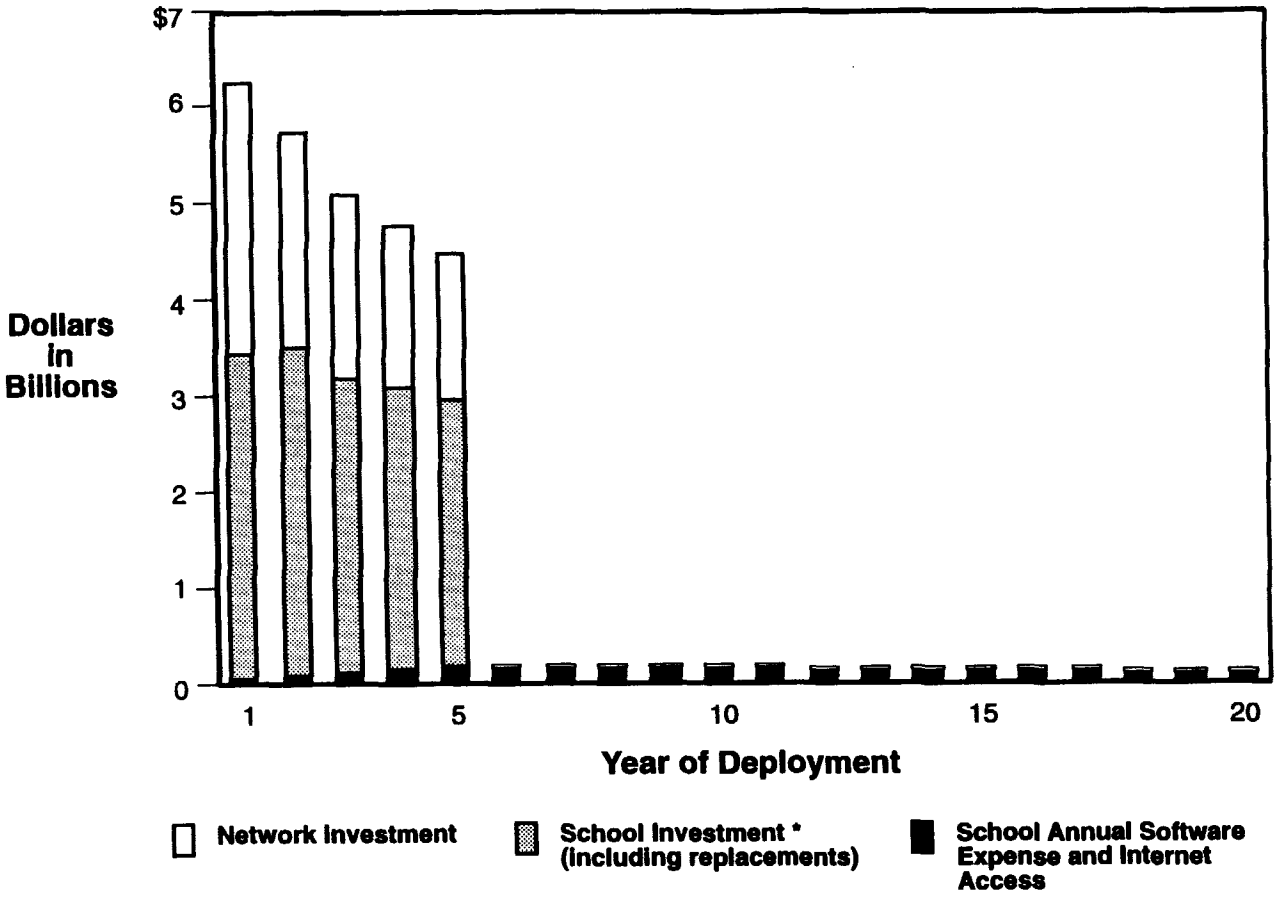
Figure 17: Y-Axis Scaled to Show Detail for Figure 13:
5-Year Accelerated Broadband Deployment, Teacher-Only Access (Scenario 1)



*In the 5-year accelerated deployment, replacement costs for school investment in computers, etc., is minimal in relationship to the initial investment and therefore is not immediately visible in years 6 through 20. Also, modeling the costs out to 20 years allows comparisons with the 20-year deployment.

Figure 18: Y-Axis Scaled to Show Detail for Figure 14:
20-Year Broadband Deployment, Teacher-Only Access (Scenario 1)

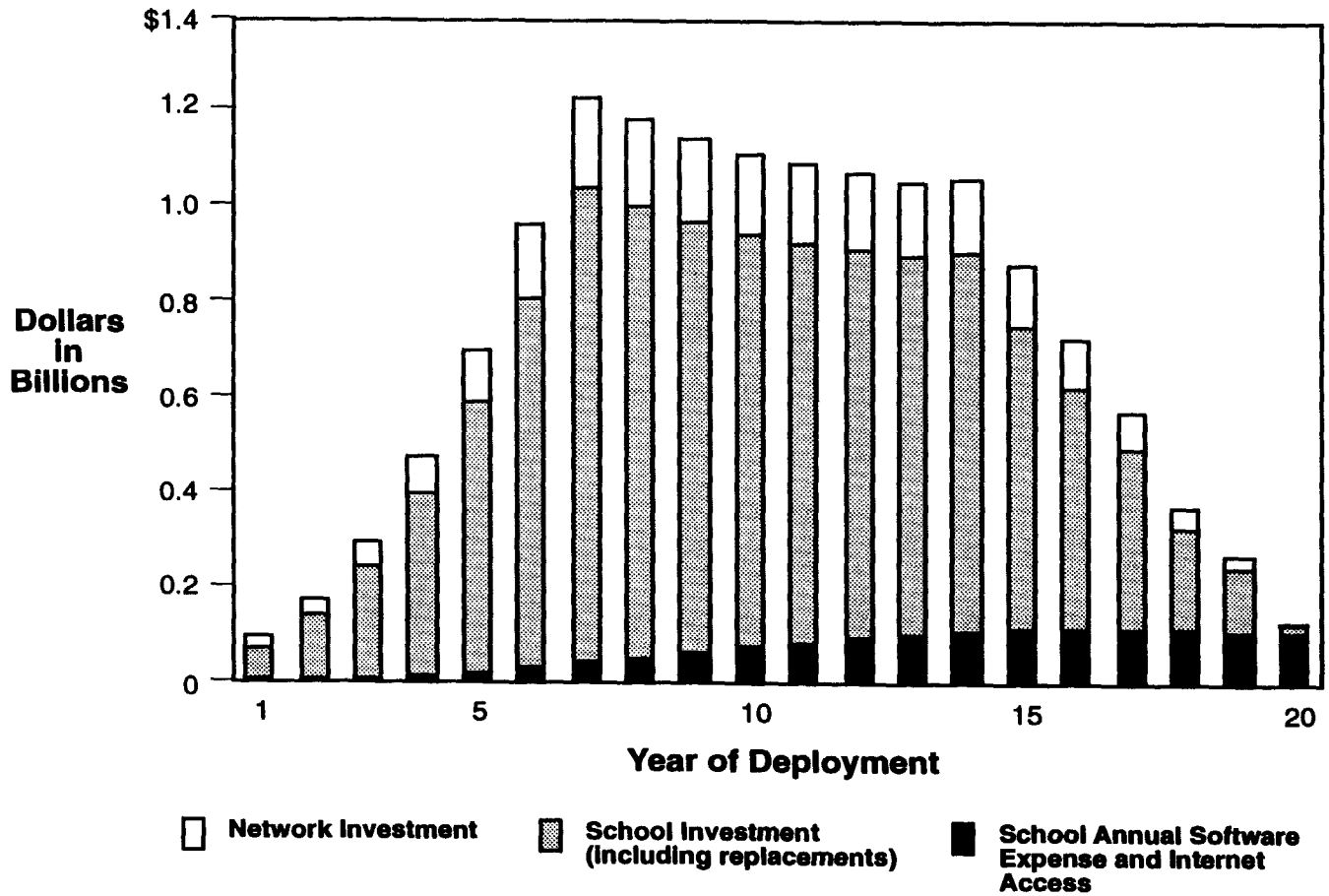
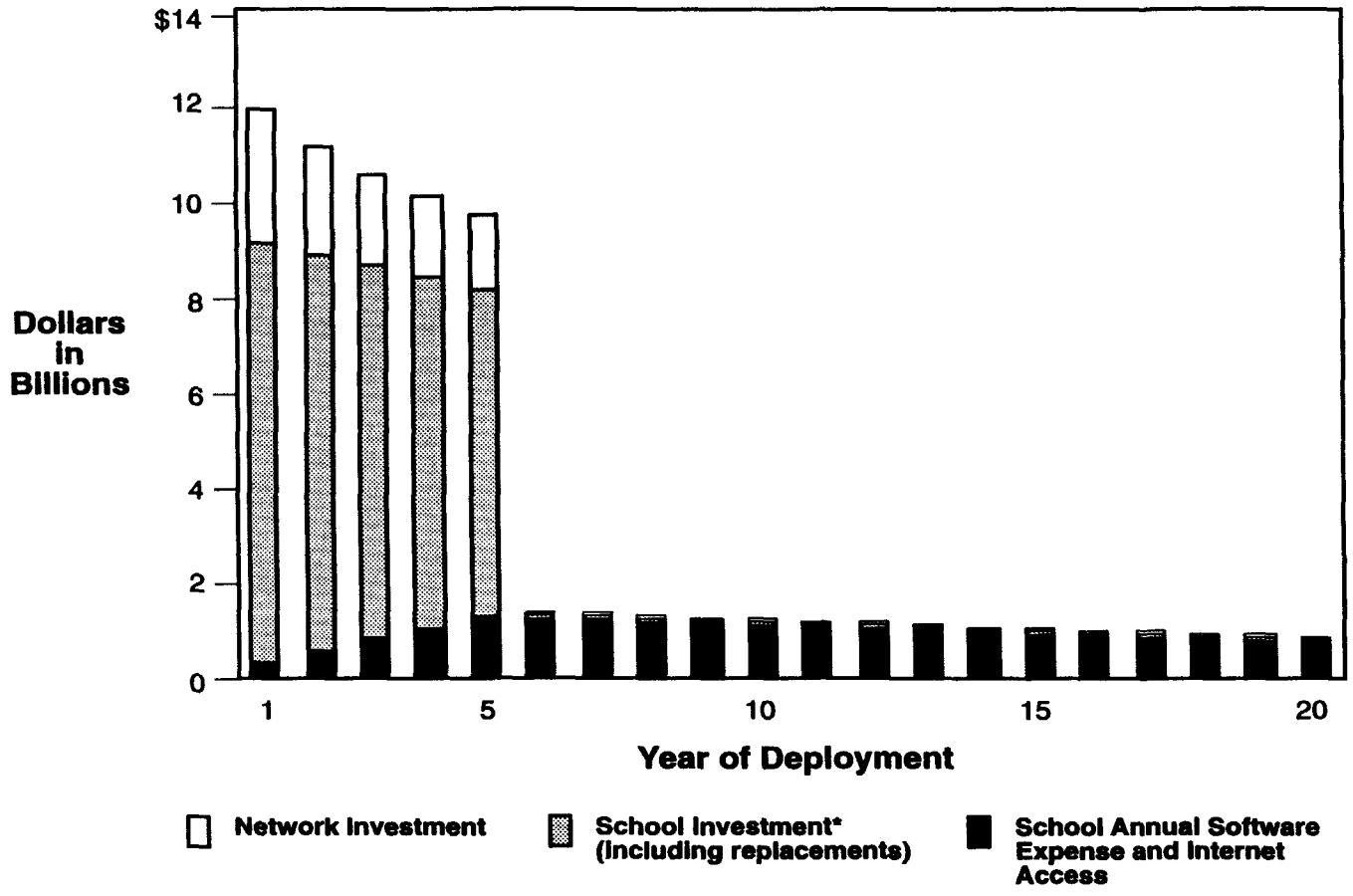


Figure 19: Y-Axis Scaled to Show Detail for Figure 15:
5-Year Accelerated Broadband Deployment, Team-of-Students Access (Scenario 2)



*In the 5-year accelerated deployment, replacement costs for school investment in computers, etc., is minimal in relationship to the initial investment and therefore is not immediately visible in years 6 through 20. Also, modeling the costs out to 20 years allows comparisons with the 20-year deployment.

Figure 20: Y-Axis Scaled to Show Detail for Figure 16:
20-Year Broadband Deployment, Team-of-Students Access (Scenario 2)

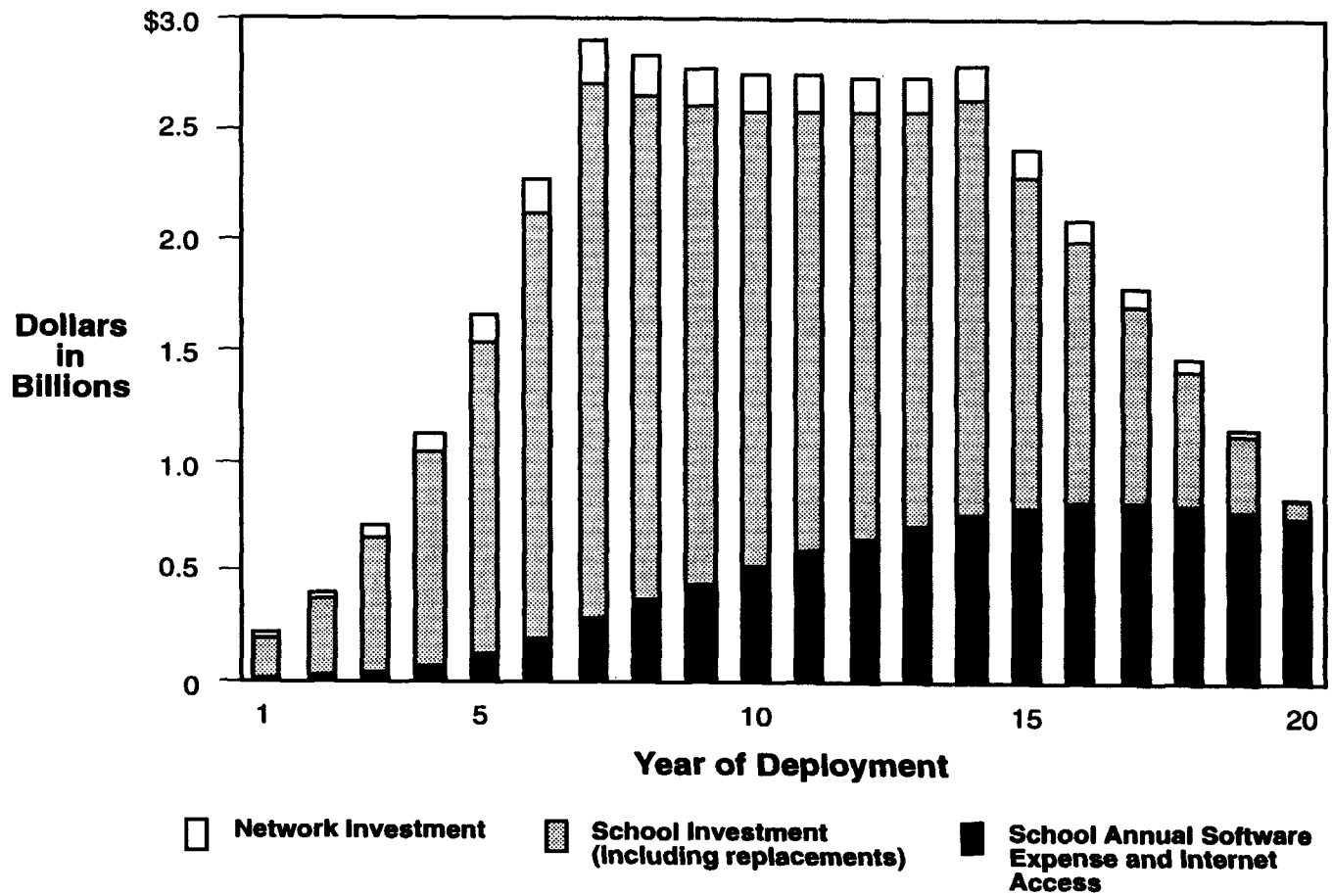
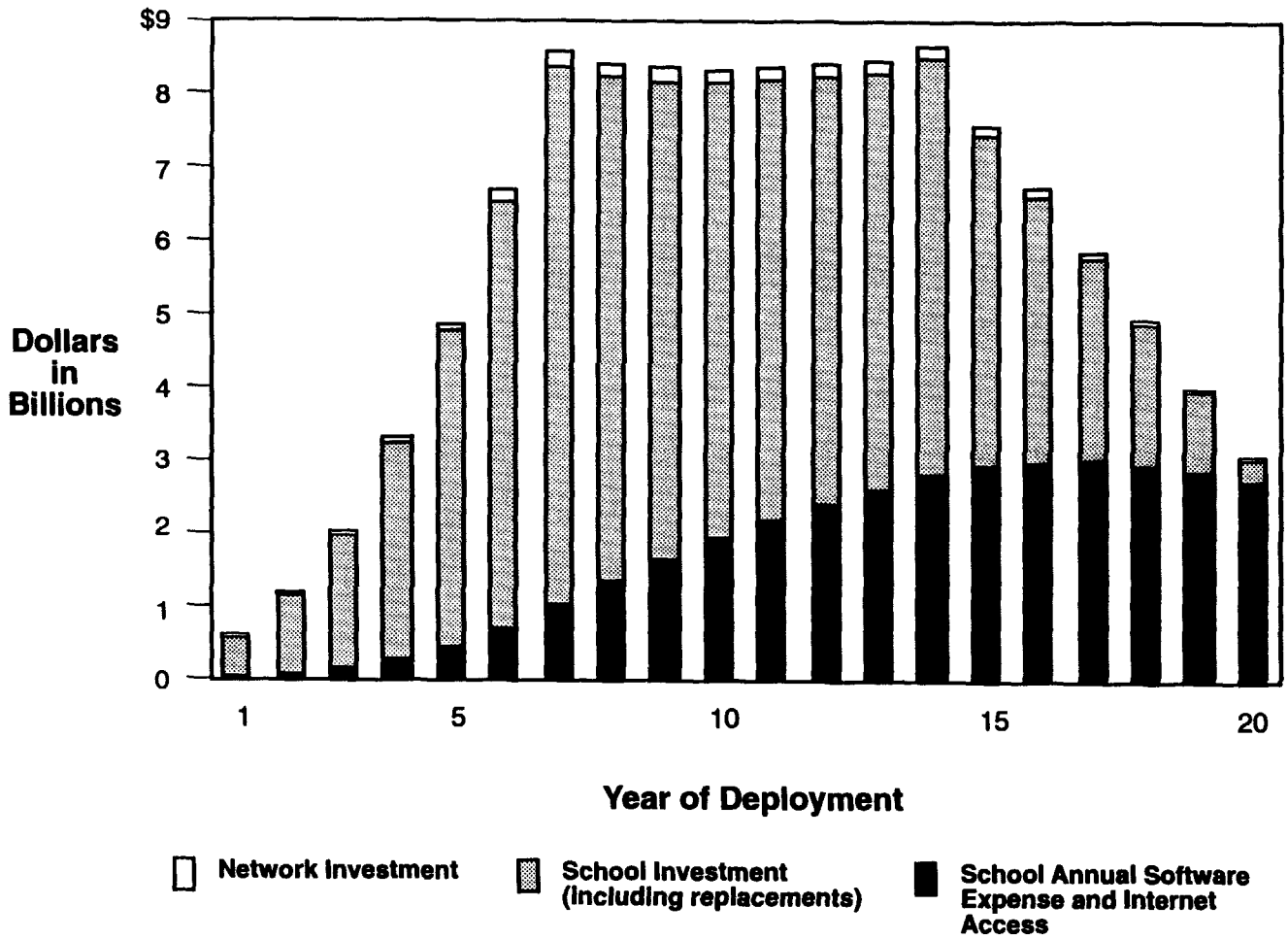
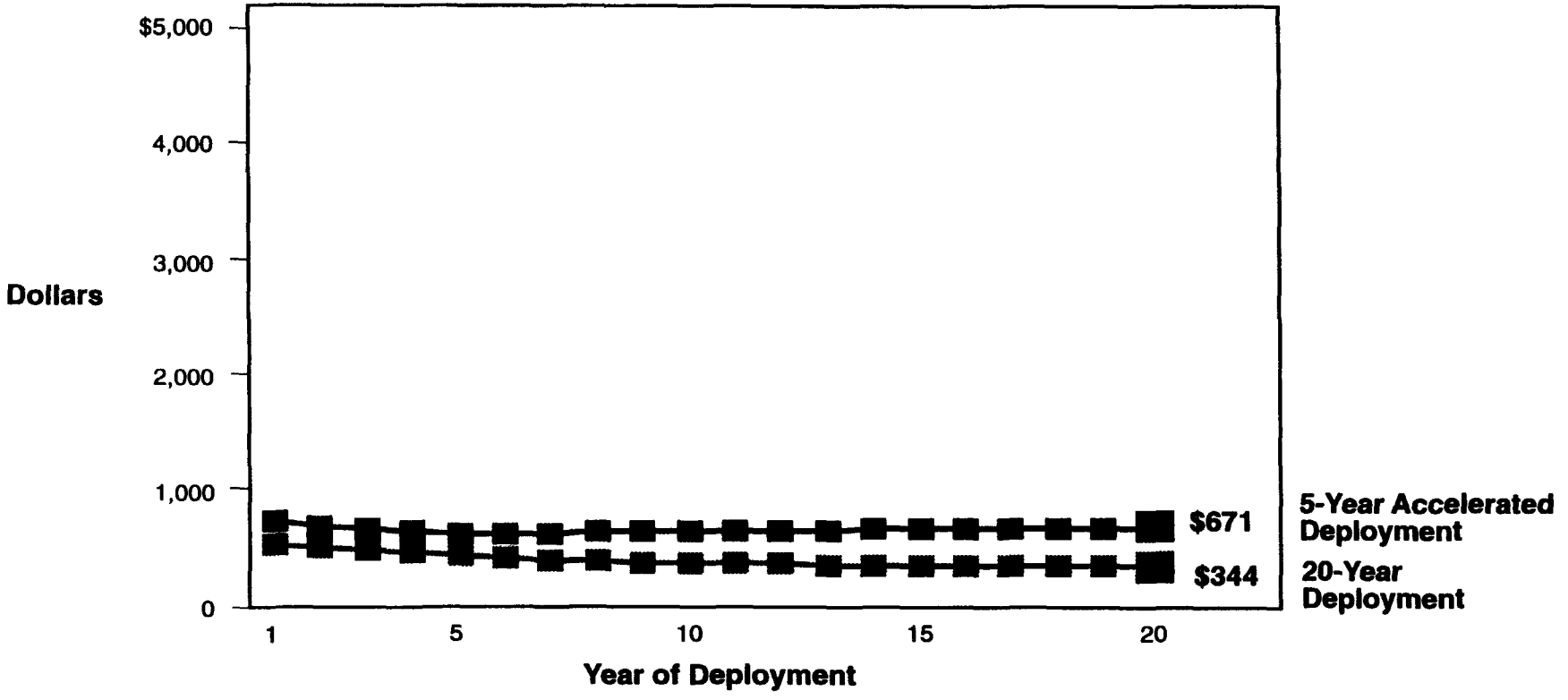


Figure 21: Y-Axis Scaled to Show Detail for Figure 5:
20-Year Broadband Deployment, Universal Access (Scenario 3)



VI. Appendix B: Incremental Investment per Student Charts

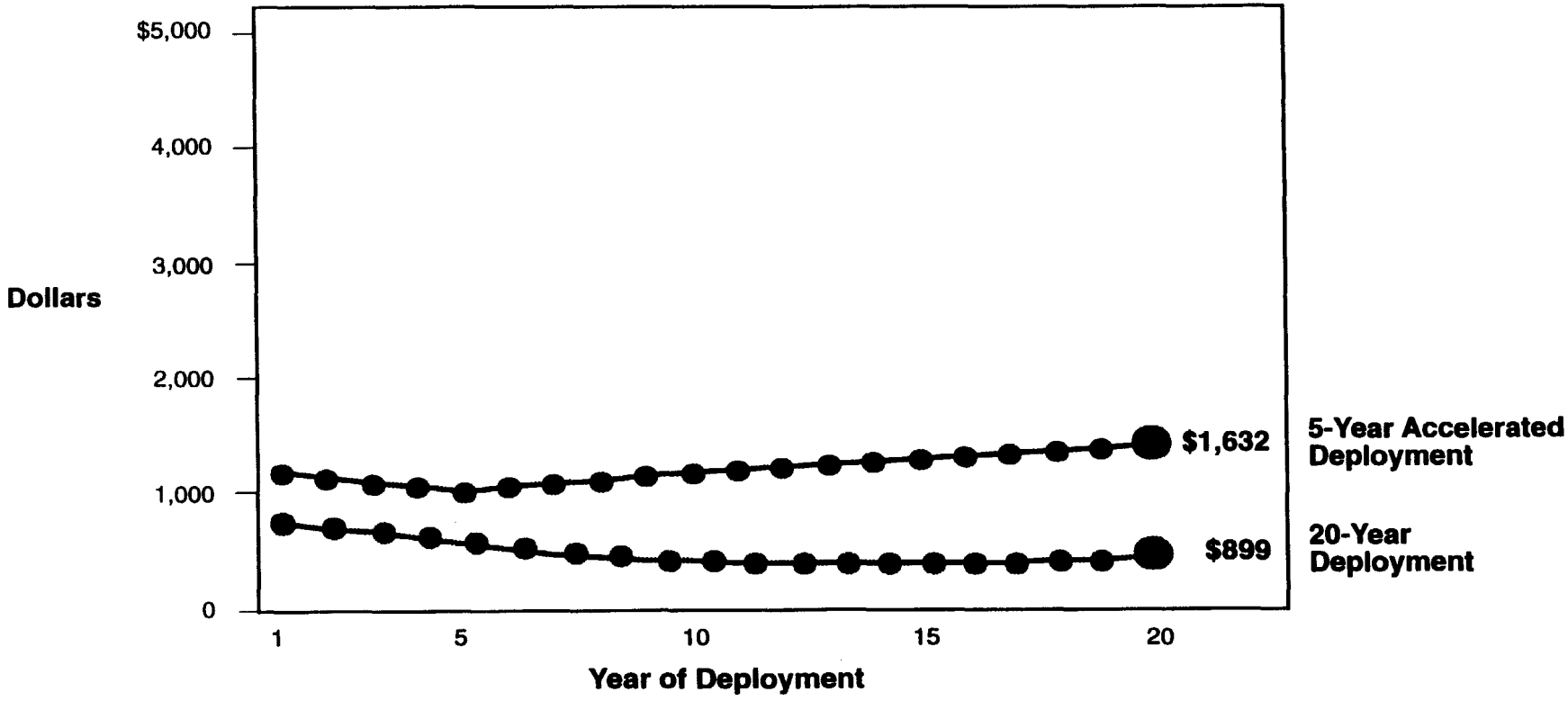
Figure 22: Incremental Investment per Student per Year for Teacher-Only-Access (Scenario 1): 5-Year Accelerated and 20-Year Broadband Deployment



*Modeling the costs out to 20 years allows comparison between the 5-year accelerated and the 20-year deployment schedules.

VI. Appendix B: Incremental Investment per Student Charts, cont.

Figure 23: Incremental Investment per Student per Year for Team-of-Students Access (Scenario 2): 5-Year Accelerated and 20-Year Broadband Deployment



*Modeling the costs out to 20 years allows comparison between the 5-year accelerated and the 20-year deployment schedules.

VII. Appendix C, Background Data

Figure 24: Background Data for Figures 13 and 17: Costs by Category for Teacher-Only-Access (Scenario 1), 5-Year Accelerated Broadband Deployment

Year	Teacher-Only-Access (Scenario 1), 5-Year Accelerated Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	$40,185,280	$3,424,273,273	$2,803,925,315
2	78,361,296	3,248,924,084	2,262,052,279
3	114,528,048	3,090,272,143	1,918,999,843
4	148,685,536	2,933,965,065	1,688,112,911
5	180,833,760	2,788,928,573	1,507,575,712
6	175,810,600	21,936,249	0
7	170,787,440	20,046,357	0
8	165,764,280	20,046,357	0
9	160,741,120	18,291,457	0
10	155,717,960	17,650,244	0
11	150,694,800	17,110,274	0
12	145,671,640	16,637,801	0
13	140,648,480	16,232,824	0
14	135,625,320	16,232,824	0
15	130,602,160	15,591,611	0
16	125,579,000	15,355,374	0
17	120,555,840	15,193,384	0
18	115,532,680	15,051,642	0
19	110,509,520	14,950,397	0
20	105,486,360	14,849,153	0
Total	2,672,321,120	15,741,539,086	10,180,666,061

Figure 25: Background Data for Figures 14 and 18: Costs by Category for Teacher-Only-Access (Scenario 1), 20-Year Broadband Deployment

Year	Teacher-Only-Access (Scenario 1), 20-Year Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	$843,891	$71,909,739	$20,126,893
2	2,487,971	138,079,274	33,505,081
3	5,382,818	239,496,091	53,502,536
4	10,147,788	387,283,389	82,288,841
5	17,323,874	574,519,286	115,599,889
6	27,285,805	788,422,699	152,537,827
7	40,237,521	1,008,358,356	187,553,881
8	52,381,512	954,654,731	181,971,563
9	63,717,780	912,032,187	174,321,341
10	74,246,323	877,639,250	168,478,386
11	83,967,143	849,731,710	163,806,197
12	92,880,238	826,789,684	159,696,285
13	100,985,609	805,334,173	156,831,364
14	108,283,255	806,218,862	155,386,973
15	113,023,109	645,161,208	128,561,083
16	115,407,101	511,008,359	102,227,500
17	115,637,162	382,486,977	76,320,373
18	113,915,222	212,606,704	50,674,835
19	110,443,214	134,312,448	25,262,798
20	105,486,360	19,339,541	1,128,038
Total	1,354,083,697	11,145,384,666	2,189,781,684

Figure 26: Background Data for Figures 15 and 19: Costs by Category for Team-of-Students Access (Scenario 2), 5-Year Accelerated Broadband Deployment

Year	Team of Students Access (Scenario 2), 5-Year Accelerated Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	$281,296,960	$8,823,525,473	$2,803,925,315
2	548,529,072	8,320,387,954	2,262,052,279
3	801,696,336	7,842,232,317	1,918,999,843
4	1,040,798,752	7,355,227,130	1,688,112,911
5	1,265,836,320	6,898,810,138	1,507,575,712
6	1,230,674,200	126,075,282	0
7	1,195,512,080	115,213,411	0
8	1,160,349,960	115,213,411	0
9	1,125,187,840	105,127,389	0
10	1,090,025,720	101,442,111	0
11	1,054,863,600	98,338,720	0
12	1,019,701,480	95,623,252	0
13	984,539,360	93,295,708	0
14	949,377,240	93,295,708	0
15	914,215,120	89,610,431	0
16	879,053,000	88,252,697	0
17	843,890,880	87,321,680	0
18	808,728,760	86,507,039	0
19	773,566,640	85,925,153	0
20	738,404,520	85,343,267	0
Total	18,706,247,840	40,706,768,272	10,180,666,061

*Includes Replacements

Figure 27: Background Data for Figures 16 and 20: Costs by Category for Team-of-Students Access (Scenario 2), 20-Year Broadband Deployment

Year	Team of Students Access (Scenario 2), 20-Year Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	5,907,236	185,294,035	20,126,893
2	17,415,798	353,616,488	33,505,081
3	37,679,728	607,773,005	53,502,536
4	71,034,515	970,889,981	82,288,841
5	121,267,119	1,421,154,888	115,599,889
6	191,000,636	1,923,519,064	152,537,827
7	281,662,646	2,427,455,012	187,553,881
8	366,670,587	2,276,048,702	181,971,563
9	446,024,460	2,156,825,613	174,321,341
10	519,724,263	2,062,087,748	168,478,386
11	587,769,998	1,987,513,817	163,806,197
12	650,161,664	1,927,355,636	159,696,285
13	706,899,260	1,867,050,563	156,831,364
14	757,982,788	1,872,135,179	155,386,973
15	791,161,765	1,490,240,093	128,561,083
16	807,849,707	1,187,566,770	102,227,500
17	809,460,132	901,842,942	76,320,373
18	797,406,557	614,684,473	50,674,835
19	773,102,500	348,266,451	25,262,798
20	738,404,520	92,328,569	1,128,038
Total	9,478,585,880	26,673,649,028	2,189,781,684

*Includes Replacements

Figure 28: Background Data for Figure 4: Costs by Category for Universal Access (Scenario 3), 5-Year Accelerated Broadband Deployment

Year	Universal Access (Scenario 3), 5-Year Accelerated Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	$1,044,817,280	$26,891,852,591	$2,803,925,315
2	2,037,393,696	25,358,513,525	2,262,052,279
3	2,977,729,248	23,877,128,176	1,918,999,843
4	3,865,823,936	22,352,345,187	1,688,112,911
5	4,701,677,760	20,918,934,791	1,507,575,712
6	4,571,075,600	455,848,884	0
7	4,440,473,440	416,575,749	0
8	4,309,871,280	416,575,749	0
9	4,179,269,120	380,107,839	0
10	4,048,666,960	366,783,025	0
11	3,918,064,800	355,562,130	0
12	3,787,462,640	345,743,846	0
13	3,656,860,480	337,328,174	0
14	3,526,258,320	337,328,174	0
15	3,395,656,160	324,003,361	0
16	3,265,054,000	319,094,219	0
17	3,134,451,840	315,727,950	0
18	3,003,849,680	312,782,465	0
19	2,873,247,520	310,678,547	0
20	2,742,645,360	308,574,629	0
Total	69,480,349,120	124,701,489,012	10,180,666,061

*Includes Replacements

Figure 29: Background Data for Figures 5 and 21: Costs by Category for Universal Access (Scenario 3), 20-Year Broadband Deployment

Year	Universal Access (Scenario 3), 20-Year Broadband Deployment		
	School Annual Software Expense and Internet Access	School Investment*	LEC Network Investment
1	21,941,163	564,728,904	20,126,893
2	64,687,250	1,077,736,825	33,505,081
3	139,953,275	1,850,477,434	53,502,536
4	263,842,484	2,950,509,565	82,288,841
5	450,420,729	4,309,300,567	115,599,889
6	709,430,933	5,819,211,459	152,537,827
7	1,046,175,542	7,332,116,341	187,553,881
8	1,361,919,324	6,873,693,536	181,971,563
9	1,656,662,279	6,513,796,440	174,321,341
10	1,930,404,407	6,229,521,604	168,478,386
11	2,183,145,707	6,008,471,759	163,806,197
12	2,414,886,179	5,831,566,209	159,696,285
13	2,625,625,825	5,649,199,437	156,831,364
14	2,815,364,643	5,667,583,822	155,386,973
15	2,938,600,841	4,517,635,407	128,561,083
16	3,000,584,626	3,611,428,630	102,227,500
17	3,006,566,205	2,757,763,146	76,320,373
18	2,961,795,784	1,923,492,620	50,674,835
19	2,871,523,571	1,096,336,779	25,262,798
20	2,742,645,360	326,621,520	1,128,038
Total	35,206,176,127	80,911,192,004	2,189,781,684

*Includes Replacements

Figure 30: Background Data for Figures 6, 7, 8, 22, and 23: Incremental Investment per Student by Deployment Schedule for All Three Scenarios

Year	5-Year Accelerated Broadband Deployment			20-Year Broadband Deployment		
	Scenario 1: Teacher Only Access	Scenario 2: Team of Students Access	Scenario 3: Universal Access	Scenario 1: Teacher Only Access	Scenario 2: Team of Students Access	Scenario 3: Universal Access
1	$735	$1,396	$3,604	$519	$1,180	$3,388
2	$695	$1,351	$3,541	$493	$1,137	$3,292
3	$664	$1,313	$3,485	$470	$1,093	$3,182
4	$638	$1,281	$3,432	$449	$1,048	$3,059
5	$615	$1,251	$3,382	$429	$1,003	$2,937
6	$620	$1,283	$3,499	$411	$962	$2,822
7	$624	$1,314	$3,613	$394	$922	$2,712
8	$629	$1,344	$3,724	$382	$897	$2,646
9	$633	$1,373	$3,831	$372	$879	$2,603
10	$637	$1,400	$3,935	$365	$866	$2,574
11	$641	$1,428	$4,035	$358	$857	$2,554
12	$645	$1,454	$4,132	$353	$849	$2,541
13	$648	$1,479	$4,225	$348	$843	$2,532
14	$652	$1,503	$4,316	$344	$840	$2,531
15	$655	$1,527	$4,403	$342	$840	$2,540
16	$659	$1,550	$4,487	$340	$845	$2,564
17	$662	$1,571	$4,568	$340	$853	$2,599
18	$665	$1,592	$4,646	$340	$865	$2,646
19	$668	$1,613	$4,721	$342	$880	$2,704
20	$671	$1,632	$4,792	$344	$899	$2,774
Total	$13,052	$28,654	$80,372	$7,735	$18,558	$55,201

Appendix 2: Project Information

Project Information

List of Participants in the Telecommunications Industries Analysis Project

As of June 27, 1995

State Regulators	NARUC representatives from: Illinois Commerce Commission Iowa Utilities Board Massachusetts Department of Public Utilities New York Public Service Commission Washington Utilities and Transportation Commission
Regional Holding Companies	Ameritech Bell Atlantic BellSouth NYNEX Pacific Telesis SBC Communications Inc. US WEST
Independents	Anchorage Telephone Utility GTE Sprint Local Telecom Division
Interexchange Carriers	AT&T Sprint
Foreign Domestics	InfoCom Research, Inc. NTT America
Local, National, and International Services	BT France Telecom North America
Materials Manufacturers	Corning
Telecommunications Equipment Manufacturers	Nortel

Sponsors:

Corporation for Public Broadcasting

Assisting with *public* data:

Bellcore
Federal Communications Commission
National Exchange Carrier Association

Project Information, cont.

Background on the Telecommunications Industries Analysis Project

The goal of the Telecommunications Industries Analysis Project is to provide information to support the development of alternative communications policies to meet the needs of stakeholders in an environment that includes competitive and non-competitive markets, federal and state regulatory jurisdictions, and a proliferation of new services made possible by technological advances. The purpose of the project is to produce research and analysis which will assist policy makers in making informed decisions.

The project is a neutral forum of communications industry stakeholders exploring multiple viewpoints of selected issues. This forum incorporates the following elements:

- **Broad representation:** The current forum includes foreign and domestic local exchange carriers (LECs), interexchange carriers (IXCs), materials and equipment manufacturers, and federal and state regulators. The project actively seeks expansion of this forum to include other communications industry representatives such as competitive access providers, cable television companies, computer companies, electric power utilities, or publishers.

- **Multiple viewpoints:** Participants are required to play an active role in the research and analysis, to represent their own interests, to understand and to assist in developing others' perspectives, and to work toward the common goal of representing multiple views. Since papers reflect multiple viewpoints and ideas, authors and reviewers may not agree with particular views or approaches expressed in the papers. The objective is to lay out ideas and options to assist policy makers in their decisions.

- **Analysis and results of alternative policies:** Research tools, including a jointly produced data base and computer software models, and data analysis developed by this forum create a common language for examining issues. The common language allows the participants to focus on underlying issues. Appropriate computer software tools, including modifications to existing tools, are developed.

- **All data, analysis methods, and results are public:** Data used by this project must be publicly available on a nationwide basis. Research products become public domain information.

- **Neutral setting:** The project resides in a neutral setting, free of partiality, thereby ensuring objective and independent research.