditions, an LPTV operator may be able to offer local teleconferencing services. For example, if 2 LPTV stations (20 miles apart) are linked by microwave, they may be able to lease their studios to a nearby corporation (with plants or offices in each of the two markets) for teleconference meetings. While video teleconferences are commonly envisaged as linking sites which are thousands of miles apart, some of the most successful applications of video teleconferencing involve a link of 15-30 miles. For example, the Department of Energy links its Washington office with a suburban office in Maryland, 25 miles away. The Department of Energy pays $ 5,000 per month for the microwave link, exclusive of room costs at each end.

  This form of teleconferencing may also be broadcast from each of the stations to homes or offices in the area. Under this condition, the issue of "private" communication may come into play. The FCC does not permit the use of broadcast services (point to point microwave does not come under broadcast rules) for private communication. Thus, a broadcast teleconference which is scrambled and received only by employees of a corporation would not likely be permitted. However, if the teleconference involved a corporate employee training program on stress relief, typing, or microcomputers - and all homes in the area could view it - the issue of private communication would most likely not arise.

Other Revenue Opportunities

An LPTV station in a small market may discover a broad range of revenue opportunities which cannot be anticipated in this report. Indeed, a keen entrepreneurial spirit may be the strongest asset of an LPTV operator.

It may be noted that an LPTV group is likely to be identified by consumers as generally skilled in "new technologies." In some markets, this may suggest opportunities for spinoff businesses such as a video store, microcomputer software dealer or a telephone store. Such a profitmaking subsidiary can help support noncommercial activities at the station.

NON-CABLE PAY TV SERVICE

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INTERNATIONAL RESOURCE DEVELOPMENT INC.
30 High Street
Norwalk, Connecticut 06851 U.S.A.
Telephone: (203) 866-6914
WU Telex: 64-3452

Exhibit 7-5

Estimated Construction and Operating Costs of a Low Power Television Station

Transmission Equipment	Cost
100 watt translator (UHF output, VHF input) combined with modulator meeting FCC specifications for FM microwave transmission	$ 7,577
Installation of antenna tower	$ 6,300
100 foot antenna tower	$ 2,255
Installation of transmission line at $5.10 a foot	$ 1,006
Transmission line, connectors, hangers, and other installation hardware	$ 580
UHF directional antenna	$ 370
TOTAL	$18,088

Studio Equipment	Cost
1 live camera, 1 video switcher, 1 picture monitor, 2 microphones, 2 videotape recorders (1 record and playback, 1 playback only), 1 waveform monitor, 1 audio mixer, 1 film island, 1 sync generator, 1 time base corrector, and portable lighting	$26,200
TOTAL TRANSMISSION AND STUDIO EQUIPMENT COSTS	$44,288

Source: Communications Studies and Planning International Inc.

IRD estimates that a 1,000-watt transmitter for a 20-30 mile broadcast radius may cost somewhere between $60,000 and $100,000.1/ But this does not include the cost of local origination programming which can equal or exceed the transmission costs.

At the high extreme is the LPTV station in Bemidji, Minnesota. Not only is it the only commercial station serving the community of 11,500, but the relatively flat terrain increases the station's coverage to a 50-mile radius which involves 40,000 people who do not receive 2 other full power TV stations. The station's owner has taken advantage of the large potential audience by constructing a 1,000-watt station atop a 457-foot tower.

He has admitted spending $463,000 for construction and $600,000/year in operating costs including a $100,000 mobile production unit and a $102,000 building.2/ He hopes to succeed with a combination of advertising and STV service to 1500 subscribers in the first year. 3/

IRD predicts that "LPTV will carve out a natural market in small, high-density rural areas not covered by future multichannel MDS or by existing STV stations." 4/ They believe that single channel LPTV will be able to survive competition from multi-channel DBS, due to LPTV's ability to tailor its product to local tastes as well as offering much lower prices, e.g. 20-25 installation and $10-15/month as against predicted DBS fees of $100-200 and $30-40, respectively.5/

1) International Resources Development, Inc. Non-Cable Pay TV Service (March 1983) at 216.
2) Ibid. at 218
3) Ibid. at 219
4) Ibid. at 224
5) Ibid.

EXHIBIT 7-6

Comparison of Projected Costs of LPTV and MDS

	LPTV	MDS
Cost per channel	$50-70 K	$75-100 K
Operating & maintenance costs	$6K/year per channel	$9K/year
Subscriber equipment, 1984/1985	$150 decoder	$200

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EXHIBIT 7-7

Subscriber Forecasts for Low Power Television (LPTV)
1982-1992
(000s)

	1982	1984	1987	1992
Subscribers	0	400	785	980
LPTV	0	350	625	800
Translators (pay TV)	0	50	160	180
LPTV HH as percent of households not passed by cable	0%	1.1%	2.4%	3.1%

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