1956 AT&T Consent Decree
Allowed to re-enter non telephone industries such as computers and information services

Required Western Electric and AT&T to license their patents to anyone who wanted them upon the payment of appropriate royalties.

Allowed others to manufacture telephone equipment which they could actually sell to businesses and residential customers who could attach this equipment to AT&T's telephone network

1956 FCC agrees to hear the "Above 890" proposition-whether the private line business should be change by allowing microwave systems employing radio frequencies above 890 megahertz to be used by private (non bell) parties. TV channels and Motorola were at the heart of this market. AT&T fought this on the basis of eventual forced interconnection "cream skimming" of long distance markets.

1958 National Aeronautics and Space Act creates NASA

1958 DOD launches SCORE

1959 FCC announces "Above 890" decision freeing spectrum for non-ATT use. (Common Carrier Division)

1960 (October) AT&T seeks satellite permit

1961 (May) FCC issues First Report and Order on Satellites in which "some sort of joint venture" limited to ownership by international common carriers warranted serious consideration.

1961 (July) NASA signed a cooperative agreement with AT&T to launch TELSTAR; RCA to produce RELAY; and Hughes to produce SYNCOM

1962 Satellite Act

1962: ATT's Telstar I launched on July 10 and on that same day live television pictures originating in the United States were
received in France.

1963 (Feb 1st) COMSAT formed

1963 MCI decision allows special service common carriers (private lines)

1964 INTELSAT negotiations begin

1965 80.6% of all US households had telephone service; but only 66% of households with income under $5k had service

1965 COMSAT launches "Early Bird" first satellite for commercial communications including 249 voice grade circuits

1965 FCC's issues first report and order in which it asserted jurisdiction over microwave-linked cable

1966 The US exported only $34 million worth of communications equipment, out of a total output of more than $4 billion--US Department of Commerce (bdsaf-363b(66)-I)

1966 FCC Second Report and Order broadened FCC jurisdiction to include cable. The FCC also put restrictions on signal importation due to copyright concerns; which caused in effect the beginning of the "freeze"

1966 Lawrence G. Roberts of MIT publishes "Towards a Cooperative Network of Time-Shared Computers" which outlines the ARPANET plan. Worldwide direct telephone dialing has its first public demonstration, a call from Philadelphia to Geneva, Switzerland. (June 15).

1966 Western Union pushes to become a national information utility

1967 Bell is largest private enterprise in the world; assest of $37.6 billion, operating revenues of $13 billion accounting for 42% of total operating revenues of the nation's 50 largest utilities.

1967 INTELSAT II, III, IV launched; there are now 9,000 commercial voice grade circuits

1967 Western Union obtains approval to offer SICOM and Info-Com computer based services

1967 Carnegie Commission on Educational Television releases "Public Television: A Program for Action"

1968 The FCC rules, under Section 214 of the Communications Act, that telephone companies must file for a Certificate of Public Convenience before building cable facilities, eliminating a strong competitive advantage of the telcos over cable companies. (13 FCC 2d 448)

1968 Fortnightly Corp. v. United Artists Television, 392 U.S. 390 cable systems were held not legally liable for payment for distant signals if they were picked up over the air

1968 The FCC freezes development of cable systems in the top 100 markets with an "anti-leapfrogging" notice that cable systems have to obtain permission of any distant station before importing it; cable systems in 35 mile radius of TV stations in smaller markets have to carry nearest network, independent and public stations; while it considers new rules for cable (Community Antenna Television Systems, Inc.,15 FCC 2d

1968 Carter-Phone decision

1968 USSC upholds FCC jurisdiction over cable as "reasonably ancillary" US v Southwestern Cable 392 US 157 (1968)

1968 Rostow Report issued on Dec 7th
Among the findings:
International Communications:
1. Formation of a single entity for US International transmission seems the most effective organizing principal for the future
2. Establishing competition between cable and satellite would be "very difficult"
3. Creation of a single entity should be subject to conditions:
a. it should not engage in manufacturing
b. it should not provide a domestic satellite program nor have domestic carrier affiliation
c. It should be subject to "strengthened Government regulation"
Domestically
4. A pilot Domestic satellite program should be established and managed by COMSAT

1969 (June) President's Task Force on Communications Policy is released.
Among the findings:
1. " We have concluded that strong arguments remain for retaining the public message telephone service as a monopoly of established carriers. However a variety of other, newer communications services can be opened up to greater competitive pressures, promising an added contribution to a high level of overall industry performance without wasteful duplication or loss of service quality.
2. "continuing developments in terrestrial microwave and coaxial cable technology promise to yield substantial increases in capacity and reductions of cost"
3. "One of the most important long term trends in the communications industry is the inter-relation of communications and computer technology. The same advances in electrical circuitry that underlie the development of highspeed, high-capacity digital computers--the transistor, the diode, integrated circuits etc,,"

1969 The FCC requires cable systems with more than 3,500 subscribers to provid local So the origination programming.

1969 The U.S. Supreme Court affirms the FCC "Section 214" ruling which requires telephone companies to file for Certificates of Public Convenience before building cable facilities. (396 U.S. 888)

1969 The U.S. District Court in Nevada rules that Nevada can regulate cable through the Public Utilities Commission.

1970 Sloan Report

1970 IBM controls 3/4ths of computer processors as the industry fights possible FCC jurisdiction

1970 (January, 23rd) "Open Skies" Policy comes from a letter to Dean Burch

1970 Nixon submits plan to Congress for creation of OTP

1970 The FCC permits the merger of TelePrompTer and H&B American, making TelePrompTer the largest cable company in the country. It serves 419,000 subscribers 10% of the industry.

1970 OTP proposes " a major telecommunications pilot program to determine the usefulness and economic viability of wideband distribution facilities in alleviating some urgent problems of today's society"

1970 Corning Glass demonstrate highly transparent fibers, and Bell Laboratories demonstrates semiconductor lasers that could operate at room temperature; these demonstrations help establish the feasibility of fiber-optic communications.

1970 The FCC adopts "anti-siphoning" rules to protect programming on broadcast TV (23 FCC 2d 825)

1971 *Computer Inquiry I Decision* (CI-I) permitted communications carriers to transport data over their networks on a regulated basis but not to process it.

1971 *Specialized Common Carrier Services Decision* expanded "MCI decision"

1971 The Eighth Circuit holds the FCC could not require local origination. *(United States v. Midwest Video Corp.*, 441 F.2d 1322 (8th Cir.))

1972 The U.S. Supreme Court overturns an appellate court ruling in favor of the FCC's local origination rules but reaffirms FCC authority overcable. *(United States v. Midwest Video Corp.* (Midwest Video I), 406 U.S. 649)

1972 Greyhound's suit against IBM charged IBM with monopolizing the computer leasing market. The court ruled in favor of IBM, though the case was reversed when appealed and settled out of court

1971 (Feb) The FCC issued rules that dealt with retransmission of broadcast signals, including government access to and use of non-broadcast cable channels. As well, they established technical standards and divided regulatory jurisdiction between federal and local levels of government.
(This was upheld in US vs Midwest video corp. US 649, 675-76 (1972))

1973 IBM v. Telex came to trial in 1973 and accused IBM of monopolizing the "plug compatible" equipment market (tape drives, disk drives, and add-on memories). The district court ruled in favor of Telex, only to be reversed in 1975.

1973 The FCC approves applications to establish domestic communications satellites, a crucial link in cable program distribution.

1973 Congress passes anti-blackout legislation which requires that sold-out games in pro football, baseball, basketball and hockey be made available for over the air TV, rather than cable or pay TV.

1973 (Februrary) OTP memo expounding on "open skies"

1. There should be no forced merger of international record carriers or of international transmission facilities
2. Fed regulation of carriers owning international transmission facilities should encourage efficient utilization of both cable and satellite technology without heavily detailed intrusion into the investment and operating decisions of the carriers

3. International services other than public telephone service should be provided on a competitive basis with only such regulatory oversight as is necessary to protect from potentially anti-competitive practices
4. The satellite act of 1962 should be reviewed to determine what changes are needed to reflect the permanent INTEL:SAT agreements, the maturity of COMSAT as a commercial common carrier and the emergence of new satellite services
5. There should be thorough review of authority and procedures of the Executive branch for cable landing licenses and satellite approvals, in order to permit international common carriers to do advance planning and make necessary commitments with their foreign partners with some assurance of federal agreement and to reduce friction in governmental relations with foreign nations on these matters.

1973 CATV " 8k systems serving 8 million homes" Community Antenna Television Association (CATA) is organized as a trade association.

1974 OTP releases the Report to the President
Cabinet Committee on Cable Communications

1974 OTP (June) releases "Cable Television Financial Performance Model; Description and Detailed Flow Diagram" BY L Afflerbach, L. Bertman, S. Polk, and F.L. Skinner

1974 Letter from CTW to R.E, Wiley; chairman of the FCC containing an eight point statement of policy thereafter known as "regulation by policy".
"regulation by policy which would lay down for the guidance general but firm, strong but not meddlesome, policies that will govern the regulatory decision when it must be made"

1974 CTW resigns; John Eger assumed role of director until July 1976 when Honser took over as director

1974 Anti –trust suit & 1982 Modified Final Judgement

The government indicated that it brought the 1974 suit because the 1956 consent decree had not prevented AT&T from restraining competition in telephone equipment manufacture, nor protected against antitrust violations in long distance telephone service. AT&T pursued various legal actions to derail this suit, but pretrial action began in 1978, and a new settlement was proposed in 1982. That year the court, under Judge Harold Green, held a hearing on the settlement and released what was officially called "A Modification of Final Judgment."

AT&T was required to divest itself of its 22 operating companies, the local service providers.

AT&T would only be allowed to provide long distance service and would have to face competition from other long distance carriers, such as MCI and Sprint.
Local telephone service was now to be provided by seven regional Bell operating companies

1975 Distribution of satellite programming begins when Home Box Office shows the Muhammad Ali vs. Joe Frazier fight on Sept. 30 to customers in United Artists' Vero Beach and Ft. Pierce, Fla. systems and in American Television and Communication Corp.'s Jackson, Miss. system.

1976 The Copyright Revision Act is passed by Congress. It establishes a "compulsory license" allowing cable systems to retransmit broadcast stations and sets fee schedules for

carrying distant signals for the first time. The cable operator is liable for copyright payments. (17 U.S.C. 101-118)

1976 FCC repeals distant signal "leapfrogging" rules, allowing cable systems to import signals as they choose. (Selection of Television Signals, 57 FCC 2d 625)

1977 U.S. Court of Appeals strikes down FCC rules limiting pay TV, opening the way for expanded cable services. It also suggests that cable may have some First Amendment rights. (*Home Box Office v. FCC,* 567 F.2d (D.C. Cir.) *cert. denied,* 434 U.S. 329)

1977 The FCC approves the use of 4.5 meter earth station receivers. The ruling permits more cable systems to acquire the equipment necessary to receive nationally distributed programming via satellite. (American Broadcasting Inc., 62 FCC 2d 901)

Creation Stage 1876-1896

1876 Bell patents telephone
Original investors included Boston bankers, George Bradley, W.G. Salastonn and G.Z. Salisby

1876 Western Union replies by using their telegraph network

1879 Westernn Union forced to give up its infrastructure and 88 patents

1882 Bell acquires Western Electric and signs an exclusive contract that created uniformity and also proved very profitable for Western

1897 AT& T acquires numerous patents and begins to prepare for competition

1900 Bell culminates a process of constant restructuring by moving the company to New York under
1901 ATT shifts from holding company to centralized management structure

*1899,1900, 1906 the annual rate of growth exceeded 22%

Competition Regulation

The most serious threat to Bell was the American Telephone, Telegraph and Cable company (headed by rival banker, Rockefeller) attempted to consolidate independents. *The Financial History of American Telephone and Telegraph Company;* Stehlman, page 57

1905 Sublicensing becomes a "powerful weapon"

1906 Morgan finances ATT and breaks up consolidation efforts of the competitors

1907 States begin regulation of telephone institute common carrier laws

1907 Vail returns, streamlines company, includes marketing and embraces regulation

1907 Loading coil introduced

1908 Western Union under the control of ATT

1910 Mann-Elkin widens state efforts of regulation but proves ineffective

1911 Radio Act of 1912: the federal government shut down all private radio operations in the United States.

1913 Kingsbury commitment forces divestiture of WUnion, puts ATT under ICC and requires connection/access

1917 First Air-to ground and Ground to Air radio communications developed by Bell

1918 President Woodrow Wilson issued a proclamation assuming control of the telephone and telegraph systems in the United States, placing them under the direction of the Post Office

1919 The Bell System announces plans for the introduction of machine switching (dial telephones) in its exchanges.

1920 Graham-Willis act solidifies the theory of natural monopoly and precludes it from anti-trust suits

1923 Gifford established Bell Labs and reorganized company to "establish organizational principles that lasted into the 1980's"

1924 - AT&T introduces "telephotographic" fax machine

1926 ATT goes into agreement with RCA
For one million dollars Bell turned over its radio facilities to RCA and withdrew from broadcasting. It also gave up its rights to manufacture receiving sets to RCA. In Return RCA agreed to use Bell wires exclusively and not to compete in the telephone business.

1926 ATT invents and patents sound motion picture

1926 The first simple television shadow images were shown on a standard Western Electric oscillograph tube at Bell Labs.

1927 Radio Act

1926 Transcontinental service becomes an important aspect for the military

1928 Lloyd Espenschied and Herman Affel applied for a patent for broadband coaxial cable, the first broadband transmission medium.

1931 - AT&T inaugurates the Teletypewriter Exchange Service (TWX) November 21.

1934 Communications Act

1. Federal-State division of responsibilities
2. Common carrier obligations including interconnection
3. Rate regulation
4. Universal services
5. Creation of Federal Communications Commission (FCC) to assume telecom duties of ICC and FRC (radio)

- Descriptions and rates for various services, features, & options
- Terms and conditions of transaction
- Limits on carrier liability
- A substitute for a contract with customer

- FCC to regulate <u>interstate</u> telephone service
- Regulation of <u>intrastate</u> (wireline) communications left to the states
- No clear division between state and federal
- Can divide individual calls (intrastate/interstate)
- Many network components serves both types of calls and cannot be physically separated
- FCC can preempt state on some issues, but must clearly show why it is necessary
- Carriers must provide (interstate communications) "service upon request"
- Must interconnect with other carriers when FCC decides it is "in the public interest"
- Charges, practices, classifications, and regulations must be "just and reasonable"
- No "unjust or unreasonable discrimination

- Regulators decided when carriers had to interconnect
- Carrier cannot construct facilities until FCC issues "certificate of public convenience"
- Carrier also need FCC approval to dismantle facilities
- Thus, FCC empowered to control entry into and exit from the industry
- FCC used this power (for years) to keep competitors out and retain monopoly status
- In theory, FCC could set rates on each individual service/option (rate elements)

FCC chose a loose approach to monitor overall earnings, especially of AT&T

1939-1945 WWII

On the back of Western Electric, AT&T became not only the major industry player in the United States, but in fact, the largest company in the world. Through its monopoly control, AT&T came to dominate the three major areas of telephone service: local service, long distance service, and equipment. DOD relationship very strong "by 1944 roughly 85% of Western Electric business was defense contracts"

1945 - Western Union installs the first commercial radio beam system. *[Note 3]

1946 - AT&T televises Army-Navy game in Philadelphia and transmits it to NYC

1946 - AT&T has 8 VF channels on microwave from Catalina Island to Los Angeles. Raytheon has a microwave link transmitting audio from WQXR in NYC to Boston.

1949 - FCC's Jordaphone Docket (1949 - 1954). Jordaphone and three other manufacturers of answering machines sought FCC approval for their use on telco lines. The FCC decision left the matter to the states as only about 1% of telephone calls at that time were interstate.

1949 The government sued Western Electric and AT&T charging that they had monopolized the manufacture and sale of telephones and equipment (Civil Action No. 17-49). (Led to 1956 consent decree)
What the government sought was the divestiture by AT&T of Western Electric, the termination of the exclusive relationship Western Electric enjoyed with AT&T, and the total separation of telephone manufacturing from the provision of telephone service, among other things.

1956 - The Bell System and the British Post Office inaugurates service on a transatlantic telephone cable, TAT-1

1956 Hush-a-Phone decision permitted telephone users to attach a cup-like device to the telephone mouthpiece to make communication more private. (Key in the Carterfone decision)

1956 Consent Decree or "Final Judgement"
AT&T agreed to restrict its activities to the regulated business of the national telephone system and government work. They were allowed to keep Western Electric.

An injunction was issued which barred AT&T from engaging in any business other than the provision of common carrier communication services

Required Western Electric and AT&T to license their patents to anyone who wanted them upon the payment of appropriate royalties.

1956 FCC agrees to hear the "Above 890" proposition-whether the private line business should be change by allowing microwave systems employing radio frequencies above 890 megahertz to be used by private (non bell) parties. TV channels and Motorola were at the heart of this market. AT&T fought this on the basis of eventual forced interconnection "cream skimming" of long distance markets.

1959

In 1959, the anti-trust's subcommittee of the House Judiciary Committee held hearings on the 1956 consent decree The Subcommittee's investigations revealed that AT&T was very active behind the scenes in trying to get the government to suspend its 1949 suit. (Report of the Antitrust Subcommittee of the House Committee on the Judiciary on the Consent Decree Program of the Department of Justice, 86 Cong. First Sess., Jan. 30, 1956).

As a result of AT&T's continuing lobbying of the Defense Department, the Secretary of Defense wrote a letter to the Attorney General asking him to end the 1949 litigation without requiring AT&T's divestiture of Western Electric. The Subcommittee, in its 1959 report, concluded that the Attorney General manifested a willingness to have the Justice Department consider a token settlement.

The Subcommittee also uncovered the fact that AT&T had actually prepared the letter that the Secretary of Defense sent to the Attorney General. (Subcommittee Report, 55)

1959 - AT&T introduces the TH-1 1860-channel microwave system. The FCC's Above 890 MHz Decision allowed private microwave systems

1961 In response to Above 890, Bell proposed TELPAK, a new service which amounted to dramatic reduction in AT&T's rates for private line services. In 1964 the FCC claimed TELPAK was unlawful due to predatory pricing. This lead to a series of court battles over the next ten years.

1962 President Kennedy signed the Communications Satellite Act, which gave a monopoly on international communications via satellite to a new corporation, called Comsat. (Although AT&T built Telstar) AT&T went ahead with Telstar II anyway to complete its experimental program. It was launched on May 7, 1963. The publicity from Telstar had been very positive for AT&T. AT&T had built six flight worthy spacecraft and launched two of them using company funds. Bell Labs had developed much of the technology required for satellite communications including transistors, solar cells, and TWT amplifiers. AT&T also built ground stations for Echo and Telstar

1963 Bill McGowan establishes Microwave Communications of America and requests a permit to construct a private line from St. Louis to Chicago.

1966 Lawrence G. Roberts of MIT publishes "Towards a Cooperative Network of Time-Shared Computers" which outlines the ARPANET plan. Worldwide direct telephone dialing has its first public demonstration, a call from Philadelphia to Geneva, Switzerland. (June 15).

1968 Rostow Report asserted that competition should replace regulation as the norm in telecommunications.

1968 Carterfone Decision

FCC ruling that allowed non-AT&T equipment to be attached to the public telephone network provided the equipment met certain technical and operational specifications. Permitted the connection of a device used to interconnect private two-way radio communication systems with the public telephone network. The Carterfone decision opened the way to competition in connection of customer-owned terminal equipment to the public telephone network. As a result the interconnect industry was born.

1969 New York telephone crisis

1969 "The MCI decision " allowed Microwave Communications, Inc. (MCI) to provide specialized common carrier services in direct competition with existing common carriers.
The MCI decision also required existing carriers to furnish interconnect service to the new carriers.

1970 Corning Glass demonstrate highly transparent fibers, and Bell Laboratories demonstrates semiconductor lasers that could operate at room temperature; these demonstrations help establish the feasibility of fiber-optic communications.

1971 *Specialized Common Carrier Services Decision* expanded "MCI decision"

1971 *Computer Inquiry I Decision* (CI-I) permitted communications carriers to transport data over their networks on a regulated basis but not to process it.

1973 The Senate Subcommittee on Antitrust and Monopoly, chaired by Senator Philip Hart, held a series of hearings in 1973 and 1974 on the question of competition in telecommunications.

1974 **Anti –trust suit**

The government indicated that it brought the 1974 suit because "the 1956 consent decree had not prevented AT&T from restraining competition in telephone equipment manufacture, nor protected against antitrust violations in long distance telephone service".

The government sought to have Western Electric divested from AT&T and divided into separate companies, and to have some or all of the Bell operating companies split away from AT&T's long lines.

Debutts refused a compromise and took the government head on.....

1. They tried to get the suit thrown out
2. And appealed to Congress for

a. To urge Congress to reaffirm the need for a unitary network.
if that course should fail, they would push Congress to adopt legislation that would deregulate most of the Bell system operations.

1976 - - AT&T installs its first digital switch.

1976 The FCC launches Computer Inquiry II.

1980 The FCC issues its Computer Inquiry II decision which differentiated between basic and enhanced services. Basic service requires regulation. AT&T must now provide unregulated services through a fully separated subsidiary.

1984

- AT&T was required to divest itself of its 22 operating companies, the local service providers.

- AT&T would only be allowed to provide long distance service and would have to face competition from other long distance carriers, such as MCI and Sprint.

Local telephone service was now to be provided by seven regional Bell operating companies

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- 1837 - Samuel Morse invented 1st practical telegraph
- 1843 - Government funded first telegraph line as a research experiment
- 1844 - 1st telegraph over government funded line, but government soon withdrew funding
- 1845 - Morse organized first private telegraph company
- 1851 - 50 private telegraph companies operating and competing with some overlap of coverage

Telegraph & Western Union

- 1856 - Western Union (WU) formed via a merger of several regional telegraph companies
- 1866 - WU introduces first stock ticker, providing stock quotes to brokers (transport + content)
- 1866 - First regulation of telegraph
- 1870s - WU acquired all competitors and became (temporarily) first powerful monopoly in US
- 1871 - WU launches money transfer service, another example of a value-added application on top of a transport service

Early Telephone History

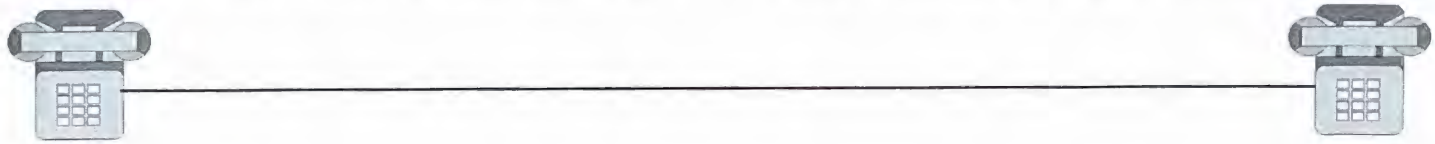
- 1876
  - Bell filed and received first telephone patent called "an improvement to telegraphy"
  - Gray filed similar patent only hours later
  - Gray soon sold his invention to WU
- 1877
  - Bell received second key patent for telephone receiver
  - Bell & partners form "Bell Telephone Company"
  - Bell offered to sell for $100,000, but WU declined
  - WU purchased various non-Bell patents and formed its own telephone company

Bell's Early Business Model

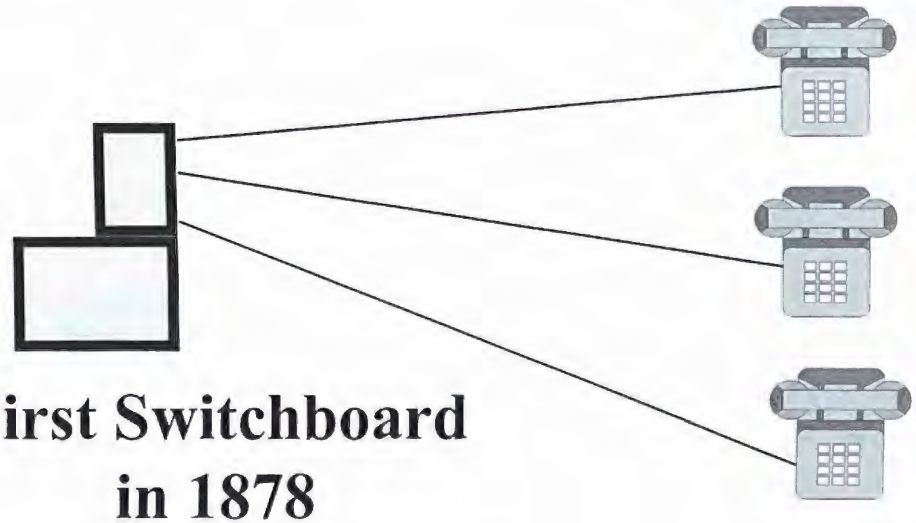
- Leased phones to customers and sold service
  - Made the telephone business more capital intensive
  - Generated monthly service revenue, a major factor in financial success of Bell system
- Established a system of franchise agents
  - Agents paid license fee to Bell company
  - Agents received (patent) rights to operate a telephone system in a given area
  - Agents built systems only in most attractive areas
  - Agents sold service to customer

Network Externalities

First Service in 1877 was via Private Lines



Value to customer increases with more phones on "network"



First Switchboard in 1878

Early Competition

- WU ignored Bell patents and marketed its own telephone service
- WU and Bell company often established competing exchanges in the same town, destroying profitability of both
- The two systems were not interconnected
- Bell sued WU over patent infringement
- Courts supported Bell patent rights

1879 Patent Litigation Settlement

- WU agreed to withdraw from telephone business and sell it to Bell company
- Bell agreed to stay out of telegraph business for life of telephone patents (1877 + 17 yrs)
- Bell created American Bell Telephone Company to consolidate Bell and WU local telephone properties
  - Restructured agreements with its local agents
  - First Bell ownership in agent's local business

Preparing for Patent Expiration

- Competitors will be able to legally enter the telephone business after patents expire
- Competition could destroy profits of all
- Local franchisees may not need Bell
- A new long distance market might emerge
- How can Bell use long distance to protect its local exchange interests?
- What should Bell do in the 1880s to prepare for 1890s changing business environment?

Challenges of new Long Distance

- Must be able to interconnect local and LD
- Need uniform technical interface standards
- Need cash flow to build Long Distance
- Need some form of long term business agreement between local and LD companies
- Desirable to have integrated planning of local and LD
- Unproven market of unknown size
- Parallels with today and NGN

Bell Consolidation

- Purchased Western Electric in 1882 (from WU) which became sole supplier of Bell equipment
  - High quality, standard equipment (interconnection)
  - Economies of scale from volume production
  - Dependable supplier
- In 1880's Bell obtained 30-50% equity position in local agents in exchange for permanent contracts
- Formed AT&T in 1885 as LD subsidiary
- Bell company vision in 1885: Build lines from any city to each other city in the U.S., Canada, & Mexico

Bell Consolidation - 2

- Bell competitive strategy in 1893
  - Horizontal integration of its local exchanges
  - Backward integration into manufacturing
  - Forward integration into equipment leasing
  - Technology leadership with LD network
- Created integrated Bell System in 1899
- Purchased controlling interest in WU in 1909 making it possible to send and deliver telegram via telephone

Independent Telcos

- Bell won in court against occasional competitors until patents expired in 1893 and 1894
- Then competing "independents" became a serious financial threat to Bell, with 49% of lines in 1907
- Independents had own manufacturing, trade association, & some independent interconnection
- Bell unable to sell bonds in 1907 and J.P. Morgan banking group took over control of company
- Bankers brought Theodore Vail back from retirement to rescue Bell company

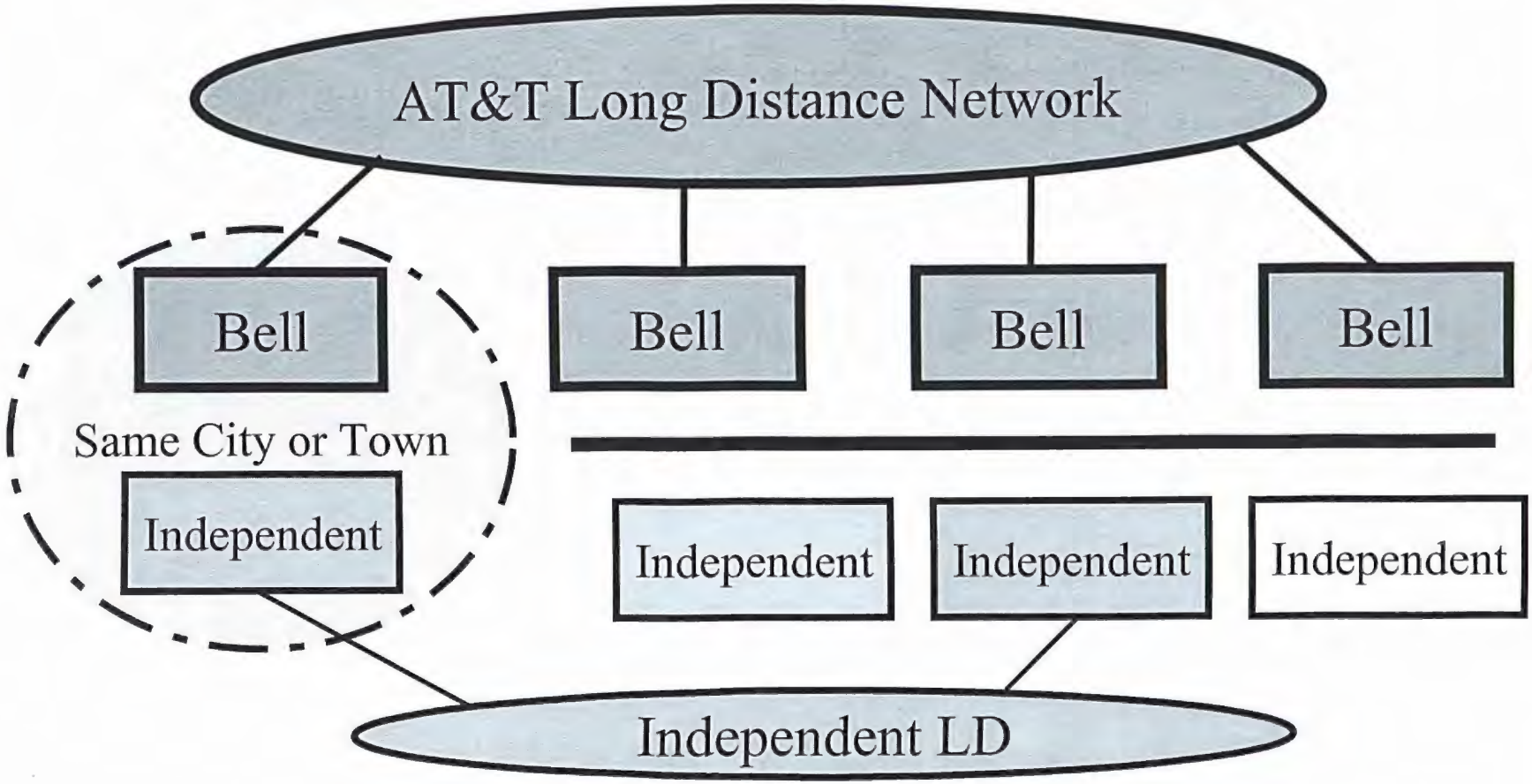
Public Interest in Early 1900's

- Telephone service becoming important to business commerce and to the public
- In general, public did not like monopolies
  - Abused power with higher prices and poor service
  - Standard Oil was broken up in 1910
- But, public not benefiting from telco competition
  - No interconnection among competing systems
  - Telco financial instability from duplicate facilities and ruthless competition
  - Poor service
- Bell company faced a serious public relations problem

Early Regulation

- Post Roads Act in 1866 regulated telegraph interconnection and allowed US Postmaster General to fix rates for government use
- In 1885 Courts ruled that telephone system is a common carrier
- Interstate Commerce Act in 1887 established ICC, but with focus on railroad regulation
- Sherman Antitrust Act of 1890 prohibited certain business actions that created monopolies and/or operated in restraint of trade

No Interconnection with Competitors



Early State Regulation

- 1907 - Early proposals for state regulation of telecom in New York and Wisconsin
- Claimed competition was "detrimental to the public welfare"
- Single carrier would be required to *serve all* who wanted service in an area
- Bell and Independents supported proposals, endorsing regulation over competition
- Obligation to "serve all who wanted service" was also the beginning of universal service concept

1910 Mann-Elkin Act

- First federal regulation of interstate telephone service
- Said telephone companies were common carriers, but did not define term
- Did not specify carrier obligations to other carriers
- ICC could regulate some aspects of interstate telephone operation, but very little happened

Kingsbury Commitment

- 1912 - Independent telcos protested to DOJ that AT&T was violating antitrust laws
- DOJ preparing to file antitrust suit against AT&T
- 1913 - to avoid an antitrust suit, AT&T (Vail) committed the following to DOJ
  - Dispose of its stock in WU
  - Acquire no more competing telcos w/o ICC approval
  - Interconnect its facilities with independents
- AT&T abandoned its earlier vision of monopolizing all telecommunications in the US

Graham Willis Act of 1921

- Declared telephone service to be a natural monopoly
- Said telecom competition is not in the public interest
- Exempted telcos from antitrust laws when acquiring a competing (local) company

Unified Telephone Industry

- Kingsbury Commitment and Graham-Willis Act radically changed the telephone industry
  - Incentives for local competition were eliminated
  - Duplicate systems were rapidly consolidated
  - Interconnection was assured for nationwide service
  - Independents became an integral part of network
- Bell and Independents began working together toward common industry goals
- The industry had moved from competition to monopoly

Bell's Business Success

- Early success based on patent right of monopoly
- After patents expired, success based on:
  - Control of Western Electric manufacturing
  - Long distance network (built under patent monopoly)
  - Refusal to interconnect to independents
  - Control over local agents
  - Greater customer value from larger network
- When public reaction turned negative, new success based on negotiating acceptable regulatory environment

Influence of Theodore Vail

- Led consolidation in 1880's to position Bell for success after patents expired
- Rejected interconnection in early years
- Proposed interconnection in Kingsbury Commitment as public sentiment changed
- Vail's new vision and public relations phrase:
  - **"One system, one management, universal service"**
  - Industry work together to provide service to everyone
- Negotiated accommodation with Federal and State governments

Why Regulate?

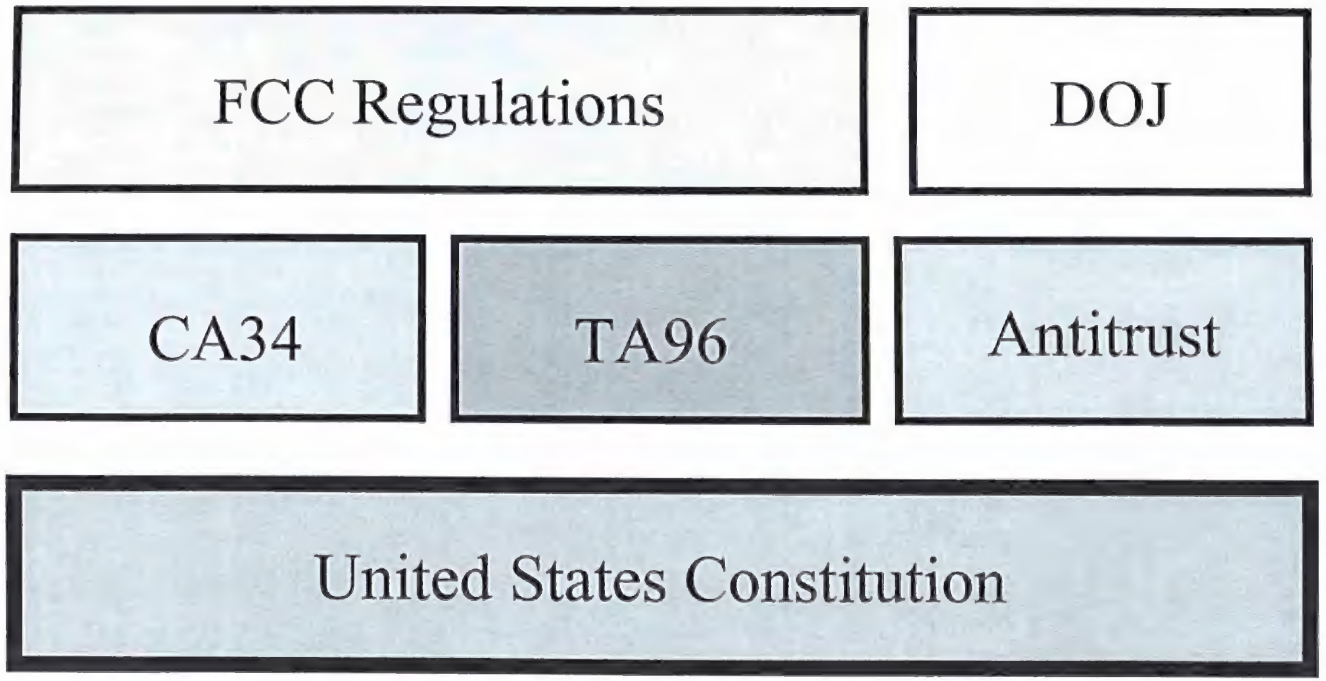
- Public normally benefits from competition, but
- Telecom had characteristics of a natural monopoly
  - Very difficult for multiple providers to make a profit
  - Provides essential service to public
- Laws changing to eliminate telecom competition
- Purpose of regulation to ensure company will not abuse its monopoly powers
  - Carrier receives franchise to serve a specific area
  - Control via strict rules for conducting business
- Alternatives to competition are government regulation or government ownership

The Regulatory Process

- Purpose to assure fair treatment of rate payers and investors. Principles include:
  - Service upon demand
  - Uniform policies to all users
  - Acceptable service quality
  - Fair rates to customers
  - Fair return to stockholders
- Regulatory agency establishes rules
- Agency monitors & controls telco operations to ensure conformance with regulatory rules

Traditional Common Carrier Regulation in a Monopoly Environment

Basis for Regulations



Constitution Principles & Telecom

- States Rights: Powers not delegated to United States shall remain with states/people
- Protection of Property Rights: Government cannot seize property without fair payment
- Freedom of Speech: All have right to speak and public has a right to multiple sources of information
- Equal Protection: Congress shall have a rational basis for laws applying only to selected individuals or companies

Communications Act of 1934 (CA34)

- Public not benefiting from telecom competition
- First comprehensive federal legislation addressing telecommunications issues
- Established a national goal of "universal service"
  - A phone in every household, at an affordable price
- Promoted the construction of the most rapid and efficient telephone system possible
- Created the FCC and granted it authority over common carriers engaged in the provision of interstate or foreign communications services

Key Parts of CA34

1. Federal-State division of responsibilities
2. Common carrier obligations including interconnection
3. Rate regulation
4. Universal services
5. Creation of Federal Communications Commission (FCC) to assume telecom duties of ICC and FRC (radio)

1. Federal-State Responsibilities

- FCC to regulate interstate telephone service
- Regulation of intrastate (wireline) communications left to the states
  - No clear division between state and federal
  - Can divide individual calls (intrastate/interstate)
  - Many network components serves both types of calls and cannot be physically separated
- FCC can preempt state on some issues, but must clearly show why it is necessary

2. Common Carrier Obligations

- Carriers must provide (interstate communications) "service upon request"
- Must interconnect with other carriers when FCC decides it is "in the public interest"
- Charges, practices, classifications, and regulations must be "just and reasonable"
- No "unjust or unreasonable discrimination"

Interconnection after CA34

- Regulators decided when carriers had to interconnect
- LECs interconnected with most other carriers, especially for switched voice
- LECs typically shared costs & revenue when they connect with another LEC
- LECs typically charged for all calls received from, *or handed off to,* a non-LEC network

Limiting Competition

- Carrier cannot construct facilities until FCC issues "certificate of public convenience"
- Carrier also need FCC approval to dismantle facilities
- Thus, FCC empowered to control entry into and exit from the industry
- FCC used this power (for years) to keep competitors out and retain monopoly status

Tariffs

- Defines carrier services and how offered
  - Descriptions and rates for various services, features, & options
  - Terms and conditions of transaction
  - Limits on carrier liability
  - A substitute for a contract with customer
- Carrier submits for approval to FCC/PUC
- FCC/PUC can approve, reject, or modify
- Public documents and available for review, but are often hard for public to read

Quality of Service (QOS)

- In theory, QOS could be specified in tariffs
- Telcos sought to avoid such precise definitions of QOS requirements
- FCC and PUCs generally used their power of continued surveillance to monitor QOS
- Telco submitted periodic reports on numerous service attributes
- Customers could also file PUC complaint

3. Rate Regulation

- Regulated (monopoly) carrier is entitled to:
  - Recover reasonable costs including operational expenses, taxes & depreciation
  - Earn a "reasonable" profit on invested capital consistent with assumed business risks
- Sum of both is called "revenue requirement"
- For carriers offering multiple services, this approach says nothing about how each individual service should be priced

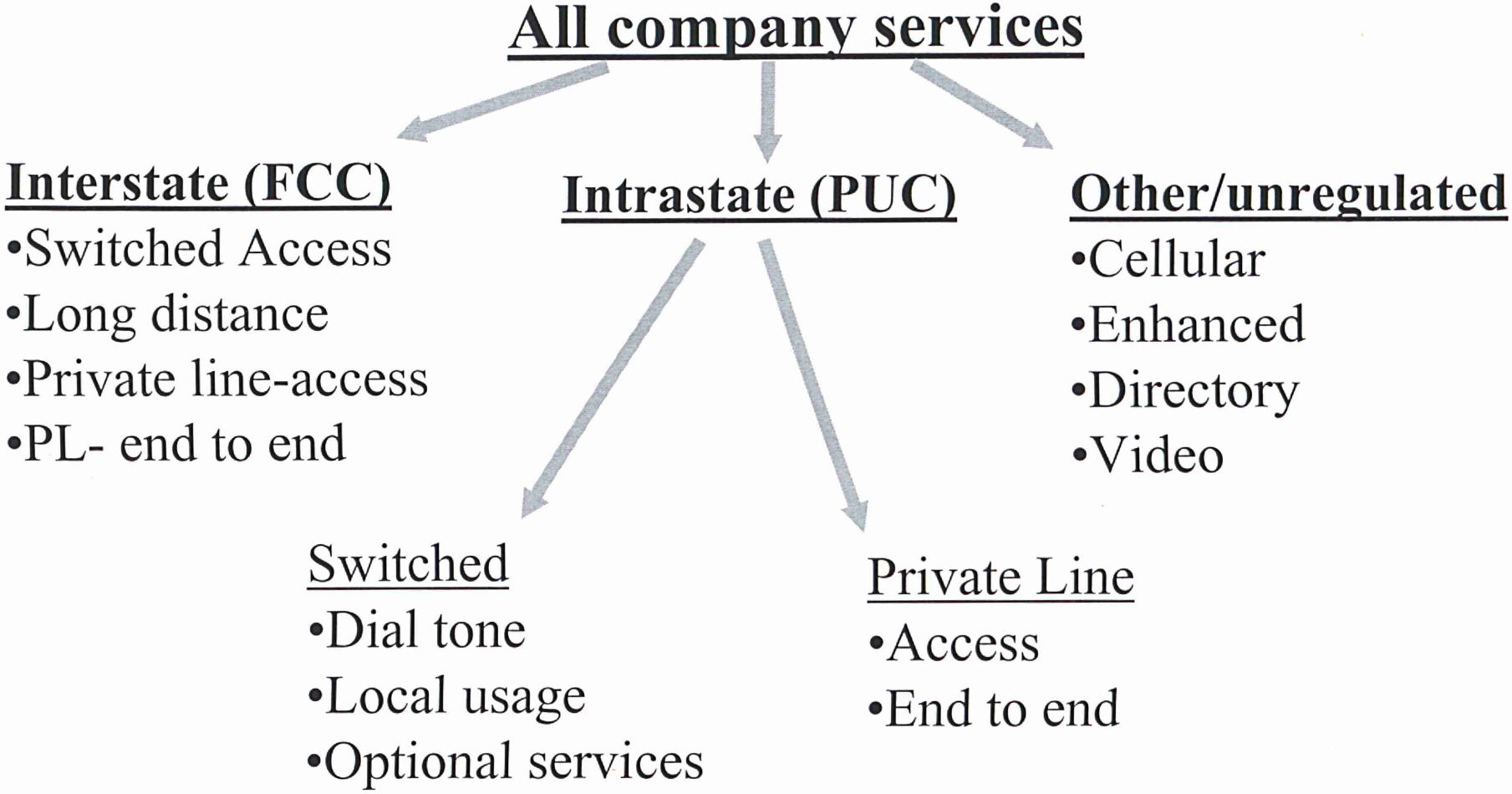
Ratemaking Principles

- In theory, FCC could set rates on each individual service/option (rate elements)
- FCC chose a loose approach to monitor overall earnings, especially of AT&T
- In the 1960's the FCC began establishing an allowable aggregate rate-of-return and permitting telcos broad discretion in individual service rates
- With ROR regulation carrier has incentive to increase regulated costs & investments
  - ➡ Higher regulated costs lead to higher prices

Rate of Return Regulation

- FCC/PUC establishes service categories
- All capital, expense & revenue assigned to appropriate category
- FCC/PUC establishes authorized ROR
- FCC/PUC can challenge expense legitimacy
- Rates established to yield composite ROR
- Uniform system of accounts (USOA) tracks capital, revenue, & expense

Regulatory Service Categories



Ratemaking under CA34

- Structure rates to achieve multiple objectives
  - National goal of universal service
  - Fair price to consumers
  - Fair return to investors
- Methods used to achieve universal service
  - Cross subsidization
  - Low depreciation rates
  - Low installation rates
  - Rate-of-Return regulation
- Ratemaking is a political process

4. Universal Services

- Initial meaning was "interconnection"
- CA34 objective to make telephone service available to all at reasonable rates
  - Presumably this includes local and LD
  - But FCC only regulates interstate services
- However, states had similar objectives
- Regulators and industry "agreed" to subsidize local service, especially in high-cost rural areas, with profits from Long Distance

Historical Subsidy Flows

- Long distance subsidized local
  - Via separations between companies
  - Within Bell companies before Divestiture
  - Via Access Charges since Divestiture
- High business rates subsidized low residence
- High usage fees subsidizes low monthly
- Optional services subsidized basic service
- Low cost areas subsidized high cost areas
- Extra inter-company subsidies for high cost rural

"Logic" to Rationalize Subsidies

- Common costs should be allocated between services such as local and toll
  - ➡ Complex procedures called "separations" for separating costs into intra-state and inter-state jurisdictions
- Rates should be based on "value of service"
  - e.g. higher rates in cities than rural
  - e.g. higher rates for business than residence
  - ➡ No relationship between rates and costs for a given service or to serve a given customer

Separations

- Many network operating costs are common and support both intrastate and interstate
- Regulators decided to allocate usage-based costs based on usage
- Regulators arbitrarily decided to allocate most common costs to interstate
- This process resulted in a considerable flow of "profit" from LD to local, especially for high-cost rural local service

5. FCC & its Powers

- FCC can hear and decide complaints
- FCC can prescribe carrier accounting rules
  - Uniform system of accounts (USOA)
  - Different than general business accounting
- FCC has general rule-making power "as may be necessary in the execution of its functions"
- Courts have said FCC lacks authority to make rules binding on the states

Changes to Regulation

- FCC has broad powers to change regulations as environment changes
- Congress can also change the laws as necessary
- Telecom was relatively stable as a monopoly for 30 years after CA34
- Very few changes were made to the regulations until 1960s

CA34 Organization

- Title I General Provisions
- Title II Common Carriers
- Title III Provisions Relating to Radio
- Title IV Procedural & Admin. Provisions
- Title V Penal Provisions
- Title VI Cable Communications (added later)

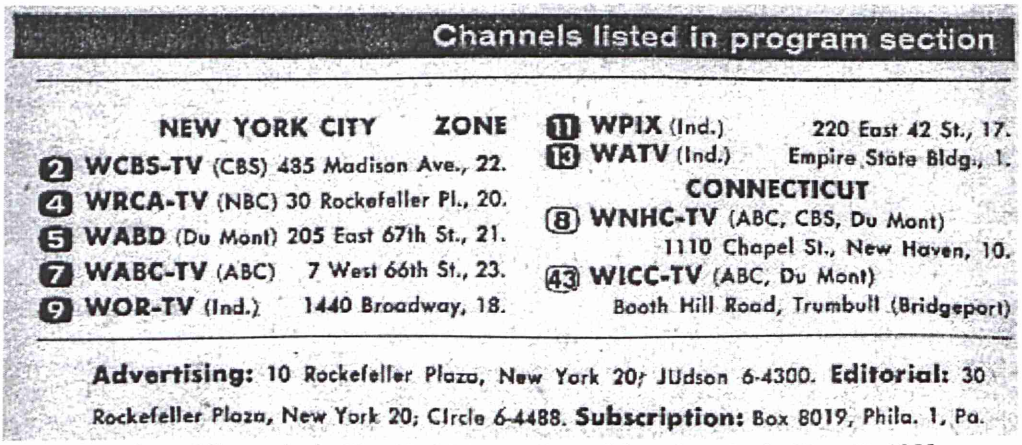
Observations on CA34

- Act does not precisely define a "common carrier telephone system".
- During Congressional hearings in 1934, it was agreed that "interconnection" should be an absolute requirement. However, the change was never made.
- Peter Huber (author of 1998 textbook) noted an unstated, but clear, premise of the Act was that telephone service is best provided by a monopoly.

Telecom Regulatory Organization

- Telco regulatory functions in monopoly
  - Maintain rate base and control accounting
  - Negotiate depreciation rates
  - Manage rate cases to assure sound finances
  - Provide regulators with requested information
  - Follow the rules and keep regulators happy
- Telco regulatory organization was one of the most important ones in monopoly environment

A U. S. Television Chronology, 1875-1970



Channels listed in program section

NEW YORK CITY ZONE

2 WCBS-TV (CBS) 485 Madison Ave., 22.
4 WRCA-TV (NBC) 30 Rockefeller Pl., 20.
5 WABD (Du Mont) 205 East 67th St., 21.
7 WABC-TV (ABC) 7 West 66th St., 23.
9 WOR-TV (Ind.) 1440 Broadway, 18.
11 WPIX (Ind.) 220 East 42 St., 17.
13 WATV (Ind.) Empire State Bldg., 1.

CONNECTICUT

8 WNHC-TV (ABC, CBS, Du Mont) 1110 Chapel St., New Haven, 10.
43 WICC-TV (ABC, Du Mont) Booth Hill Road, Trumbull (Bridgeport)

Advertising: 10 Rockefeller Plaza, New York 20; JUdson 6-4300. Editorial: 30 Rockefeller Plaza, New York 20; CIrcle 6-4488. Subscription: Box 8019, Phila. 1, Pa.

The channel line-up in the New York Metropolitan edition of *TV Guide,* Nov. 12, 1955.

This timeline of U. S. television broadcasting history is a work in progress. If you can suggest any improvements in this list, please send them to Jeff Miller. The following people have contributed to this page: Donna Halper, Bob Carpenter, Joseph Gallant, Paul Lindemeyer, Wesley Orr, Dan Kallenberger, Mark Leff, Pat Dyer, Neil Nelkin, Dave Robertson, Al Robinson, Xen Scott, William V. Sutherland, John Ross, Teddy Dibble, Chuck Davis, Tom Hoehler, Bill Hepburn, Rickey Stein, and Garrett Bauer. Last revision: Dec. 29, 2002.

An asterisk indicates the sign-on date for the station. Start dates are shown for all stations on the air or with a construction permit by Sept. 30, 1948, when a freeze on new applications was imposed.

1875. George R. Carey of Boston proposes a television system in which every picture element is transmitted simultaneously, each over a separate circuit.

1880. The principle of scanning an image is proposed, by E. E. Sawyer in the U. S., Maurice Leblanc in France, and others (approximate date).

1900. The term *television* is coined by Constantin Perskyi at the International Electricity Congress, part of the 1900 Paris Exhibition (*Tube: The Invention of Television* by David E Fisher and Marshall Jon Fisher, p. 29).

1921. Charles Francis Jenkins incorporates the Jenkins Laboratories in Washington for the sole purpose of "developing radio movies to be broadcast for entertainment in the home."

May 19, 1922. Charles Francis Jenkins achieves his first successful laboratory transmission.

Oct. 3, 1922. Jenkins first public demonstration, using Navy station NOF in Anacostia. He transmitted pictures, rather than television in the modern sense. The photographs were sent by a telephone wire from his Washington office to NOF and they were then broadcast by wireless back to the Post Office in Washington.

June 14, 1923. Jenkins' first true television demonstration, using NOF. (He continued to use NOF until 1925. By 1925, the NOF transmissions were on 1875 kHz, using 48 lines.)

Dec. 29, 1923. Zworykin applies for a patent for an all-electronic television system.

June 13, 1925. Charles Francis Jenkins achieves the first synchronized transmission of pictures and sound, using 48 lines, and a mechanical system. A 10-minute film of a miniature windmill in motion is sent from Anacostia to Washington, D. C., a distance of 5 miles. The images were viewed by representatives of the Bureau of Standards, the Navy, the Commerce Department, and others. Jenkins called this "the first public demonstration of radiovision" (although Baird had publicly demonstrated a working television set at Selfridge's Department Store in London two months earlier).

1926. Orrin Dunlap, radio editor of the *New York Times,* describes television as "an inventor's will-o'-the-wisp."

Aug. 18, 1926. A weather map is televised for the first time, sent from NAA Arlington to the Weather Bureau Office in Washington.

Dec. 1926. WGY's TV station*, video 37.8 meters, sound 755 kHz

Apr. 7, 1927. An image of Commerce Secretary Hoover is transmitted in the first successful long distance demonstration of television using Bell Telephone Co. experimental station 3XN, Whippany NJ. 3XN used 1575 kHz video, 1450 kHz audio, 185 synch. AT&T had not previously announced its television research, which was being conducted by Herbert E. Ives and others.

May 23, 1927. The first demonstration of television before a large audience, about 600 members of the American Institute of Electrical Engineers and the Institute of Radio Engineers, at the Bell Telephone Building in New York.

Sept. 7, 1927. Philo T. Farnsworth demonstrates TV in San Francisco. His transmission was electronic, unlike the mechanical TV of Bell Labs, Jenkins, and others.

Jan. 13, 1928. Alexanderson demonstrates the GE system and announces the beginning of television broadcasting. The pictures were received on sets with 1.5 square inch screens in the homes of Alexanderson and two board members in Schenectady. (This is considered by some the first home reception of television in the U. S.) The picture, with 48 lines at 16 frames per second, was transmitted over 2XAF on 37.8 meters and the sound was transmitted over WGY radio station.

Feb. 25, 1928. FRC grants first TV license to Jenkins Laboratories for W3XK at 1519 Connecticut Ave. NW Washington. On air 7/2/28? 6.42 MHz, 48 lines. (In 1929 it was authorized to move the transmitter to between Silver Spring and Wheaton. The station ceased to operate on Oct. 31, 1932.)

Apr. 1928. W2XBS New York, RCA, begins in the laboratory.

May 11, 1928. The first regular schedule of TV programming is begun by General Electric in Schenectady. Programs are transmitted Tuesday, Thursday, and Friday afternoons from 1:30 to 3:30 p.m., using 24 lines.

July 1928. These stations are on the air on this date, according to John Ross: W2XBU Beacon NY (Harold E. Smith); W2XBV New York (RCA); W2XBW Bound Brook NJ (RCA); W2XAV East Pittsburgh (Westinghouse); W4XA White Haven TN; W6XC Los Angeles.

July 2, 1928. Charles F. Jenkins begins broadcasting the first regular telecasts designed to be received by the general public.

July 12, 1928. First televised tennis match.

July 21, 1928. Boston Post reports W1XAY Lexington MA has been licensed.

Aug. 13, 1928. WRNY Coytesville NJ becomes the first standard radio station to transmit a television image (the face of Mrs. John Geloso). It was a 1.5 square inch image enlarged by a magnifying glass to three inches so it could be viewed by 500 persons at Philosophy Hall at New York University. Station also operated W2XAL New York, 9.705 MHz. (WRNY broadcast sight and sound alternately rather than simultaneously. Viewers would first see the face of a performer and a few seconds later would hear the voice. The performances took place for 5 minutes every hour and were designed to lure the radio audience into buying "televisor" sets from Pilot. [Tube: The Invention of Television, by Fisher])

Aug. 22, 1928. WGY simulcasts on radio and TV (WGY, 2XAF and 2XAD) Al Smith accepting the Democratic presidential nomination. This was the first over-the-air remote pickup and the first TV news event.

Sept. 11, 1928. First play broadcast by television, "The Queen's Messenger," on W2XAD. (Sound was also broadcast over WGY radio.) Video was on 21.4 meters; sound was on 31.96 meters. The event was reported on page 1 of the *New*

York Times the next day. (During 1928, Ernest Frederik Werner Alexanderson of General Electric transmitted daily TV tests over W2XAD.)

Sept. 11, 1928. First TV signal in Buffalo, on WMAK in Kenmore

Late Oct. 1928. W1XAY* Lexington MA. (The station was licensed to J. Smith Dodge and C. F. Jenkins. J. Smith Dodge was a former engineer for WNAC and former announcer at WGI. Carl S. Wheeler was also involved in founding the station. Station basically broadcast WLEX's radio programming. The station remained on the air sporadically until the end of March 1930.)

1929. Milton Berle appears in an experimental TV broadcast. Film of the appearance survives.

1929. W2XBS (RCA) begins two-hour daily broadcasts from Van Cortlandt Park.

Mar. 27, 1929. W2XCL* Brooklyn NY (Pilot Radio and Tube Corp.) begins operating.

Mar. 30, 1929. Radio Service Bulletin lists these new stations: W9XAO Chicago IL (Nelson Brothers Bond and Mortgage Co.) 2.0-2.1 MHz, 500 watts; W2XCR Jersey City NJ (Jenkins Television Corporation) 2.1-2.2 MHz, 5000 watts; W2XCL Brooklyn NY (Pilot Electric Manufacturing Co.) 2.0-2.1, 2.75-2.85 MHz, 250 watts; W2XCO New York (RCA) 2.1-2.2 MHz, 5000 watts; W2XR New York (John V. L. Hogan), 500 watts (visual broadcasting and experimental); W2XCW Schenectady (General Electric) 2.1-2.2 MHz 20,000 watts.

April 1929. W1WX Boston begins experimental broadcasts two times a day with 100 watts. [These broadcasts continued until December, when the call was changed to W1XAV. The licensee of W1WX and W1XAV, Shortwave and Television Laboratory, Inc., was founded on 5 December 1928 by A. M. "Vic" Morgan, Hollis Baird, and Butler Perry. The company was officially dissolved on 1 January 1935, but by that time it existed only on paper, since Baird, Perry, and Morgan had all moved to General Television Corp, which they acquired on 8 March 1934. This information provided by Donna Halper, from state government records.]

Apr. 30, 1929. Radio Service Bulletin lists these new stations: W1XB Somerville MA (General Industries Co.) 500 watts (experimental and visual broadcasting).

May 11, 1929. The "first regularly scheduled TV broadcasts" begin (one source), three nights per week.

May 31, 1929. Radio Service Bulletin lists these new stations: W9XR Downers Grove IL (Great Lakes Broadcasting Co.) 2.1-2.2, 2.85-2.95 MHz, 5000 watts; W2XCP Allwood NJ (Freed-Eisemann Radio Corp.) 2.0-2.1, 2.85-2.95 MHz, 2000 watts (visual broadcasting and experimental).

June 27, 1929. First public demonstration of color TV, by H. E. Ives and his colleagues at Bell Telephone Laboratories in New York. The first images are a bouquet of roses and an American flag. A mechanical system was used to transmit 50-line color television images between New York and Washington.

July 1929. WOKO Poughkeepsie NY begins transmitting TV as W2XBU in late July 1929.

July 31, 1929. Radio Service Bulletin lists these new stations: W9XAA Chicago (Chicago Federation of Labor), 6.08, 11.84, 17.78 MHz, 500 watts.

Aug. 31, 1929. Radio World reports WENR radio Chicago receives a license for a 5000 watt TV station (W9XR?).

Sept. 30, 1929. Radio Service Bulletin lists these new stations: W1XAV Boston (Shortwave and Television Laboratory Inc.) 2.1-2.2 MHz, 500 watts; W3XL Bound Brook NJ (RCA Communications Inc.) 2.85-2.95 MHz, 30,000 watts.

Oct. 31, 1929. Radio Service Bulletin lists these new stations: W10XU Airplane (Jenkins Laboratories), 2.0-2.1 MHz, 10 watts; W10XZ Airplane (C. Francis Jenkins), 1.608, 2.325, 3.088, 4.785, 6.335 MHz, 6 watts.

Nov. 30, 1929. Radio Service Bulletin lists these new stations: W9XAP Addison IL (Chicago Daily News), 2.75-2.85

MHz, 5000 watts.

1930. Don Lee's television station opens in Los Angeles.

Jan. 1930. W1XAV* Boston

Mar. 1930. (End of March) W1XAY Lexington MA goes off the air, leaving W1XAV temporarily as the only mechanical TV station in Boston.

Mar. 31, 1930. Radio Service Bulletin lists these new stations: W2XBO Long Island City NY (United Research Corporation), 2.0-2.1, 2.75-2.85 MHz, 5000 watts; W8XT East Pittsburgh PA (Westinghouse Electric and Manufacturing Co.), 660 kHz, 25,000 watts.

Apr. 30, 1930. Radio Service Bulletin lists these new stations: W2XAP Jersey City NJ (Jenkins Television Corporation), 2.75-2.85 MHz, 250 watts.

May 22, 1930. An audience at Proctor's Theatre in Schenectady becomes the first to see closed-circuit TV projected onto a big screen.

May 31, 1930. Radio Service Bulletin lists these new stations: W10XAL United States (portable) (National Broadcasting Co.), 2.392 MHz, 50 watts; W10XAO United States (portable) (National Broadcasting Co.), 1.584 MHz, 50 watts.

Aug. 9, 1930. An Associated Press item has: "Station WMAQ's new television transmitter is to be on the air some time this month. The first regularly scheduled sight programs in conjunction with a sound broadcast station are to provide studio scenes which are to be transmitted three times a day. The television station is W9XAP, 2800 kilocycles."

Aug. 20, 1930. The first demonstration of home reception of television, a half-hour broadcast from the Jenkins station, W2XCR in Jersey City, and the de Forest station W2XCD in Passaic. Two sets were available in public places and one in a press suite. (Or Aug. 25 1930)

July 30, 1930. NBC opens W2XBS, New York. W2XBS started as an RCA lab rig in Apr. 1928 and was used for big screen theater tests as early as Jan. 1930. In July 1930 it was put in charge of NBC broadcast engineers.

Nov. 1930. W9XAP Chicago (Chicago Daily News) broadcast the senatorial election returns. Press release claimed it was the first time a senatorial race, complete with charts showing the standings of the candidates as the votes were tallied, was ever televised.

Dec. 7, 1930. W1XAV Boston broadcasts a video portion of a CBS radio program, *The Fox Trappers* orchestra program, sponsored by I. J. Fox Furriers. Included was what is sometimes called the first television commercial, which was prohibited by FRC regulations. [However, Donna Halper reports that as early as 1928 W1XAY in Lexington Mass. simulcast one hour of WLEX radio daily, and there is a mention of commercials in that hour. She also reports that Big Brother Bob Emery made an appearance on W1XAV, as did several other Boston area announcers, when W1XAV tried on a few occasions in 1930-31 to telecast a Boston radio station's programming. They first tried WEEI and then WNAC. The FRC took a dim view of their attempts to telecast a network program, however, since there was no agreement yet about whether or not experimental TV stations could run network commercials, so the FRC advised them not to try it.]

Dec. 13, 1930. Radio World lists W1XY Lawrence MA (Pilot).

1931. The following stations are listed with 1931 start dates in the 1950 *Broadcasting* Yearbook: ch. 2, KTSL, Hollywood, CA

Feb. 24, 1931. *New York Times* article (p. 32) refers to daily television broadcasts which began the previous evening on W2XCD (De Forest) in Passaic.

Apr. 1931. W2XCR, Jenkins second station, moves from its original site in Jersey City to 655 Fifth Avenue in New York. The station now had 5000 watts power, and could broadcast 60-line pictures rather than 48-line pictures.

Apr. 26, 1931. Jenkins Television Corp. gives a public demonstration on W2XCR, beginning a regular schedule of four hours per day, which lasted into early 1932. Simulcast with WGBS radio.

May 1, 1931. The first marriage is broadcast on TV, on W2XCR New York.

July 21, 1931. W2XAB New York (CBS) begins broadcasting the first regular seven-day-per-week TV broadcasting schedule in the U. S., 28 hours per week with live pickups and a wide variety of programs. The first broadcast included Mayor James J. Walker, Kate Smith, and George Gershwin.

Sept. 4, 1931. W9XD (later WTMJ-TV) Milwaukee licensed. (The first application for a TV license was filed May 5, 1930.)

Oct. 1931. W1XG* Boston (Shortwave and Television Laboratory). This was a VHF station with 30 watts. Chief Engineer was Hollis Baird; studios were at 70 Brookline Ave.

Oct. 18, 1931. British television pioneer John Logie Baird appears on WMCA radio to discuss a proposed television station to be operated jointly by his company and WMCA. (Radio Pictures Inc. objected to the proposed station since the applicant was a foreign organization, and the FRC denied the application.)

Oct. 30, 1931. NBC puts a TV transmitter atop the Empire State Building. The first experimental TV broadcast from the ESB was on Dec. 22, 1931.

1932. RCA demonstrates an all-electronic television system, originally with 120 lines.

Aug. 7, 1932. *New York Times* article describes reception reports received by W2XAB.

Nov. 8, 1932. CBS TV reports on the presidential election to an estimated 7500 sets, or 9000 sets according to CBS's estimate. Program consisted of commentary, return charts, still cartoons of politicians.

Jan. 23, 1933. W9XAL Kansas City first day of broadcasting. [*Journal-Post News Flashes* with John Cameron Swayze begin the following day at 12:00 p.m. as a daily program simulcast on KMBC radio.]

Jan. 25, 1933. W9XK Iowa City, Iowa, begins mechanical TV broadcasts, with sound on its radio station WSUI. The program included a brief overview of the University of Iowa, a musical number, and a drama sketch. W9XK was the first educational station with regularly- scheduled programs.

Feb. 20, 1933. CBS suspends television broadcasts.

Mar. 10, 1933. W6XAO (later KTSL, for Thomas S. Lee, then KNXT and KCBS-TV) Los Angeles begins full-scale broadcasting. An earthquake struck Los Angeles the same day, and films of the damage were broadcast the next day. (W6XAO was the first broadcasting station to show a current full-length motion picture, The Crooked Circle.) According to *Broadcasting* magazine, W6XAO started Oct. 4, 1939 and the call was changed to KTSL in 1949 and KNXT in 1951. Another source gives May 6, 1948, as the start date for KTSL.

June 27, 1934. W1XAV Boston is discontinued. The FCC told Shortwave and Television Laboratory that the world didn't need two mechanical TV stations. One license was accepted, the other was denied, effective 13 July 1934. At this point Shortwave and Television changed its name to General Television Corp. and switched from a mechanical to an electronic system.

Dec. 1934. Philo Farnsworth demonstrates a non-mechanical television system.

1935. (Mid 1935) W1XG Boston changes from a mechanical to an electronic system.

April-May 1935. *Short Wave Listener Magazine* for April-May 1935 lists these television stations:

2000-2100 kc.
W2XDR Long Island City NY
W8XAN Jackson MI
W9XK Iowa City IA
W9XAK Manhattan KS
W9XAO Chicago IL
W6XAH Bakersfield CA

2750-2850 kc.
W3XAK portable
W9XAP Chicago IL
W2XBS Baltimore MD
W9XAL Kansas City MO
W9XG West Lafayette IN
W2XAB New York NY

42000-56000, 60000-86000 kc.
W2XAX New York NY
W6XAO Los Angeles CA
W9XD Milwaukee WI
W2XBT portable
W2XF New York NY
W3XE Philadelphia PA
W3XAD Camden NJ
W10XX portable and mobile [Vicinity of Camden NJ]
W2XDR Long Island City NY
W8XAN Jackson MI
W9XAT portable
W2XAD New York NY
W2XAG portable
W1XG Boston MA
W9XK Iowa City IA

Regarding W6XAH in Bakersfield, listed above, Mark D. Luttrell writes that it "was an experimental television station that was operated by Pioneer Mercantile Company in Bakersfield during 1932. The station was an experimental effort by the Schamblin brothers--Frank, Leo and Charles. It has been reported in several publicattions as 'the first television station west of the Mississippi River.' Due to technical problems the work ended later that year and the company then focused on starting a radio station which went on the air as KPMC 1560 AM in 1933 from Bakersfield. The station was later sold and is now owned by Buckley Radio in Connecticut. ...My grandfather worked in management for the company."

June 29, 1936. 343-line TV transmitted from the Empire State Building on W2XBS, the first high-definition television.

July 7, 1936. NBC's first attempt at actual programming after 6 years of tests: a 30-minute variety show strictly for RCA licensees, speeches, dance ensemble, monologue, vocal numbers, and film clips.

Aug. 15, 1936. *Broadcasting* reports Philco Corp. demonstrates its system of television with seven-mile transmission of live and film subjects in 345-line images 9 1/2 by 7 1/2 inches.

Nov. 6, 1936. RCA displays 343-line TV for the press as part of NBC's tenth anniversary celebration.

Apr. 1, 1937. *Broadcasting* reports CBS applies for experimental video station in New York, plans to install RCA TV transmitter in Chrysler building tower and to construct special studios.

May 1937. Gilbert Seldes becomes the first TV critic, with an article "Errors of Television" in the *Atlantic Monthly.*

May 15, 1937. *Broadcasting* reports RCA demonstrates projection television, with images enlarged to 8 by 10 feet, at Institute of Radio Engineers convention.

Oct. 13, 1937. FCC adopts new television allocations: seven channels between 44 and 108 MHz (44-50, 50-56, 66-72,

78-84, 84-90, 96-102, and 102-108 MHz), and 12 additional channels from 156-194 MHz. The higher channels are earmarked for a time when workable tubes are devised for these frequencies.

May 31, 1938. W2XBS telecasts the movie *The Return of the Scarlet Pimpernel,* starring Leslie Howard; the staff projectionist played the last reel out of order, ending the film 20 minutes early. After this incident, NBC could not obtain first-run movies for many years.

Nov. 15, 1938. First telecast of an unscheduled event, a fire, on NBC's W2XBT. A mobile unit was in a park in Queens when a fire broke out on Ward's Island, across the river. (However on Apr. 24 1936 an outdoor scene of firemen answering an alarm was transmitted by RCA from Camden, New Jersey.)

1939. The following stations are listed with 1939 start dates in the 1950 *Broadcasting* Yearbook: ch. 4, WNBT, New York, NY; ch. 4, WRGB, Schenectady, NY

Apr. 30, 1939. President Roosevelt is the first President to appear on television, from the New York World's Fair on W2XBS, now transmitting on 45.25 MHz visual and 49.75 MHz aural.

May 17, 1939. A Princeton-Columbia baseball game is telecast from Baker Field in New York by W2XBS, the first sports telecast 4 p.m. to 6:15 p.m. Bill Stern was the announcer.

June 1, 1939. First heavyweight boxing match televised, Max Baer vs Lou Nova, form Yankee Stadium.

Aug. 26, 1939. First major league baseball game telecast, a double-header between the Cincinnati Reds and the Brooklyn Dodgers at Ebbets Field, Brooklyn, announcer Walter L. "Red" Barber or Bill Stern (sources differ), on W2XBS.

Sept. 30, 1939. First televised college football game, Fordham vs Waynesburg, at Randall's Island, New York, on W2XBS.

Oct. 22, 1939. First NFL game is televised by W2XBS: Brooklyn Dodgers vs Philadelphia Eagles at Ebbetts Field in Brooklyn. Play by play announcer was Allen (Skip) Walz.

Nov. 10, 1939. W2XB (or W2XD?) (WRGB)* Schenectady NY (became WRGB in 1942, on ch. 3 (?), moved from ch. 4 to ch. 6 in 1954).

Jan. 1940. The FCC holds public hearings on television.

Feb. 1, 1940. The first NBC network television program, from W2XBS to Schenectady.

Feb. 25, 1940. First hockey game televised, Rangers vs Canadians, on W2XBS, from Madison Square Garden.

Feb. 26, 1940. The first quiz show, Spelling Bee, on WRGB.

Feb. 28, 1940. FCC announces a limited commercial television service will be authorized beginning on September 1. Standards were not set, pending further research until the best system could be determined. (Two days later the FCC suspended its authorization for commercial service, declaring that the marketing campaign of RCA disregarded the commission's findings and recommendations.)

Feb. 28, 1940. First basketball game televised, from Madison Square Garden, Fordham vs the University of Pittsburgh, by W2XBS.

Mar. 10, 1940. W2XBS utilizes the Metropolitan Opera to broadcast a scene from an opera from its television studio. The audio portion is carried over radio station WJZ.

Mar. 15, 1940. *Broadcasting* reports RCA cuts price of television sets, starts sales drive intended to put a minimum of 25,000 in homes in service area of NBC's New York video station.

Apr. 1, 1940. *Broadcasting* reports FCC suspends order for "limited commercial" operation of TV, censures RCA for sales efforts which are seen as an attempt to freeze TV standards at present level, calls new hearing; critics call move "usurpation of power."

Apr. 13, 1940. W2XWV (WABD) licensed to DuMont.

June 1940. W2XBS (NBC) covers the Republican National Convention from Philadelphia for 33 hours over five days.

Aug. 1940. W9XBK (WBKB)* Chicago (Balaban & Katz/Paramount).

Aug. 29, 1940. Peter Goldmark of CBS announces his invention of a color TV system.

Sept. 3, 1940. First showing of high definition color TV, by W2XAB, transmitting from the Chrysler Building, using 343 lines. This was the first telecast of any kind from CBS since the closing of their scanner station 2/2/33.

1941. W6XYZ (KTLA)* Los Angeles.

1941. The following stations are listed with 1941 start dates in the 1950 *Broadcasting* Yearbook: ch. 4, WBKB, Chicago, IL; ch. 2, WCBS-TV, New York, NY; ch. 3, WPTZ, Philadelphia, PA.

Mar. 1, 1941. *New York Times* lists: Television Sight: 51.25, Sound 55.75; W2XBS 2-5 p.m. test pattern; 730-830 p.m test pattern; 830 p.m. pick up of... track meet, Madison Square Garden

Mar. 8, 1941. NTSC formally recommends TV standards to the FCC, calling for 525 lines and 30 frames per second.

Apr. 30, 1941. The FCC approves the NTSC standards and authorizes commercial TV to begin on July 1.

May 2, 1941. 10 stations granted commercial TV licenses effective July 1. Stations were required to broadcast 15 hours per week. W2XBS received license number 1.

June 30, 1941. *Broadcasting* reports Bulova Watch Co., Sun Oil Co., Lever Bros. Co. and Procter & Gamble sign as sponsors of first commercial telecasts on July 1 over WNBT New York.

July 1, 1941. Commercial TV authorized.

July 1, 1941 W2XBS New York NY becomes a commercial station, changes call to WNBT (later calls WRCA-TV, WNBC-TV). At 1:29 p.m., General Mills sponsors a Brooklyn Dodgers-Philadelphia Phillies game, followed by the "Sunoco Newscast" with Lowell Thomas. At 9:15 p.m., "Uncle Jims Question Bee," hosted by Bill Slater and sponsored by Spry, made its one-and-only appearance and, at 9:30, Ralph Edwards hosted "Truth Or Consequences," simulcast on radio and TV and sponsored by Ivory Soap. This was the first game show broadcast on TV. The world's first (legal) TV commercial for Bulova watches occurs at 2:29:10 superimposed over a test pattern. [According to microfiche records at the FCC, WNBT was granted a C.P. on 6/17/41 for Channel 1 (50-56 mhz.), effective 7/1/41. License to cover the C.P. granted 6/17/41, eff. 7/1/41. First operation was granted to be effective 7/1/41. The first listed call letters were WNBT. They changed to WRCA on 10/18/54 and to WNBC on 5/22/60.]

July 1, 1941. CBS station in New York changes call to WCBW (later call WCBS-TV), goes on the air with the first news telecast at 2:30 p.m. This was the station's first actual programming other than test patterns and the color demo. At 3:25 p.m., WCBW broadcasts "Jack and the Beanstalk," narrated by Lydia Perera, Ann Francis and animator John Rupe. Mr. Rupe drew cartoons to accentuate the narrative in a program that ran each afternoon for the first several months of the stations operation. [According to microfiche records at the FCC, WCBW was granted a C.P. on 6/24/41 for Channel 2 (60-66 mhz). Program tests authorized to commence on 7/1/41. License to cover the C.P. granted 3/10/42. The date of first operation is shown as 10/29/41. The first listed call letters were WCBW. They changed to WCBS on 11/1/46.]

July 1, 1941. W3XE Philadelphia becomes WPTZ Philadelphia PA (later call KYW-TV). The station was then off during the war. (However *Broadcasting* magazine and the 1946 *Broadcasting* Yearbook give Sept. 1941 as the date for

WPTZ.)

July 1, 1941. *New York Times* lists: WNBT, (2) WCBW, (4) W2XWV

Aug. 7, 1941. The first audience-participation program, a program of charades, is broadcast on WNBT.

Oct. 12, 1941. *New York Times* lists: (1) WNBT, (2) WCBW

1942. The following stations are listed with 1942 start dates in the 1950 *Broadcasting* Yearbook: ch. 5, KTLA-TV, Hollywood, CA

Jan. 6, 1942. FCC grants permission to Du Mont Laboratories to build a commercial TV station, to operate on 78-84 MHz (then channel 4).

Mar. 1, 1942. W2XB Schenectady changes call to WRGB (for Walter R. G. Baker, GE executive.)

Mar. 1, 1942. *New York Times* lists (1) WNBT

Apr. 13, 1942. *Broadcasting* reports minimum program time required of TV stations is cut from 15 hours to four hours a week for war period.

June 28, 1942. [This is the date WABD was established according to the 1946 *Broadcasting* Yearbook. Station would have been W2XWV at the time. However apparently programs for W2XWV were listed in the *New York Times* before this date.]

Oct. 13, 1943. WBKB* Chicago

Sept. 19, 1943. *New York Times* lists: (4) W2XWV

Nov. 7, 1943. *New York Times* lists: (4) W2XWV

Dec. 23, 1943. The first complete opera, Hansel and Gretel, is telecast, by WRGB Schenectady.

Jan. 2, 1944. *New York Times* lists: (4) W2XWV

May 1, 1944. *Broadcasting* reports CBS proposes starting off postwar TV with high-definition, full-color pictures, broadcast on 16 MHz bands.

May 2, 1944. W2XWV becomes a commercial station, changes call to WABD New York NY (later calls WNEW-TV, WNYW-TV). At 9 p.m. station broadcasts "Your World Tomorrow," a 30-minute show consisting of news about World War II and entertainment segments featuring singer Jessica Dragonette. The program was sponsored by Dun22 Plastics. [According to microfiche records at the FCC, WABD was granted a C.P. on 5/2/44 for Channel 4 (78-84 mhz.) License to cover the C.P. granted on 5/2/44. The first listed call letters were WABD. Call changed to WNEW on 9/7/58.]

May 22, 1944. *Broadcasting* reports single ownership of five TV stations is permitted by FCC, up from former limit of three.

Oct. 2, 1944. *Broadcasting* reports FCC opens hearings on postwar allocations with testimony of Radio Technical Planning Board that agreement had been reached to recommend the 41-56 MHz band for FM, TV allocations to extend upwards from there.

Oct. 9, 1944. *Broadcasting* reports CBS, in testimony presented by Paul Kesten, executive vice president, asks for more space for FM, with TV being moved to UHF part of spectrum above 300 MHz.

1945. The following stations are listed with 1945 start dates in the 1950 *Broadcasting* Yearbook: ch. 5, WTTG,

Washington, DC

Jan. 15, 1945. FCC announces allocations proposal for spectrum above 25 MHz: 44-50 Television; 50-54 Amateur; 54-84 Television 84-88 Educational FM broadcasting; 88-102 Commercial FM broadcasting; 102-108 (Non-Government but not yet determined).

May 21, 1945. FCC announces allocation of spectrum above 25 MHz with exception of 44-108 MHz but delays decision as to placement of FM for propagation studies to be made by FCC and industry engineers. The 44-108 MHz spectrum is to be allocated, following tests, on one of the following three alternatives:

> Alternative 1: 44- 48 Amateur; 48-50 Facsimile; 50-54 Educational FM broadcasting; 54-68 Commercial FM broadcasting; 68-74 Television; 74-78 Non-Government fixed & mobile -aero markers on 75 MHz to remain as long as required; 78-108 Television, fixed, mobile [shared].
>
> Alternative 2: 44-56 Television; 56-60 Amateur [the same as pre-WW2]; 60-66 Television; fixed; mobile [shared]; 66-68 Facsimile; 68-72 Educational FM broadcasting; 72-86 Commercial FM broadcasting. aero markers remain on 75 MHz as long as required; 86-92 Television; 92-104 Television, fixed, mobile [shared]; 104-108 Non-Government fixed and mobile.
>
> Alternative 3: 44-50 Television, fixed, mobile [shared] 50-54 Amateur; 54-78 Television, fixed, mobile [shared] aero markers remain on 75 MHz as long as required; 78-84 Television; 84-88 Educational FM broadcasting; 88-102 Commercial FM broadcasting; 102-104 Facsimile; 104-108 Non-Government fixed and mobile.

June 4, 1945. *Broadcasting* reports in joint request, FM Broadcasters Inc. and Television Broadcasters Association ask FCC to allocate 44-108 MHz immediately: FM to get 50-54 MHz for educational use, 54-68 MHz for commercial operation; TV to receive 68-74 MHz and 78-108 MHz.

June 27, 1945. FCC allocates 88-92 educational FM; 92-106 commercial FM; 106-108 facsimile broadcasting; 92.1-93.9 community; 94.1-103.9 metro; 104.1-105.9 rural; TV channel 1 44-50; TV channel 2-6 according to the present scheme.

Aug. 9, 1945. WABD New York and WTTG Washington are linked for a network broadcast, according to Alan E. Ruiter, biographer of Allen B. Dumont.

Sept. 20, 1945. WABD(TV) signs off, channel 4, 78-84 MHz; plans to return Dec. 15 on channel 5, 76-82 MHz

Sept. 24, 1945. *Broadcasting* reports FCC distributes 13 VHF channels among 140 markets

1946. The beginning of network television as WNBT begins feeding its programs to Philadelphia and Schenectady on a more-or-less regular basis. (Some programs were fed from New York to both cities as early as 1941.)

Jan. 15, 1946. A directory of U. S. commercial television stations as of this date (from the 1946 *Broadcasting Yearbook* lists:

WBKB	Chicago	66-72 MHz now; channel 4 on Mar. 1	Established 1943
WABD	New York	78-84 MHz now; channel 5 on Mar. 1	Established June 28, 1942
WCBW	New York	60-66 MHz now; channel 2 on Mar. 1	Established July 1, 1941
WNBT	New York	50-56 MHz now; channel 4 on Mar. 1	Established July 1, 1941
WRGB	Schenectady	66-72 MHz now; channel 4 on Mar. 1	Established Nov. 10, 1939
WPTZ	Philadelphia	66-72 MHz now; channel 3 on Mar. 1	Established Sept. 1941
KTSL	Hollywood	50-56 MHz now; undesignated on Mar. 1	Has CP
WTZR	Chicago	50-56 MHz now; undesignated on Mar. 1	Has CP

WMJT	Milwaukee	66-72 MHz now; undesignated on Mar. 1	Has CP

Jan. 17, 1946. W18XGZ Charleston seeks license to cover experimental TV (Zaharis)

Jan. 31, 1946. WTZR* Chicago IL (Zenith).

Feb. 4, 1946. *Broadcasting* reports CBS demonstrates color-television film program broadcast from its new UHF transmitter; says with industry cooperation color for the home can be available within a year.

Feb. 18, 1946. *Broadcasting* reports first Washington-New York telecast through AT&T coaxial cable is termed success by engineers and viewers.

Feb. 25, 1946. New TV channel assignments go into effect; among the changes: WCBW from 60-66 to (2) and WNBT from 50-56 to (4).

Mar. 1, 1946. Modern channel allocation system goes into effect with channel 1 44-50 MHz, channel 2 54-60 MHz, etc.; WCBW(TV) and WNBT(TV) go off the air for channel conversions (WNBT resumes May 9 on channel 4)

Apr. 22, 1946. *Broadcasting* reports CBS color-television program is successfully transmitted over 450-mile coaxial cable link from New York to Washington and back.

May 9, 1946. First variety show premieres, *Hour Glass,* on NBC. The show ran 10 months.

June 19, 1946. First televised heavyweight title fight (Joe Louis vs Billy Conn), broadcast from Yankee Stadium, is seen by the largest television audience to see a fight. 141,000.

Sept. 6, 1946. W9XBK changes its call to WBKB(TV) Chicago IL, ch. 4 (later ch. 2; later call WBBM-TV).

Sept. 30, 1946. *Broadcasting* reports CBS petitions FCC to adopt standards and authorize commercial operation of color-television stations in UHF frequencies immediately.

Oct. 1, 1946. *New York Times* lists (2) WCBW, (4) WNBT, (5) WABD

Oct. 2, 1946. *Faraway Hill* airs on the DuMont network, becoming the first TV network soap opera.

Nov. 1946. WTTG* Washington (DuMont), according to one source; however, the 1954 *Telecasting Yearbook* gives Jan. 1 1947 and *Broadcasting* magazine gives January 1947. The call stands for Thomas T. Goldsmith, DuMont's chief engineer. (Station was originally W3XWT. Starting May 28, 1945, it had given test pattern and recorded announcements asking for reception reports. None was received for 3 months. The U. S. Navy finally picked it up while monitoring for "suspicious" radio signals.)

Nov. 1, 1946. WCBW changes call to WCBS-TV.

Nov. 4, 1946. *Broadcasting* reports RCA demonstrates all-electronic system of color TV.

Nov. 11, 1946. *Broadcasting* reports Bristol-Myers is the first advertiser to sponsor a television-network program, *Geographically Speaking,* which started Oct. 27 on NBC-TV's two-station network.

Dec. 24, 1946. The first church service telecast, Grace Episcopal Church in New York, on WABD on the New York-Philadelphia-Washington network.

1947. The following stations are listed with 1947 start dates in the 1950 *Broadcasting* Yearbook: ch. 4, WNBW, Washington, DC; ch. 7, WMAL-TV, Washington, DC; ch. 2, WMAR-TV, Baltimore, MD; ch. 4, WWJ-TV, Detroit, MI; ch. 5, KSD-TV, St. Louis, MO; ch. 5, WABD, New York, NY; ch. 5, WEWS, Cleveland, OH; ch. 6, WFIL-TV,

Philadelphia, PA; ch. 3, WTMJ-TV, Milwaukee, WI

Jan. 22, 1947. W6XYZ changes call to KTLA(TV)* (5), first commercial TV west of Chicago. A 30-minute show is telecast from the Paramount TV stage, featuring Bob Hope, Jerry Colonna, Dorothy Lamour, and William Bendix. The FCC microfiche records show the station was granted a Special Temporary Authorization for commercial operation on 1/9/47 and that the date of its first commercial license was 2/9/53.

Jan. 30, 1947. The FCC declares that the CBS color system is "premature" and requires further testing before it could be approved.

Feb. 8, 1947. KSD-TV* St. Louis MO, ch 5.

Mar. 4, 1947. WWDT (WWJ-TV) Detroit MI, ch 4, experimental (regular programs June 3).

Mar. 24, 1947. *Broadcasting* reports FCC denies CBS petition for commercial color-TV operation, sends color back to labs for continued search for "satisfactory" system.

May 7, 1947. *Kraft Television Theater* premieres on NBC, the first regularly scheduled drama series on a network.

June 27, 1947. WNBW-TV (WRC-TV)* Washington DC (was W3XNB).

Sept. 13, 1947. WFIL-TV* Philadelphia PA, ch. 6.

Sept. 30, 1947. The opening game of the World Series is the first World Series game to be telecast, between the New York Yankees and the Brooklyn Dodgers at Yankee Stadium. The game was carried by WABD, WCBS-TV, and WNBT in New York, and was also telecast in Philadelphia, Schenectady, and Washington. The 1947 World Series brought in television's first mass audience, and was seen by an estimated 3.9 million people, mostly in bars [Tim Brooks].

Oct. 3, 1947. WMAL-TV (WJLA-TV)* Washington DC, ch. 7, the first VHF high band station.

Oct. 5, 1947. First presidential address telecast from the White House: Truman speaks about food conservation and the world food crisis, proposing meatless Tuesdays and eggless and poultry-less Thursdays

Oct. 17, 1947. WEWS* Cleveland OH.

Oct. 27, 1947. WMAR-TV* Baltimore MD, ch. 2.

Nov. 6, 1947. *Meet the Press* first appears as a local program in Washington.

Nov. 17, 1947. *Broadcasting* reports television network service extends to Boston with the opening of AT&T radio relay system between that city and New York.

Nov. 20, 1947. *Meet the Press* first network telecast. (Became a weekly program on Sept. 12, 1948.)

Dec. 3, 1947. WTMJ-TV* Milwaukee WI, ch. 3 (later ch. 4) (previous experimental operation as W9XMJ and W9XD.]

Dec. 17, 1947. WEWS* Cleveland OH, ch. 5.

Dec. 27, 1947. *Puppet Television Theater* (later called *Howdy Doody Time*), debuts on NBC TV with Buffalo Bob Smith. It was carried by six stations.

1948. The following stations are listed with 1948 start dates in the 1950 *Broadcasting* Yearbook: ch. 9, KFI-TV, Los Angeles, CA; ch. 13, KLAC-TV, Los Angeles, CA; ch. 5, KPIX, San Francisco, CA; ch. 6, WNHC-TV, New Haven, CT; ch. 8, WSB-TV, Atlanta, GA; ch. 7, WENR-TV, Chicago, IL; ch. 9, WGN-TV, Chicago, IL; ch. 5, WAVE-TV, Louisville, KY; ch. 6, WDSU-TV, New Orleans, LA; ch. 4, WBZ-TV, Boston, MA; ch. 7, WNAC-TV, Boston, MA; ch.

11, WBAL-TV, Baltimore, MD; ch. 13, WAAM, Baltimore, MD; ch. 7, WXYZ-TV, Detroit, MI; ch. 5, KSTP-TV, St. Paul, MN; ch. 13, WATV, Newark, NJ; ch. 4, KOB-TV, Albuquerque, NM; ch. 4, WBEN-TV, Buffalo, NY; ch. 7, WJZ-TV, New York, NY; ch. 11, WPIX, New York, NY; ch. 8, WHEN, Syracuse, NY; ch. 4, WLWT, Cincinnati, OH; ch. 4, WNBK, Cleveland, OH; ch. 13, WSPD-TV, Toledo, OH; ch. 10, WCAU-TV, Philadelphia, PA; ch. 4, WMCT, Memphis, TN; ch. 5, WBAP-TV, Fort Worth, TX; ch. 4, KDYL-TV, Salt Lake City, UT; ch. 6, WTVR, Richmond, VA; ch. 5, KING-TV, Seattle, WA

[WLWT was previously W8XCT.]

1948. ABC broadcasts the series *On the Corner* on four stations. ABC considers this its first network show, although an earlier show, *Play the Game,* produced by ABC using DuMont's facilities, was seen on a network.

1948. CBS begins network programming.

Jan. 1, 1948. *New York Times* lists: (2) WCBS-TV, (4) WNBT, (5) WABD.

Jan. 18, 1948. The Original Amateur Hour with Ted Mack debuts.

Feb. 9, 1948. WLWT(TV)* Cincinnati OH, ch. 4 (later ch. 5).

Mar. 1, 1948. WCAU-TV* Philadelphia PA (was W3XAU).

Mar. 11, 1948. WBAL-TV* Baltimore MD, ch. 11.

Mar. 15, 1948. WCAU-TV* Philadelphia PA, ch. 10.

Apr. 5, 1948. WGN-TV* Chicago IL, ch. 9.

Apr. 22, 1948. WTVR (WTVR-TV)* Richmond VA, ch. 6.

Apr. 27, 1948. KSTP-TV* St. Paul-Minneapolis MN, ch. 5.

May 6, 1948. KTSL(TV)* (KNXT) Los Angeles CA, ch. 2.

May 10, 1948. *Broadcasting* reports FCC orders into effect earlier proposal assigning TV ch. 1 (44-50 mc) to nongovernmental fixed and mobile services, denying FM spokesmen's pleas for that channel for use in FM network relaying; gives FM stations in 44-50 mc band until end of year to move to 88-108 mc; issues proposed new expanded TV allocation table; calls hearing on feasibility of TV use of frequencies above 475 mc; proposes required minimum hours of TV station operation be scaled from 12 hours a week for first 18 months to 28 hours a week after 36 months.

May 14, 1948. WBEN-TV* Buffalo NY, ch. 4.

May 15, 1948. WATV(TV)* (WNTA-TV, WNDT-TV, WNET-TV)* Newark NJ. [According to an Internet web page, WATV began licensed operations on Jan. 2 1948.]

June 8, 1948. Milton Berle Show premieres on NBC.

June 9, 1948. WBZ-TV* Boston MA, ch. 4.

June 15, 1948. WPIX-TV* New York NY, ch. 11; WNHC-TV* New Haven (ch. 6, moved to channel 8 in December, 1953; became WTNH in 1972) (was affiliated with NBC, CBS with a little ABC and DuMont programming as well; exclusively an ABC affiliate since September, 1955)

June 20, 1948. *Toast of the Town,* with Ed Sullivan, premieres on CBS, with guests Dean Martin and Jerry Lewis. (The name was changed to the *Ed Sullivan Show* on September 18, 1955.)

June 21, 1948. First network telecast of political conventions; both parties meet in Philadelphia that year; telecasts reach cities connected to network lines with Philadelphia. NBC sends edited kinescope recordings for next-day telecasts on those stations not yet connected to the network.

June 21, 1948. WNAC-TV (WNEV-TV, WHDH)* Boston MA, ch. 7.

July 21, 1948. WSPD-TV* Toledo OH, ch. 13.

July 30, 1948. Professional wrestling premieres on prime-time network TV (DuMont).

July 1, 1948. KDYL-TV (KCPX-TV)* Salt Lake City UT, ch. 4.

Aug. 10, 1948. WJZ-TV (WABC-TV)* New York NY, ch. 7, 7 p.m. The first broadcast originated from the Palace Theater on Broadway with a four-hour show. The opening act was Carlton Emmys dog act, followed by stars such as Ray Bolger, Beatrice Lillie, Pat Rooney, Ella Logan, James Barton, Willie West and McGinty, Buck and Bubbles, Walter "Dare" Wahl, Gus Van, Henry Morgan, Raye and Naldi, and Paul Whiteman and his orchestra.

Aug. 10, 1948. *Candid Camera* debuts on ABC.

Aug. 15, 1948. The first network nightly newscast, CBS-TV News, debuts on CBS with Douglas Edwards.

Aug. 25, 1948. KSEE (KFI-TV, KHJ-TV)* Los Angeles CA, ch. 9 (was W6XEA). However another source says KHJ-TV went on the air as KFI-TV on Oct. 6, 1948.

Aug. 27, 1948. Whitaker Chambers, appearing on *Meet the Press,* accuses Alger Hiss of being a communist.

Sept. 21, 1948. *Texaco Star Theater,* with Milton Berle, premieres on NBC (or Sept. 14)

Sept. 17, 1948. KLAC-TV* (KCOP-TV)* Los Angeles CA, ch. 13; WENR-TV (WBKB-TV, WLS-TV)* Chicago IL, ch. 7.

Sept. 29, 1948. WSB-TV* Atlanta GA, ch. 8. (With the merger in 1951 of *Atlanta Constitution* into *Atlanta Journal,* Cox took over the ch. 2 facility of *Constitution* and sold channel 8 to Broadcasting, Inc.)

Sept. 29, 1948. WBAP-TV* Fort Worth TX, ch. 5.

Sept. 30, 1948. FCC freezes new TV applications; channel 1 deleted, assigned to land mobile

Oct. 8, 1948. WNBY (WNBQ, WMAQ-TV)* Chicago, first telecast (a World Series game). *Broadcasting* magazine says WNBQ went on the air Sept. 1, 1948.

Oct. 9, 1948. WXYZ-TV* Detroit MI, ch. 7.

Oct. 24, 1948. WJBK-TV* Detroit MI, ch. 2.

Oct. 31, 1948. WNBK (KYW-TV, WKYC-TV)* Cleveland OH, ch. 4 (later ch. 3).

Nov. 2, 1948. WAAM-TV (WJZ-TV)* Baltimore MD, ch. 13.

Nov. 24, 1948. WAVE-TV* Louisville KY, ch. 5 (later ch. 3).

Nov. 25, 1948. KRSC-TV (KING-TV)* Seattle WA, ch. 5.

Nov. 27, 1948. WDTV (KDKA-TV)* Pittsburgh sends out its first signal, ch. 3 (although Jan. 11, 1949, is considered the start date below).

Nov. 29, 1948. KOB-TV* Albuquerque NM, ch. 4; Kukla, Fran and Ollie debuts on NBC. (Show had previously aired on WBKB Chicago as Junior Jamboree beginning Oct. 13, 1947.)

Dec. 1, 1948. WHEN-TV* Syracuse NY, ch. 8 (moved to ch. 5 in July 1961)

Dec. 11, 1948. WMCT (WMC-TV)* Memphis TN, ch. 4 (later ch. 5).

Dec. 18, 1948. WDSU-TV* New Orleans LA, ch 6. 6 p.m.

Dec. 22, 1948. KGO-TV* San Francisco CA.

Dec. 24, 1948. The first Catholic midnight mass is telecast by WNBT, WJZ-TV, and WCBS-TV.

1949. The following stations are listed with 1949 start dates in the 1950 *Broadcasting* Yearbook: ch. 4, WBRC-TV, Birmingham, AL; ch. 13, WAFM-TV, Birmingham, AL; ch. 5, KPHO-TV, Phoenix, AZ; ch. 4, KNBH, Los Angeles, CA; ch. 7, KECA-TV, Los Angeles, CA; ch. 11, KTTV, Los Angeles, CA; ch. 8, KFMB-TV, San Diego, CA; ch. 4, KRON-TV, San Francisco, CA; ch. 7, KGO-TV, San Francisco, CA; ch. 9, WOIC, Washington, DC; ch. 7, WDEL-TV, Wilmington, DE; ch. 4, WMBR-TV, Jacksonville, FL; ch. 4, WTVJ, Miami, FL; ch. 5, WAGA-TV, Atlanta, GA; ch. 5, WOC-TV, Davenport, IA; ch. 5, WNBQ, Chicago, IL; ch. 10, WTTV, Bloomington, IN; ch. 6, WFBM-TV, Indianapolis, IN; ch. 2, WJBK-TV, Detroit, MI; ch. 7, WLAV-TV, Grand Rapids, MI; ch. 4, WTCN-TV, Minneapolis, MN; ch. 4, WDAF-TV, Kansas City, MO; ch. 3, WBTV, Charlotte, NC; ch. 2, WFMY-TV, Greensboro, NC; ch. 3, KMTV, Omaha, NE; ch. 6, WOW-TV, Omaha, NE; ch. 12, WNBF-TV, Binghamton, NY; ch. 9, WOR-TV, New York, NY; ch. 6, WHAM-TV, Rochester, NY; ch. 7, WCPO-TV, Cincinnati, OH; ch. 7, WKRC-TV, Cincinnati, OH; ch. 3, WLWC, Columbus, OH; ch. 6, WTVN, Columbus, OH; ch. 10, WBNS-TV, Columbus, OH; ch. 5, WLWD, Dayton, OH; ch. 13, WHIO-TV, Dayton, OH; ch. 4, WKY-TV, Oklahoma City, OK; ch. 6, KOTV, Tulsa, OK; ch. 12, WICU, Erie, PA; ch. 13, WJAC-TV, Johnstown, PA; ch. 4, WGAL-TV, Lancaster, PA; ch. 3, WDTV, Pittsburgh, PA; ch. 11, WJAR-TV, Providence, RI; ch. 4, KRLD-TV, Dallas, TX; ch. 8, KBTV, Dallas, TX; ch. 2, KLEE-TV, Houston, TX; ch. 4, WOAI-TV, San Antonio, TX; ch. 5, KSL-TV, Salt Lake City, UT; ch. 5, WSAZ-TV, Huntington, WV

Jan. 1, 1949. KLEE-TV (KPRC-TV)* Houston TX, ch. 2; KTTV* Los Angeles.

Jan. 3, 1949. Colgate Theatre premieres on NBC.

Jan. 10, 1949. The Goldbergs premieres on CBS.

Jan. 11, 1949. A two-hour special on all networks celebrates the linking of eastern and midwestern networks via coaxial cable; WDTV (KDKA-TV)* Pittsburgh PA, ch. 3 (later ch. 2).

Jan. 16, 1949. KNBH (KRCA, KNBC)* Los Angeles CA; WOIC (WTOP-TV)* Washington DC.

Jan. 17, 1949. *Broadcasting* reports AT&T coaxial cable links East Coast and Midwest television stations.

Jan. 31, 1949. *Broadcasting* reports first Emmy awards ceremony is held, and broadcast by KTSL(TV) Los Angeles.

Feb. 23, 1949. WHIO-TV* Dayton OH, ch. 13 (later ch. 7).

Mar. 8, 1949. WAGA-TV* Atlanta GA.

Mar. 15, 1949. WLWD (WDTN-TV)* Dayton OH, ch. 5 (later ch. 2); WICU-TV* Erie PA, ch. 12.

Mar. 18, 1949. WGAL-TV* Lancaster PA, ch 4 (later ch. 8).

Mar. 21, 1949. WTVJ(TV)* Miami FL.

April 1949. KTLA Los Angeles broadcasts 27 hours and 30 minutes of live coverage of the effort to rescue three-year-old Kathy Fiscus, who had fallen into a well. The event gripped Los Angeles and stimulated sales of TV sets in the city.

Apr. 3, 1949. WLWC* Columbus OH, ch. 3 (later ch. 4).

Apr. 4, 1949. WKRC-TV* Cincinnati OH, ch. 11 (later ch. 12).

May 1949. The first telethon, benefitting the Damon Runyon Cancer Fund, is hosted by Milton Berle. It aired for 24 hours.

May 5, 1949. KGO-TV* San Francisco CA.

May 9, 1949. *Broadcasting* reports FCC authorizes NBC to operate a UHF station at Bridgeport CT for experimental rebroadcasts of programs of WNBT New York.

May 16, 1949. KFMB-TV* San Diego CA; Milton Berle appears on the covers of both Time and Newsweek.

May 22, 1949. WAFM-TV (WABT, WAPI-TV)* Birmingham AL.

May 30, 1949. WFBM-TV* Indianapolis IN, ch. 6 *Broadcasting* reports longest direct TV pickup, 129 miles, is made by KFMB-TV San Diego during dedication when it got and rebroadcast salute from KTLA(TV) Los Angeles without special equipment of any kind.

June 1, 1949. KSL-TV* Salt Lake City UT, ch. 5.

June 6, 1949. WKY-TV* Oklahoma City OK, ch. 4.

June 11, 1949. WHAM-TV (WROC-TV)* Rochester NY, ch. 6 (later ch. 5, and later in a trade to ch. 8).

June 27, 1949. *Captain Video* debuts on DuMont.

July 1, 1949. WBRC-TV* Birmingham AL ch. 4 (to ch. 6 in 1953); WTCN-TV (WCCO-TV)* Minneapolis-St. Paul MN, ch. 4.

July 10, 1949. WJAR-TV* Providence RI, ch. 11 (later ch. 10).

July 11, 1949. FCC announces TV allocation plan; to add 42 UHF channels to the present 12 VHF channels, with another 23 to 28 UHF channels reserved for experimental television, providing for 2,245 TV stations in 1400 communities.

July 15, 1949. WBTV* Charlotte NC, ch. 3.

July 18, 1949. WJAR-TV* Providence ch. 11 (moved to ch. 10 in May 1953).

July 26, 1949. WCPO-TV* Cincinnati OH, ch. 7 (later ch. 9).

Aug. 15, 1949. WLAV-TV (WOOD-TV)* Grand Rapids MI, ch. 7 (later ch. 8).

Aug. 25, 1949. RCA announces the development of a compatible color TV system.

Aug. 29, 1949. WOW-TV* Omaha NE, ch. 6.

Aug. 30, 1949. WTVN-TV* Columbus OH, ch. 6.

Sept. 1, 1949. KMTV* Omaha NE, ch. 3.

Sept. 15, 1949. WMBR-TV (WJXT)* Jacksonville FL, ch. 4; WJAC-TV* Johnstown PA, ch. 13 (later ch. 6).

Sept. 16, 1949. KECA-TV (KABC-TV)* Los Angeles.

Sept. 17, 1949. KBTV (WFAA-TV)* Dallas TX, ch. 8.

Sept. 22, 1949. WFMY-TV* Greensboro NC, ch. 2.

Oct. 5, 1949. WBNS-TV* Columbus OH, ch. 10.

Oct. 6, 1949. The *Ed Wynn Show* becomes the first regularly scheduled network show to broadcast from the West Coast, where it is seen live.

Oct. 11, 1949. WOR-TV (WWOR-TV)* New York NY, ch. 9 (was W2XBB; later to Secaucus NJ). An Internet web page says the inaugural broadcast was Oct. 11 1949 and began at 7 p.m., with soprano Joan Roberts accompanied by an off-stage pianist in the 15-minute "Joan Roberts Show." That was followed by "Apartment 3C," a domestic comedy starring John and Barbara Gay and the "John Reed King Show," a giveaway sponsored by Flagstaff Foods, "The Handy Man," featuring Jack Creamer with tips for homemakers. Then "The Barry Gray Show" with guests Myron Cohen, Irving Caesar, Tony Canzoneri, the Di Castro Sisters and Hope Miller with interviews conducted from the roof studio at the New Amsterdam Theater.

Oct. 14, 1949. WSAZ-TV Huntington WV 1st test pattern, channel 5 (regular programming begins Oct. 24)

Oct. 16, 1949. WDAF-TV* Kansas City MO, ch. 4.

Oct. 22, 1949. KOTV* Tulsa OK, ch. 6.

Oct. 31, 1949. WOC-TV (KWQC)* Davenport IA, ch 5 (later ch. 6).

Nov. 11, 1949. WTTV* Bloomington-Indianapolis IN, ch. 10 (later ch. 4).

Nov. 15, 1949. KRON-TV* San Francisco CA; WSAZ-TV* Huntington WV, ch. 5 (later ch. 3).

Dec. 1, 1949. WNBF-TV* Binghamton NY, ch. 12; WKTV* Utica NY, ch 13 (later ch. 2).

Dec. 3, 1949. KRLD-TV (KDFW-TV)* Dallas TX, ch. 4.

Dec. 4, 1949. KPHO-TV* Phoenix AZ.

Dec. 11, 1949. WOAI-TV* San Antonio TX, ch. 4.

Dec. 19, 1949. WXEL (WJW-TV)* Cleveland OH, ch. 9 (later ch. 8).

Dec. 29, 1949. KC2XAK, first experimental UHF TV station operating on a regular basis is opened by NBC at Bridgeport CT on 529-535 MHz.

Feb. 2, 1950. *What's My Line* debuts on CBS.

Feb. 15, 1950. WSYR-TV* Syracuse NY, ch. 5 (later ch. 3); KEYL (KGBS-TV, KENS-TV)* San Antonio TX, ch. 5.

Feb. 21, 1950. WOI-TV* Ames IA, ch 4 (later channel 5).

Feb. 25, 1950. Your Show of Shows premieres on NBC.

Mar. 27, 1950. WHAS-TV* Louisville KY, ch. 9 (later ch. 11). [According to a history of WHAS, the station originally operated with 9600 watts, but increased power to 50 kW visual on Aug. 7, 1951, the first TV station to broadcast with this much visual power. On Feb. 7, 1953, the station moved to Channel 11 and became the nation's first station with 316,000 watts visual ERP.]

Apr. 2, 1950. WTAR-TV* Norfolk VA, ch. 4 (later ch. 3).

May 1, 1950. WJIM-TV* Lansing MI, ch. 6.

May 29, 1950. *Broadway Open House* debuts.

June 1, 1950. WKZO-TV* Kalamazoo MI, ch. 3.

July 1, 1950. WHBF-TV* Rock Island IL, ch. 4.

July 10, 1950. *Your Hit Parade* premieres on NBC.

Sept. 4, 1950. *Broadcasting* reports FCC states it will adopt the CBS color-television system unless set makers agree to "bracket standards" to enable sets to receive both present 525-line pictures and the 405-line images proposed by CBS; if they agree, commission will adopt "bracket standards" for black-and-white TV and postpone color decision.

Sept. 30, 1950. WSM-TV* Nashville TN, ch. 4.

Oct. 10, 1950. The FCC approves CBS color TV system, effective Nov. 20. CBS promises 20 hours of color programs a week within two months. RCA continues work on its compatible system. Manufacturers are divided as to whether to make sets and converters to receive CBS colorcasts.

Mar. 26, 1951. *Broadcasting* reports FCC reveals proposed allocation plan making full use of UHF band in addition to 12 VHF channels to provide for some 2,000 TV stations in more than 1,200 communities.

May 28, 1951. The U. S. Supreme Court upholds the FCC's approval of the CBS color system.

June 25, 1951. CBS broadcasts color using its non-compatible system. The one-hour program, called *Premiere,* featured Ed Sullivan and other CBS stars, and is carried on a five-station East Coast CBS-TV hookup.

Late June 1951. RCA demonstrates its new electronic color system.

Aug. 11, 1951. First baseball games televised in color, a double-header between the Brooklyn Dodgers and the Boston Braves, by WCBS-TV. Red Barber and Connie Desmond were the announcers.

Sept. 4, 1951. First transcontinental TV broadcast, featuring President Truman.

Sept. 22, 1951. First live sporting event seen coast-to-coast: a college football game between Duke and the University of Pittsburgh, at Pittsburgh (NBC-TV).

Oct. 1, 1951. WLTV (WAII-TV, WQXI-TV)* Atlanta GA, originally ch. 8, later ch. 11.

Oct. 3, 1951. First live coast-to-coast network telecast of a World Series game (produced by Gillette, aired on NBC, CBS and ABC).

Oct. 15, 1951. *I Love Lucy* premieres on CBS.

Nov. 18, 1951. *See It Now* premieres on CBS, showing live shots of the Statue of Liberty and San Francisco Bay.

Dec. 24, 1951. First televised opera written for television, *Amahl and the Night Visitor,* on NBC.

1952. KTLA makes the first telecast of an atomic bomb detonation. Klaus Landsberg led the engineering feat on short notice that established microwave links that had previously been considered impossible with existing technology. The station fed the coverage to the nation.

Jan. 14, 1952. *Today* show premieres on NBC.

Apr. 14, 1952. FCC lifts TV freeze as of July 1; provides for 617 VHF and 1436 UHF allocations, including 242 non-commercial educational stations; establishes 3 zones with different mileage separation and antenna-height regulations; changes required of 30 TV stations.

Sept. 18, 1952. KPTV(TV)* Portland, the first commercial UHF TV station, transmits its first test pattern, on ch. 27.

Sept. 23, 1952. Richard Nixon's "Checkers" speech is delivered.

Oct. 12, 1952. KBTV(TV)* Denver (9), first post-freeze station in channels 7-13

Dec. 21, 1952. WSBT-TV* South Bend IN. [The station claims to be the longest continuously broadcasting UHF television station in the U. S., and the first UHF station to produce a live telecast.]

Late 1952 to 1954. Numerous TV stations switched channels. This list may not be complete.

CALL	CITY	FROM	TO
WBRC-TV	Birmingham	4	6
WLTV	Atlanta	8	11
WMAZ-TV	Macon	7	13
WBKB or WBBM-TV	Chicago	4	2
WTTV	Bloomington	10	4
WOI-TV	Ames	4	5
WOC-TV	Davenport	5	6
WAVE-TV	Louisville	5	3
WHAS-TV	Louisville	9	11
WLAV-TV	Grand Rapids	7	8
WHAM-TV	Rochester	6	5
WRGB	Schenectady	4	6
WSYR	Syracuse	5	3
WKTV	Utica	13	2
WCPO-TV	Cincinnati	7	9
WKRC-TV	Cincinnati	11	12
WLWT	Cincinnati	4	5

WNBK	Cleveland	4	3
WXEL or WJW-TV	Cleveland	9	8
WLWC	Columbus	3	4
WHIO-TV	Dayton	13	7
WLWD	Dayton	5	2
WJAC-TV	Johnstown	13	6
WDTV	Pittsburgh	3	2
WGAL-TV	Lancaster	4	8
WJAR-TV	Providence	11	10
WMCT	Memphis	4	5
WTAR-TV	Norfolk	4	3
WSAZ-TV	Huntington	5	3
WTMJ-TV	Milwaukee	3	4

Mar. 8, 1953. WFMJ-TV Youngstown begins broadcasting on channel 73, the highest channel so far.

Mar. 25, 1953. CBS concedes victory to RCA in the war over color TV standards.

Apr. 3, 1953. First issue of *TV Guide* is published, with 10 editions and a circulation of 1,562,000 copies.

May 25, 1953. KUHT* Houston, the first non-commercial educational TV station, begins regular programming.

May 29, 1953. *St. Petersburg Times* reports WSUN-TV will go on the air with a half-hour dedication ceremony at 4:15 p.m. May 31 (test patterns are currently being transmitted) channel 38 (to 2/23/70)

Aug. 30, 1953. NBC's *Kukla, Fran, and Ollie Show* is broadcast in color, the first publicly announced experimental network broadcast in compatible color.

Sept. 28, 1953. *Broadcasting* reports that, with the end of daylight saving time, CBS and NBC inaugurate "hot kinescope" systems to put programs on air on the West Coast at same clock hour as in the East.

Oct. 19, 1953. Arthur Godfrey fires Julius La Rosa on the air.

Nov. 22, 1953. RCA tests its compatible color TV system on the air for the first time with a telecast of the *Colgate Comedy Hour.* [or Nov. 23?]

Dec. 17, 1953. FCC reverses its 1951 decision and approves the RCA/NTSC color system. NBC broadcasts the NBC chimes image at 5:31:17 p.m. using NTSC standards. CBS broadcasts the first live color program at 6:15 p.m.; NBC followed with a live program at 6:30 p.m.

Jan. 1, 1954. NBC broadcasts the Rose Parade in color on 21 stations.

Mar. 9, 1954. Edward R. Murrow denounces Sen. Joseph R. McCarthy on *See It Now.*

Apr. 1, 1955. Dumont drastically cuts back its programming; very few Dumont shows stay on the air past this date. By September, 1955, Dumont programming has been reduced to NFL football on Sunday afternoons, boxing on Monday nights, and some college football on Saturday afternoons.

Oct. 17, 1954. WNBC to WRCA AM, FM, TV, at midnight; KNBH(TV) to KRCA(TV), WNBW(TV) to WRC-TV

Dec. 13, 1954. *Broadcasting* reports WBRE-TV Wilkes-Barre PA is ready to become the first UHF station to use 1,000 KW, maximum ERP authorized by the FCC.

Apr. 18, 1955. *Broadcasting* reports that DuMont switches to a film network, using Electronicam, reserving live relays for special events and sports.

Sept. 28, 1955. First World Series game broadcast in color, by WRCA-TV.

Apr. 1956. WNBQ Chicago replaces all black-and-white equipment with color equipment, becoming first TV station to broadcast all its local programming in color.

Apr. 1956. Ampex demonstrates first practical videotape recorder at NAB Convention in Chicago. The three networks immediately place orders for Ampex VTR's, which begin to arrive later in the year.

July 2, 1956. *Broadcasting* reports FCC uncovers plan for long-range shift of TV to all UHF and, for present, proposes deintermixture in 13 markets.

Aug. 8, 1956. Final telecast of the Dumont network, a boxing card. Although Dumont ceased network operations, the boxing show continued locally in New York until 1958. CBS inherits the rest of the Dumont/NFL football deal, giving the NFL its first-ever true national TV exposure.

Oct. 29, 1956. First use of videotape in network television programming: CBS uses its first Ampex VTR to be installed at Television City, Los Angeles, to record the evening news (then anchored by Douglas Edwards) and in turn, feeds the tape to West Coast stations three hours later. Previously, West Coast rebroadcasts had been done by kinescope recordings.

Oct. 29, 1956. Chet Huntley and David Brinkley take over anchor duties of NBC newscast, which is renamed "The Huntley-Brinkley Report."

Nov. 1956. First use of videotape in production of a network television entertainment program: Jonathan Winters, at the time doing a 15-minute show a couple of nights a week on NBC-TV, uses videotape and superimposing/montage techniques to be able to play two characters in the same skit. During such skits, he tapes the actions and dialogues of one of the two characters he played and did the other live. (His show, except for taped bits to allow him to play two characters, is otherwise done live).

Mar. 16, 1962. Walter Cronkite succeeds Douglas Edwards as anchorman of the *CBS Evening News.*

July 9, 1962. Telstar communications satellite is launched into orbit. [The first test transmissions between the U. S., France, and Britain occurred the next day. This was not actually the first trans-Atlantic TV, as the BBC and German TV were received in the 1930s in Long Island and perhaps elsewhere in the U. S.]

July 23, 1962. A joint ABC/CBS/NBC production is telecast to Europe via Telstar. The program featured excerpts of a baseball game at Wrigley Field, Chicago, a live news conference by President Kennedy, and a concert by the Mormon Tabernacle Choir, who had traveled to Mount Rushmore to perform. The host of the U. S.-to-Europe program was Chet Huntley of NBC.

May 15, 1963. First TV pictures transmitted from a manned U.S. space capsule, astronaut Gordon Cooper's "Faith 7." Because the picture quality is poor, only NBC carries the transmission, and on tape-delay, not live.

Sept. 2, 1963. CBS becomes first network to expand early-evening network news from 15 to 30 minutes.

Sept. 9, 1963. NBC expands early-evening network news to 30 minutes. (ABC did not follow until Jan. 2 1967, since their affiliates were strongly opposed to give up the extra 15 minutes, especially as ABC's news was then a very-distant third place).

Apr. 30, 1964. Television sets manufactured as of this date are required to receive UHF channels.

Oct. 10, 1964. Live telecast on NBC-TV (via Syncom III) of the opening ceremonies of the 1964 Summer Olympics in Tokyo (airing on the U. S. East Coast from 1 to 3 A.M.); first live color TV program ever transmitted to the U. S. by satellite.

Mar. 24, 1965. Live TV pictures from unmanned U. S. moon probe Ranger 9 transmitted prior to impact in the crater Alphonsus.

May 1967. Premiere of the *Las Vegas Late Show* with Bill Dana, which was supposed to be the cornerstone of the United Network, an attempt to launch a fourth commercial TV network. In less than a month, both the show and the fourth network idea get canceled.

Oct. 14, 1968. First live network transmission of TV pictures from inside a manned U.S. space capsule in orbit: Apollo 7 There were six such broadcasts during their eleven-day mission.

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20th Century: Third Decade

Gallery

1920-1929

Hand-cranked 35 mm movie camera
192

Press camera
Germany
1925

James Chapin's
Ruby Green Singing,
1928

1920

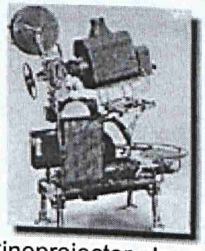
1920: First cross-country airmail flight in the U.S.
1920: Charles Jenkins invents "prismatic rings," precursor to his mechanical TV.
1920: H.G. Wells' *The Outline of History.*
1920: Transcontinental airmail in the U.S.
1920: German film expressionsim is established with *The Cabinet of Dr. Caligari.*
1920: Agatha Christie writes first of Hercule Poirot detective novels.
1920: KDKA begins regular schedule, starting the era of radio broadcasting.
1920: German psychiatrist Karl Binding calls for killing those who are "dead weight."
1920: After 21 years, Japanese movie makers start using actresses.
1920: Japan has become the world's second largest book-publishing nation.
1920: Hugh Lofting's charming *Story of Dr. Doolittle* talks to the animals.
1920: Edith Wharton's *The Age of Innocence* depicts callous New York society.
1920: Sound recording is done electrically. "Talkies" will follow.
1920: In England, Marconi creates the first short wave radio connection.
1920: Sinclair Lewis ridicules middle-class America in *Main Street.*
1920: Start of Négritude, French language anti-colonial literary movement.
1920: U.S. Post Office sets up metered postage.
1920: XWA, Montreal, begins first regularly scheduled North American broadcasts.
1920: The press release.
1920: AT&T, GE, RCA patent agreement permits radio equipment manufacturing.
1920: Nobel Prize in Literature: novelist Knut Hamsun, Norway.
1920: Eugene O'Neill's play, *The Emperor Jones*, the tale of a black anti-hero..
1920: Stanley and Helen Resor introduce psychological ad research.

1921

1921: Baseball's World Series is reported by radio.
1921: With Bessie Smith's first record, this decade will see the flowering of the blues.
1921: Quartz crystals keep radio signals from wandering.
1921: The word "robot" enters the language via Karel Capek's play *R.U.R.*
1921: Italian playwright Luigi Pirandello, *Six Characters in Search of an Author.*
1921: Cleveland Playhouse becomes first U.S. resident professional theater.
1921: D.H. Lawrence's *Women in Love* examines sexual, psychological relationships.
1921: Western Union begins wirephoto service.
1921: Nobel Prize in Literature to French novelist Anatole France.
1921: Eugene O'Neill's play *Anna Christie* opens; will win Pulitzer for drama.
1921: Skywriting.
1921: Dempsey-Carpenter fight widens awareness of broadcasting.

Twin-lens reflex camera, Germany 1928

Georges Braque's *Still Life: Le Jour*, 1929



Cineprojector played sound film or sync sound, 1929

1921: Photographs can be transmitted by wire across the Atlantic.
1921: Arnold Schoenberg develops 12-tone music notation.
1921: Radio becomes family fun as hobbyists turn in headphones for speakers.
1921: Public address amplifiers and loudspeakers are used in military ceremony.
1921: Sergei Prokofiev's opera, *The Love for Three Oranges*, is performed.
1921: At the movies: Chaplin's *The Kid* and Valentino's *The Sheik*.
1921: Many radio licenses are issued. Many radio "firsts," especially sports.
1921: Hendrik Willem Van Loon's *The Story of Mankind* is widely read.

1922

1922: The radio license floodgates open, but only three frequencies in U.S.
1922: American introduces radio to the Philippines.
1922: Nervous Hollywood censors itself with own film review board, the Hays Office.
1922: Comic Monthly magazine reprint of comic strips foreshadows comic books.
1922: RCA radio-faxes a photo across the Atlantic Ocean in six minutes.
1922: 100,000 radio sets manufactured in U.S.
1922: Paul Klee paints Twittering Machine.
1922: A commercial is broadcast. U.S. radio will be built on "toll broadcasting."
1922: Britain gets its first radio station.
1922: Muzak, developed by George Squier.
1922: Herbert Kalmus introduces two-color Technicolor process for movies.
1922: Joyce's Ulysses develops stream-of-consciousness writing.
1922: T.S. Eliot's "The Waste Land" considers the sterility of modern life.
1922: Nobel Prize in Literature: dramatist Jacinto Benavente, Spain.
1922: Eugene O'Neill's play *The Hairy Ape*, a comedy of ancient and modern life.
1922: Ludwig Wittgenstein's *Tractatus* argues that much of philosophy is nonsense.
1922: 15-year-old Philo Farnsworth designs a television "image dissector."
1922: Hermann Hesse's *Siddhartha* searches for the meaning of life.
1922: German historian Oswald Spengler completes seminal *The Decline of the West.*
1922: The BBC goes on the air.
1922: Walter Lippmann's *Public Opinion* examines opinion formation.
1922: Movie tickets sold weekly in the U.S.: 40 million.
1922: Emily Post publishes *Etiquette.*
1922: *The Reader's Digest* begins its monthly run.
1922: Germany's UFA produces a film with an optical sound track.
1922: Singers desert phonograph horn mouths for acoustic studios.
1922: Orphan Annie enters the comic pages.
1922: The first portable radio. Experimental car radio.
1922: On a Schenectady, NY, station, the first radio drama is presented.
1922: Sinclair Lewis' *Babbitt* adds a name to the lexicon of insults.
1922: Robert Flaherty's *Nanook of the North* is the first feature film documentary.

1923

1923: Argentine poet, critic, short-story writer Jorge Luis Borges' first book.
1923: Vladimir Zworykin patents the first electronic camera tube, the iconoscope.
1923: Ribbon microphones become the studio standard.
1923: Neon signs.
1923: A picture, broken into dots, is sent by wire.
1923: A book, *Crystallizing Public Opinion*, helps give stature to public relations.
1923: Nobel Prize in Literature to Irish poet W.B. Yeats.
1923: A.C. Nielsen Company begins to measure radio audiences for advertisers.
1923: In the U.S., creation of the National Association of Broadcasters.
1923: Shaw's *St. Joan* argues that she had to die; the world was not ready for her.
1923: 16 mm nonflammable film makes its debut.
1923: "Jelly Roll" Morton composes jazz.
1923: A speech by President Warren Harding is broadcast.
1923: Half a million radios are sold in U.S., a five-fold increase in one year.
1923: Several radio stations hook up by phone to form a temporary network.
1923: A half million radio sets are manufactured in the U.S.
1923: Harlem's Cotton Club presents all-black entertainment to all-white audiences.
1923: *Time*, the weekly newsmagazine.
1923: Reversal film eliminates negatives, eases home movie photography.
1923: Novelist Willa Cather and poet Edna St. Vincent Millay win Pulitzer Prizes.
1923: Kodak introduces home movie equipment.

1923: Darius Milhaud's ballet, *Creation of the World.*

1924

1924: Edna Ferber's Pulitzer Prize novel, *So Big.*
1924: King George V speech broadcast over BBC radio.
1924: Sean O'Casey's play, *Juno and the Paycock.*
1924: On Broadway, operettas *Rose Marie* and *The Student Prince.*
1924: Low tech achievement: notebooks get spiral bindings.
1924: E.M. Forster's novel about British colonial mentality, *A Passage to India.*
1924: Herman Melville's 1891 Billy Budd finally published; will lead to opera, film.
1924: Nobel Prize in Literature to Polish epic poet Wladyslaw Reymont.
1924: Eugene O'Neill continues to dominate theater drama with *Desire Under the Elms.*
1924: Ottorino Respighi composes *The Pines of Rome.*
1924: Thomas Mann, *The Magic Mountain.*
1924: Founding of Simon & Schuster, book publishers.
1924: *The Eveready Hour* is the first sponsored radio program.
1924: At KDKA, Conrad sets up a short-wave radio transmitter.
1924: E. Howard Armstrong builds first portable radio, a gift to his bride.
1924: The first Walt Disney cartoon, *Alice's Wonderland.*
1924: Daily coast-to-coast air mail service.
1924: In the U.S., 1,400 stations are broadcasting to 3 million radio sets.
1924: Almost daily sports broadcasts.
1924: Radio hook-ups broadcast Democratic, Republican conventions.
1924: K. Jansky's radio astronomy reports of "star noise" published, ignored.
1924: George Gershwin writes his symphonic jazz *Rhapsody in Blue.*
1924: Pictures are transmitted between London and New York.
1924: Two and a half million radio sets in the U.S.
1924: All-electric recorder and phonograph are built.

1925

1925: Commercial picture facsimile radio service across the U.S.
1925: *Der Prozess* (tr. As *The Trial*) by Franz Kafka.
1925: Alban Berg's *Wozzek* removes tonality from opera.
1925: Theodore Dreiser, *An American Tragedy.*
1925: Transcontinental radio hook-up carries Coolidge inaugural to 24 stations.
1925: The Goodyear blimp floats ads through the sky.
1925: Expatriate American poet Ezra Pound begins his *Cantos.*
1925: John Dos Passos, *Manhattan Transfer,* a novel of life without meaning.
1925: Random House begins book publication.
1925: Western Electric creates Vitaphone, a sound-on-disc film system.
1925: A British radio broadcast is heard in the United States.
1925: From the new Soviet Union, Dmitri Shostakovich, *1st Symphony*
1925: Harold Ross starts *The New Yorker.*
1925: Electrical recordings go on sale.
1925: Virginia Woolf's novel, *Mrs. Dalloway.*
1925: F. Scott Fitzgerald's *The Great Gatsby*, a novel of the tragedy of success.
1925: *The New Yorker.*
1925: *Grand Ole Opry* begins in Nashville as "WSM Barn Dance."
1925: Thomas Mofolo's *Chaka the Zulu* is written in the Sotho language.
1925: *Arrowsmith*, a novel by Sinclair Lewis of a life devoted to medicine.
1925: Charlie Chaplin's film, *The Gold Rush.*
1925: Romani (Gypsy) writers union is founded in Soviet Union, then is suppressed.
1925: The first volume of Adolf Hitler's *Mein Kampf*, written in prison.
1925: Sergei Eisenstein's *Battleship Potemkin* establishes film montage technique.
1925: George Bernard Shaw wins Nobel Prize in Literature.
1925: Earl Biggers introduces the fictional detective Charlie Chan.
1925: In London, the demonstration of a televised image. The first image: **$**
1925: A moving image, the blades of a model windmill, is telecast.
1925: From France, a wide-screen film.
1925: *Ben-Hur* costs nearly $4 million, an unheard-of price to make a movie.
1925: The first broadcast soap opera: *The Smith Family.*
1925: John Logie Baird demonstrates the first TV system, using mechanical scanning.
1925: Warner Bros. starts experiments to make "talkies."

1926

1926: The first featherweight phonograph stylus.
1926: Kodak manufactures 16 mm film stock.
1926: Commercial picture facsimile radio service across the Atlantic.
1926: Will Durant's *The Story of Philosophy* will sell millions of copies.
1926: Some radios get automatic volume control, a mixed blessing.
1926: The Book-of-the-Month Club starts: cut-rate books by subscription.
1926: A.A. Milne writes of Christopher Robin, Winnie the Pooh, and Piglet.
1926: In U.S., first 16mm movie is shot.
1926: Weather map is televised experimentally.
1926: Burma Shave signs dot U.S. highways.
1926: Playwright Sean O'Casey, *The Plough and the Stars*.
1926: Kafka, *The Castle*.
1926: The first radio jingle, for Wheaties.
1926: Sigmund Romberg composes *The Desert Song*.
1926: Ernest Hemingway's first novel *The Sun Also Rises*.
1926: Ring Lardner, *The Love Nest and Other Stories*.
1926: Robert Goddard launches the liquid-fuel rocket.
1926: Paul Henry de Kruif's *Microbe Hunters* is surprising best seller.
1926: Sinclair Lewis wins Pulitzer for *Arrowsmith*, refuses it.
1926: *Enough Rope*, Dorothy Parker's first book of verse.
1926: Rudolf Valentino's funeral hysteria, suicides, show emotional power of film.
1926: Giacomo Puccini's *Turandot* is produced posthumously.
1926: Richard Rodgers and Lorenz Hart bring *The Girl Friend* to Broadway.
1926: Nobel Prize in Literature: novelist Grazia Deledda, Italy.
1926: Martha Graham, barefoot, leads American modern dance movement.
1926: NBC is formed and takes over AT&T Red Network.
1926: Edna Ferber's novel *Show Boat* will become Broadway musical, hit film.
1926: *Don Juan*, the first publicly shown "talkie", premieres in New York.
1926: Bell Telephone Labs transmit film by television.
1926: Coin-operated radios in public places, 5 minutes for 5 cents.
1926: Unregulated radio stations drown each other out, beg for government controls.
1926: Poet Langston Hughes, "The Weary Blues."

1927

1927: NBC begins a second radio networks, NBC Blue.
1927: International airmail.
1927: The Literary Guild book club.
1927: BBC commissions a music composer, Gustavu Holst.
1927: CBS is formed. Radio broadcasting is becoming a mass medium.
1927: New U.S. Federal Radio Commission regulates radio transmission, not content.
1927: Electric plugs and single knob tuning make radio more than a hobby.
1927: Live test TV by mechanical scanning, 2" x 2.5", of Herbert Hoover's face.
1927: Advertising locks in as the economic base of U.S. radio broadcasts.
1927: Sinclair Lewis attacks religious hypocrisy in *Elmer Gantry*.
1927: John Logie Baird sells first recorded TV images, 30-line Phonovisor.
1927: Kafka's novel *Amerika* is published three years after his death.
1927: The film *Napoleon* tries wide-screen and multi-screen effects.
1927: Nobel Prize in Literature: philosopher and essayist Henri Bergson, France.
1927: Martin Heidegger's *Being and Time* will help found modern existentialism.
1927: Philo Farnsworth assembles a complete electronic TV system.
1927: Jerome Kern's *Showboat* connects Broadway musical with opera.
1927: Jolson's *The Jazz Singer* is the first popular "talkie."
1927: Movietone offers newsreels in sound.
1927: Hesse's novel *Steppenwolf*, a fable about the split in human nature.
1927: U.S. Radio Act declares public ownership of the airwaves.
1927: Negative feedback makes hi-fi possible.
1927: Thornton Wilder's Pulitzer Prize novel, *The Bridge of San Luis Rey*.
1927: The Academy of Motion Picture Arts and Sciences is founded.
1927: In Paris, Marcel Proust completes his 16-volume *Remembrance of Things Past*.
1927: Two-way AT&T radio phone service, U.S. to London, $75 for 5 minutes.

1928

1928: The teletype machine makes its debut.
1928: In Germany, Fritz Pfleumer creates audio tape: magnetic powder on paper, film.
1928: Daven mechanical TV disc can scan 3 standards: 24, 36, and 48 lines/sec.
1928: Charles Jenkins heralds future of television as "radio movies."
1928: Television sets are put in three U.S. homes, programming begins.
1928: General Electric builds a television set with a 3-inch x 4-inch screen.
1928: Baird invents a video disc to record television.
1928: Gershwin's tone poem, *An American in Paris.*
1928: Maurice Ravel composes his best known work, Bolero.
1928: Anthropologist Margaret Mead startles readers with *Coming of Age in Samoa.*
1928: First Oscars: *Wings*, Emil Jannings, Janet Gaynor.
1928: Also at the movies: *7th Heaven*, Chaplin's *The Circus*.
1928: Nobel Prize in Literature: novelist Sigrid Undset, Norway.
1928: O'Neill's play, *Strange Interlude*.
1928: *Decline and Fall*, first of Evelyn Waugh's satiric novel about British upper crust.
1928: Stephen Vincent Benet writes the Pulitzer winning poem, "John Brown's Body".
1928: Home radios use ordinary electric current instead of batteries.
1928: Disney adds sound to cartoons; *Steamboat Willie* introduces Mickey Mouse.
1928: In an experiment, television crosses the Atlantic.
1928: The newest dance craze: the Charleston.
1928: The *Oxford English Dictionary*, begun in 1858, is finished: 15,487 pages.
1928: Lawrence's *Lady Chatterly's Lover* will be banned for years over sex content.
1928: In Schenectady, N.Y., the first scheduled television broadcasts.
1928: *Amos 'Andy* broadcasts to huge audiences. Even movies are interrupted.
1928: Syndication of recorded shows begins with *Amos 'Andy.*
1928: Times Square gets moving headlines in electric lights.
1928: IBM adopts the 80-column punched card.
1928: Kurt Weill and Bertolt Brecht stage *The Threepenny Opera.*

1929

1929: Erich Maria Remarque's pacifist novel, *All Quiet on the Western Front.*
1929: Hollywood makes its first original musical, The Broadway Melody.
1929: In London, the first TV station is built, experimental transmission only.
1929: Sinclair Lewis' novel, *Dodsworth* explores the pain adultery can bring.
1929: Founding of the Vienna Circle and its theory of logical positivism.
1929: Experiments begin on electronic color television.
1929: The Museum of Modern Art opens in New York.
1929: Oscars: *The Broadway Melody*, Warner Baxter, Mary Pickford.
1929: Telegraph ticker sends 500 characters per minute.
1929: The first 4-color comic publication, *The Funnies*, but not quite a comic book.
1929: Ship passengers can phone relatives ashore.
1929: Brokers watch stock prices soar, crash on an automated electric board.
1929: Something else new: the car radio. But you have to stop to mount an antenna.
1929: Zworykin demonstrates the kinescope cathode ray tube for TV receivers.
1929: Phonograph manufacturers phase out hand-cranked models.
1929: German novelist Thomas Mann awarded the Nobel Prize in Literature.
1929: *Popeye the Sailor* and *Tarzan* swing into the comic strips.
1929: Television studio is built in London.
1929: Bell Labs produces color TV mechanically.
1929: 24 frames/second established as sound motion picture camera standard.
1929: The film *Hallelujah* introduces post-synchronization.
1929: Thomas Wolfe's novel, *Look Homeward, Angel*, desperation to leave small town.
1929: Les Paul, age 14, creates forerunner of the electric guitar.
1929: William Faulkner's novel *The Sound and the Fury*: a family falls apart.
1929: Hemingway's *A Farewell to Arms* extends his reputation.
1929: Winston Churchill completes 4-volume *The World Crisis*, about WW I.
1929: Air mail is flown from Miami to South America.
1929: The Vienna Circle publishes philosophical manifesto, *A Scientific World-View.*
1929: Bertrand Russell shocks tradition with *Marriage and Morals.*

Sources for the timeline and accompanying information.

TV Viewing Share Trends by Calendar Year

	Calendar Year Average																
	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	*'99	'00
All TV Homes	70	68	66	66	63	60	57	55	54	54	52	51	46	44	42	39	37	36
ABC/CBS/NBC	18	19	19	18	19	20	20	20	20	20	20	22	22	21	20	20	20	19
Independents[&]	**89**	**87**	**84**	**84**	**82**	**80**	**78**	**75**	**74**	**74**	**73**	**73**	**67**	**66**	**62**	**60**	**57**	**56**
Ad-Supported Bcst. Tot.																		
Cable Networks	7	10	11	11	14	15	18	21	24	25	26	26	32	34	37	40	44	46
Pay Services	5	6	6	5	6	7	6	7	6	6	6	6	6	6	7	7	7	6
Public Stations	3	3	3	3	4	3	3	3	3	3	4	4	3	4	3	3	3	3
All Cable Homes	59	58	55	56	52	51	49	47	46	47	46	44	40	40	38	36	33	33
ABC/CBS/NBC	18	17	17	17	17	17	16	16	16	16	17	18	17	17	17	16	15	15
Independents[&]	**77**	**75**	**72**	**73**	**69**	**68**	**65**	**63**	**61**	**63**	**63**	**62**	**57**	**57**	**54**	**51**	**49**	**48**
Ad-Supported Bcst. Tot.																		
Cable Networks	15	18	19	20	24	25	29	32	35	36	37	38	43	44	47	50	53	55
Pay Services	11	11	11	9	10	11	10	10	9	8	8	8	8	8	9	8	8	7
Public Stations	3	3	3	3	3	3	3	3	2	3	3	4	3	3	3	3	3	2
Pay Cable Homes	54	53	50	51	48	47	45	43	42	42	42	41	37	37	36	34	32	31
ABC/CBS/NBC	18	17	17	17	16	17	16	16	16	16	16	18	18	17	17	17	15	15
Independents[&]	**72**	**70**	**67**	**68**	**64**	**63**	**61**	**59**	**58**	**58**	**58**	**58**	**55**	**54**	**52**	**50**	**47**	**46**
Ad-Supported Bcst. Tot.																		
Cable Networks	15	18	19	20	23	24	28	31	34	34	35	37	42	44	47	50	53	55
Pay Services	18	18	18	16	18	18	18	18	17	17	16	15	15	14	13	11	11	11
Public Stations	3	2	3	3	3	2	2	3	2	2	2	2	2	3	2	2	2	2
Non-Cable Homes	80	77	77	77	76	74	73	70	69	69	69	66	62	58	55	51	52	55
ABC/CBS/NBC	20	23	23	20	21	23	22	24	26	29	30	31	34	32	31	32	39	45
Independents[&]	3	4	4	4	5	5	5	5	5	5	6	6	5	5	6	5	6	7
Public Stations																		

Note:– Shares are rounded and in some cases add to more than 100% due to viewing in multi-set homes.
**Starting with 3Q 1999, categories change as follows: Disney moves from pay to cable network; and non-cable homes no longer include non-wired forms of delivery such as DBS and SMATV.*
[&]Historical superstation shares are split equally between cable networks and independent stations. FOX, UPN and WB affiliates are included in independent total.

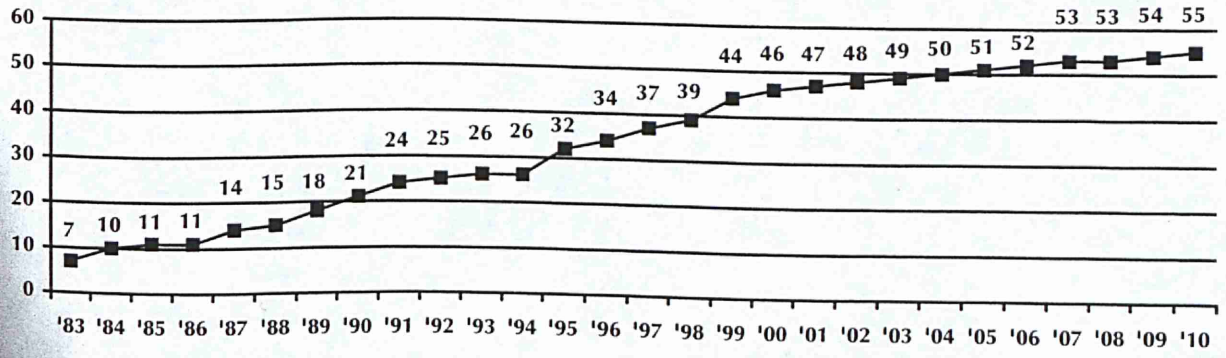
Industry Projections

The cable network industry has shown remarkable stamina, even in recessionary periods. As new forms of entertainment and the Internet have threatened the broadcast and cable model, there has been no decline in the number of hours people watch TV.

And although the Big Four (ABC, CBS, FOX and NBC) have made significant progress in staving off viewer erosion with a shift towards reality programming, KWM believes that over the long term, cable will take share.

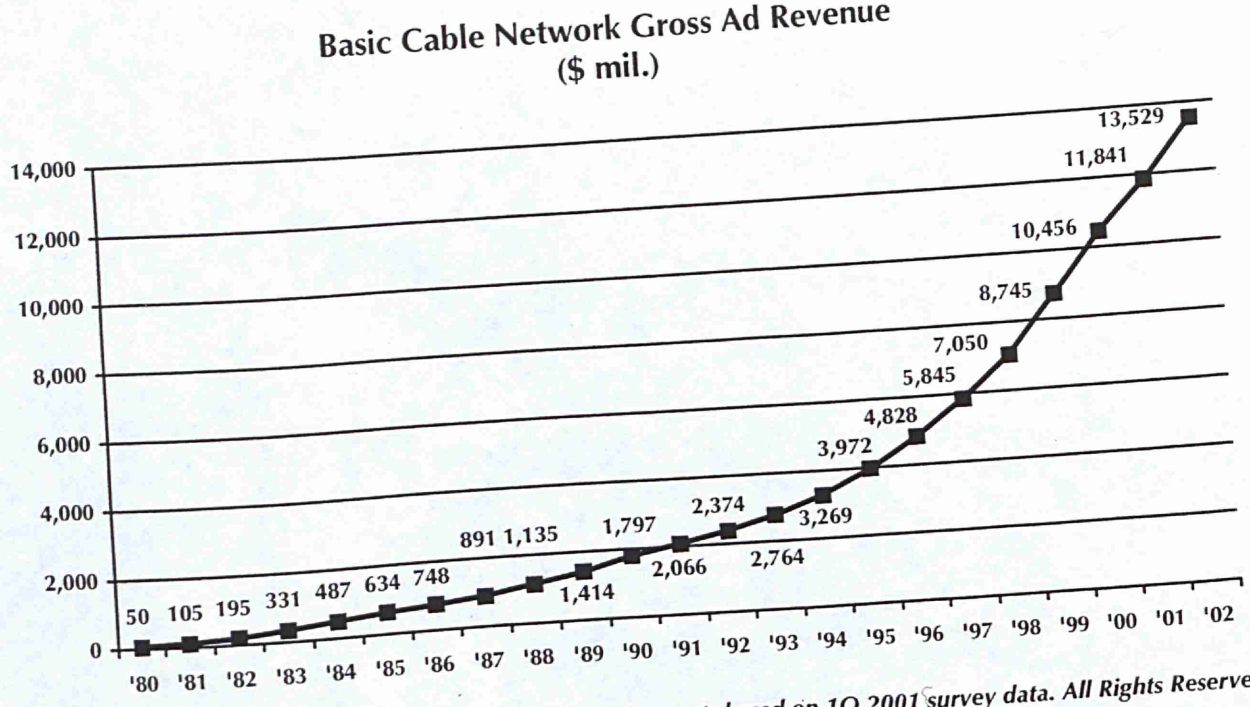
The graphic below illustrates the dramatic rise in cable viewing share over the past two decades, from 7% in 1983 to 46% by the end of 2000. By 2004, our forecasts call for cable share to grow to more than 50%, and it should continue to rise slowly thereafter, grabbing 55% by 2010.

Cable Share of Viewing Audience
(%)



This is one of the key drivers in our forecasting model which follows, in which we chart both historical industry growth (back to 1983) and our expectations over the next 10 years. However, it should be noted that 2001 and 2002 projections are based upon a survey of network executives in 1Q 2001 and the ad market has been softer than expected. Some key highlights of the model include:

- Basic cable households are expected to rise at a 2.2% CAGR between 2000 and 2010, reaching 109 mil. homes by 2010.
- Total basic cable ratings are expected to rise 1.7% per year, growing to 17.5 by 2010.
- Basic network gross ad billings are forecasted to rise at an 11.7% annual rate, from $10.5 bil. in 2000 to $31.6 bil. by 2010.



Growth could be solid for a number of reasons. First, as cable operators have completed their plant upgrades they have vastly improved channel capacity and as digital cable takes off, there will be more choices for consumers and more share will likely shift from broadcast to cable.

Although those at the low end of the totem pole will probably have a difficult time garnering advertiser support until they reach critical scale of 30 mil.-40 mil. subscribers, there are an increasing number of cable networks at the top. Giants with 70 mil.-80 mil. subscribers and solid ratings are likely to demand higher CPMs from advertisers due to the large gap between cable and broadcast.

As hit movies in their former broadcast window appear on cable and generate high ratings, and both original network programs and off-network series generate ratings equivalent to low-end and mid-range broadcast networks, the CPM gap between broadcast and cable is likely to close.

Timeline: Internet, Federal Govt, and Communications

An ecclectic collection of dates related to the Internet and federal communications policy. Time line is not complete and may not be accurate. Some sources seem to give different dates for the same event. Please let us know of any errors or ommissions.. See also Computer Inquiries Timeline; Hobbe's Internet timeline; ISOC's collection of Internet histories.

DATE	Actor	Action	Source
1741	Private	American Magazine, first magazine published in America	
1742	Private	Benjamin Franklin publishes first American magazine with advertisements, General Magazine	*Media Timeline ketupa.net*
1801	Private	Jacquard invents punch-card wood loom	*Media Timeline ketupa.net*
1844	Private	Samuel Morse demonstrates telegraph between Baltimore and Washington, D.C.	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); Hughes Network Poster.*
1850	Private	Telegraph line laid between England and France across the English Channel	*Hughes Network Poster. Ketupa.net*
1851	Private	Reuters established	*Media Timeline ketupa.net*
1851	Private	New York Times founded	*Media Timeline ketupa.net*
1861	Govt	Pony Express comes to an end	*Media Timeline ketupa.net*
1867	Private	First transatlantic submarine cable laid.	*Hughes Network Poster.*
1876	Private	Bell patents telephone	

1877	Private	First commercial telephone	*Media Timeline ketupa.net*
1880	Private	Bell Canada established	*Media Timeline ketupa.net*
1885	Private	AT&T established	*Media Timeline ketupa.net; AT&T*
1887	Govt ICC	Interstate Commerce Commission created to regulate railroads - The first independent regulatory agency	
1889	Private	Herman Hollerith develops first punch card machine	
1892	Private AT&T	AT&T opens first long distance line between NY and Chicago	*AT&T*
1894	Private	Marconi successfully transmits radio signal 2 miles in Italy	*Hughes Network Poster.*
1896	Private	Tabulating Machine Company established by Hollerith	
1901	Private	Marconi successfully transmits radio signal across Atlantic.	*Hughes Network Poster.*
1906	Private	Russian Boris Rosing invents first working TV	*Hughes Network Poster.*
1910	Govt ICC	Mann-Elkin Act brought interstate telecommunications within the jurisdiction of the the ICC	
1912	Govt ICC	Radio Act of 1912 gives Secretary of Commerce and Labor authority to issue radio licenses and control broadcasting	
		Titantic sinks - its	

1912	Private	radio calls for help go unheard	*Media Timeline ketupa.net*
1913	Govt	Kingsbury agreement between US Government and AT&T. AT&T agreed to stop acquiring independent phone companies and to divest itself of Western Union	*Larry Lessig, Future of Ideas at 29 (2001)*
1914	Private	ASCAP founded	*Media Timeline ketupa.net*
1914	Private	Calculating-Tabulating-Recording company (aka IBM) founded by Herman Hollerith	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1919	Private	CTR formed out of merger of Computing Scale Company, Tabulating Machine Company, and the Recording Company	
1920	Private	KDKA Pittsburgh broadcasts first regular programs	*Media Timeline ketupa.net*
1923	Private	Disney opens Hollywood film studio	*Media Timeline ketupa.net*
1924	Private	Calculating-Tabulating-Recording company becomes IBM	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1926	Private	NBC founded by GE	*Media Timeline ketupa.net*
1927	Govt FRC	Radio Act of 1927 creates the Federal Radio Commission, declares spectrum to be a public good	
1927	Private	Philo Farnsworth successfully transmits first image	*Hughes Network Poster.*

1928	Private	CBS created	*Media Timeline ketupa.net*
1928	Private Disney	Disney releases first Mickey Mouse cartoon	*Media Timeline ketupa.net*
1930	Govt	AT&T becomes sanctioned telephony monopoly under Theodore Vail's vision of "one system, one policy, universal service."	*Fraser, Telecommunications Competition Arrives: Is Univers Order, 15 Fall Cal. Reg. L. Rep. 1, 2-3 (1995).*
1932	Govt	GE ordered to divest RCA and NBC	*Media Timeline ketupa.net*
1932	Govt Intl	ITU established	*Media Timeline ketupa.net*
1934	Govt FCC	Communications Act of 1934 establishes the Federal Communications Commission (1934 Act is the current communications law as amended)	
1936	Private	Publication of Alan Turin, On Computable Numbers, with an application to the Entscheidungsproblem	*Media Timeline ketupa.net*
1938	Private	War of the Worlds broadcast	*Media Timeline ketupa.net*
1938	Private	First publicly broadcast football game, U Penn	*Media Timeline ketupa.net*
1939	Private AT&T	AT&T demonstrates Picturephone	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1940	Private CBS	CBS demonstrates color TV	*Media Timeline ketupa.net*
June 1944	Govt	ENIAC created and used by US Army, at U Penn, to compute World War II ballistic firing tables	

1944	Govt Contract	IBM built the Harvard Mark I, first large scale electronic calculator, in order to calculate gun-firing tables	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1944	Govt R&D	Alan Turing leads British effort to build Colossus at Bletchley Park, breaks German code created by ENIGMA	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
15-Feb 1946	Govt DOD	"Formal dedication and dinner for ENIAC - The world's first operational electronic digital computer - developed by Army Ordinance to computer WWII ballistic firing tables."	*CFP 2002 Calendar*
26-Jun 1947		ENIAC patent filed	
1947	Govt Intl	ITU becomes part of UN	*Media Timeline ketupa.net*
1947	Private AT&T	Transistor invented at Bell Labs	*Hughes Network Poster.*
1951	Govt Contract	Remington-Rand built UNIVAC computer for US census	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1952	Govt DOJ	USGovt sues IBM for antitrust	*Media Timeline ketupa.net*
1953	Private	IBM introduces 700 series computers	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1955	Private	First color television transmission of a US President, Pres. Dwight D. Eisenhower	*Hughes Network Poster.*
		Consent Decree between DOJ and AT&T : Prohibits	

1956	Govt DOJ	AT&T through its manufacturing subsidiary Western Electric from making non telecommunications related computing equiment (in other words, AT&T could not compete with IBM!)	*William Lehr, Economic Case for Voluntary Structural Sepa 2003*
1956	Private	Hush-a-phone built	*Larry Lessig, Future of Ideas at 30 (2001)*
4-Oct 1957	Govt R&D	USSR launches Sputnik I	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/; Richard T. Griffiths, From ARPANet to WWW, The History of the Internet*
1957	Govt R&D	Advanced Research Projects Agency (ARPA) formed.	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
October 1958	Govt R&D	NASA formed.	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1958	Govt UN	UN Committtee on Peaceful Uses of Outer Space established	*Hughes Network Poster.*
1960		Publication of Man-Computer Symbiosis by JCR Licklider	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
July 1961		Publication of Leonard Kleinrock, Information Flow in Large Communications Nets, RLE Quarterly Progress Report	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel and Future History of the Internet, Communications of the A (Feb 1997); Lawrence Roberts Home Page: Internet Chrono www.packet.cc/internet.html*
1961	Private	Commercial production of computer chip initiates	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1961	Private	IBM introduces time sharing and remote access computers	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
		Publication of Licklider, JCR, and	*The Past and Future History of the Internet, Communication.*

August 1962		Clark, W, On-line Man-Computer Communication	*102, 108 (Feb 1997); Lawrence Roberts Home Page: Interne 1960-2001 www.packet.cc/internet.html; PBS Nerds 2.0.1 Ti www.pbs.org/opb/nerds2.0.1/timeline/*
1962	Govt DOD	ARPA establishes Information Processing Techniques Office - IPTO; Licklider hired as director	*DARPA, Living Internet livinginternet.com/i/ii_darpa.htm; L Home Page: Internet Chronology 1960-2001 www.packet.cc TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1962	Private	Publication of John Licklider, "Galatic Networks"	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); TCMHC: Internet History 1962- computerhistory.org/exhibits/internet_history/index_page*
1962		Publication of Paul Baran, Rand, On Distributed Communications Networks	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1963	Govt contract Dod	ARPA contracts with UCLA, MIT and BBN	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
March 1964	Rand	Publication of Paul Baran, Rand, On Distributed Communications Networks, IEEE Transactions on Systems	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
November 1964		JCR Licklider and Larry Roberts meet	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1964	Govt	INTELSAT established	*Hughes Network Poster.*
1964	Private IBM	IBM releases System 360 mainframe	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1964	Private	SABRE air travel computer network goes online for air travel reservations	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1965	Govt DOD	ARPA funds first wide-area network built by Larry Roberts and Thomas Marill	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; R The Origns and Growth of the Internet and the World Wide 2001)*
1965	Govt DOD	ARPA funded JOSS	*TCMHC: Internet History 1962-1992*

		system goes online	*computerhistory.org/exhibits/internet_history/index_page*
1965	Private	Gordon Moore sets forth Moore's law	
1965	Private DEC	DEC releases PDP-8 minicomputer	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1966	Govt DOD	Larry Roberts joins ARPA IPTO, becoming chief scientist	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
October 1967		Larry Roberts, Multiple Computer Networks and Intercomputer Communication, Proceedings of the ACM Gatlinburg Conference	*The Past and Future History of the Internet, Communication. 102, 108 (Feb 1997); Larry Roberts, Internet Chronology 19 www.packet.cc/internet.html*
1967	Govt DOD	ARPA creates ARPANET plans.	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
August 1968	Govt contract DOD	ARPA RFP for construction of first four IMPs on ARPANet	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel Roberts, Internet Chronology 1960-2001 www.packet.cc/inte*
December 1968	Govt contract DOD	ARPA awards contract to BBN for development of ARPANET IMPs	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; L Internet Chronology 1960-2001 www.packet.cc/internet.html*
7-Apr 1969	Govt Grant DOD	Steve Croker, RFC 0001: Host Software released	*The Past and Future History of the Internet, Communication. 102, 108 (Feb 1997); TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; P Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
29-Oct 1969	Govt Grant	Second IMP installed at SRI (Doug Engelbart); First communication over ARPANet between computers at UCLA and Standford. (10:30 pm)	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); ARPANET, Living Internet livinginternet.com/i/ii_arpanet.htm*
1-Dec 1969	Govt funding	Fourth IMP installed at Uni Utah	*Larry Roberts, Internet Chronology 1960-2001 www.packet.c Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1-Nov	Govt	Third IMP installed at	

1969	funding	UCSB	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1-Sep 1969	Govt funding DOD	First IMP installed at UCLA (Len Kleinrock)	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1969	Govt Grant DOD	Network Working Group formed (RFC 10)	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1969	Private	Compuserve Founded	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
December 1970	Govt Grant DOD	Network Working Group completes the Network Control Protocol (NCP), network protocol for ARPANet (implementation of NCP completed 1971-72)	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; T. Future History of the Internet, Communications of the ACM, 1997)*
1970	Govt DOD	ARPANet adopts NCP	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1970	Private AT&T	AT&T developes UNIX	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
December 1971	Govt Grant DOD	23 Host Computers on ARPANet	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1971	Govt Grant DOD	Telnet protocol released by NWG	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1971	DOD	First email sent on ARPANet by Ray Tomlinson "testing 1-2-3" sent to himself	*Richard T Griffiths, History of Electronic Mail, (October 20*
January 1972	Private BBN	Robert Kahn, Communications Principles for Operating Systems, Internal BBN Memo	*The Past and Future History of the Internet, Communication. 102, 103 (Feb 1997)*
July 1972		Release of Jon Postel and Abhay Bhushan, RFC 354, FTP Protocol Specification	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
October	Govt Grant	ARPANet Publicly Demonstrated at International	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline*

1972	DOD	Conference on Computer Communications	*www.pbs.org/opb/nerds2.0.1/timeline/*
October 1972	Partnership	Internetworking Working Group organized	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1972	Private AT&T	AT&T developes C	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1972		Ray Tomlinson (BBN) writes email program for ARPANet, adopting use of @ sign	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; T Future History of the Internet, Communications of the ACM, 1997)*
October 1973		Larry Roberts leaves DARPA, Joins Telenet, first commercial packet switched network; Licklider returns to ARPA IPTO as drector	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
September 1973		Kahn and Cerf present paper on TCP at Intternational Network Working Group meeting	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1973	Govt Contract DOD	DARPA contracts with Standford, BBN, and University College of London for work on TCP	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1973	Private	Release of RFC 454: FTP	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1973	Private	Bob Metcalfe competes PhD thesis on Ethernet	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1973	Govt	Bob Kahn joins DARPA	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
May 1974		Publication of Kahn and Cerf, A Protocol for Packet Network Interconnection, IEEE	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; P*

		Transactions on Communications Technology	*Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1974	Govt Contract DOD	Licklider returns to DARPA	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1974	Private Stanford	Telenet opened by Larry Roberts	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1975	Govt DOD	Administration of ARPANet transfered from DARPA to Defence Communications Agency (aka DISA)	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1975	Private	Microsoft founded by Bill Gates and Paul Allen	
July 1976	Govt	Vint Cerf joins ARPA	
1976	Govt DOD	DARPA supports work at UC Berkely to incorporate TCP/IP into UNIX	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
3-Jan 1977	Private Apple	Apple founded by Steve Jobs and Steve Wozniak	*CFP 2002 Calendar*
October 1977		"First TCP Operation over ARPANet"	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1977	Private	Tymnet launched	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1977	Private Apple	Apple introduces APPLE II	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1977	Private Tandy	Tandy introduces TRS-80	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1-May 1978	Private DEC	Potentially the first SPAM on the Net, a commercial announcement by DEC promoting the DECSYSTEM 2020	*Reaction to the DEC Spam of 1978 www.templetons.com/bra*
March 1978		Vint Cerf, Jon Postel, Danny Cohen, TCP split into TCP/IP	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*

1979	Private	USENET established	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1979	Private	Compuserve offers email and tech support for PC users	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
1980	Govt DOD	TCP/IP "adopted as a defnese standard in 1980, enabling the defense community to begin sharing the DARPA Internet technology base"	*The Past and Future History of the Internet, Communication. 102, 105 (Feb 1997)*
1980	Private IBM	IBM chooses DOS for use in its PCs	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
13-Aug 1981	Private IBM	IBM releases PC	*CFP 2002 Calendar; TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1981	Govt DOD	DARPA Internet Working Group releases RFC 801 setting forth plan to migrate network to TCP/IP	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1981	Govt Grant NSF	NSF grant goes to establish CSNET (Computer Science Network) - uses TCP/IP in CSNET	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1981	Govt Grant NSF	CSNet established by City University New York	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1981	Private	BITNET established	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1981	Private	End-to-end archetecture described by David Clark, Jerome Saltzer, and David Reed	*Larry Lessig, Future of Ideas at 34 (2001)*
1981	Private Osborne	Osborne releases protable computer	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
August		Release of RFC 819, defining initial top	*Sean Donelan, Timeline of events with the domain name syst*

1982		level domain ARPA	*www.donelan.com/dnstimeline.html*
1982	Govt FCC	Judge Green approves of the Modified Final Judgement providing for divestiture of AT&T	
1982	Govt Contract DOD	TCP/IP adopted as protocol suite for ARPANET	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1982	Private IBM	IBM introduces IBM PC	
1982	Private Time	Time names computer as "Man of the Year"	
1-Jan 1983	Govt DOD	ARPANet migrates from NCP to TCP/IP	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
November 1983		DNS "designed by Jon Postel, Paul Mockapetris, and Craig Patridge"	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1983	Govt DOD	ARPANet split into ARPANet and Milnet	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1983		DNS name server developed	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1-Jan 1984	Govt Department of Justice	Consent Decree with AT&T goes into effect. AT&T is broken up into AT&T long distance and the Bell Operating Companies.	*In the Matters of: Amendment of Sections 64.702 of the Com and Regulations (Third Computer Inquiry); and Policy and F Rates for Competitive Common Carrier Services and Faciliti Thereof Communications Protoco*
24-Jan 1984	Private Apple	Apple announces macintosh	*CFP 2002 Calendar; TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
October 1984		Release of RFC 920,Domain Requirements (adds GOV, EDU, COM, MIL and ORG)	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
1984	Govt FCC	Cable Act of 1984	
1984	Private	William Gibson in his book Neuromancer	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*

		reportedly coins the term "cyberspace"	
1984	Private	Prodigy Founded	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
1984		DNS introduced.	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
15-Mar 1985		"Symbolics.com registered"	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
1-Apr 1985		"Berkeley releases BIND"	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
May 1985	Private	Quantum Computer Services (AOL) incorporated	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
1985	Govt NSF	NSFNET Established, using TCP/IP, AUP prohibited network use for purposes "not in support of research and education." Funded at $200 m 1986-95	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); The Past and Future History of t Communications of the ACM, 102, 105 (Feb 1997)*
1985	Private	GE reacquires NBC	*Media Timeline ketupa.net*
1985	Private MS	MS releases Windows 1.0	
1985		"DARPA/DCA implements RFC 920, 921 (U.S.C. §-ISI/SR-NIC)"	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
16-Jul 1986		Cleveland Freenet established (first freenet)	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
21-Oct 1986	Govt Congress	ECPA signed into law	*CFP 2002 Calendar*
January 1986		IETF first meeting	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
March 1986		First 'netiquette' guide created	*Richard T Griffiths, History of Electronic Mail, (October 20*
1986	Govt NSF	NSFNET established	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1986	Govt NSF	NSF signs cooperative agreement with Merit.net for operation	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*

		of NSFNet	
1986	Govt Congress	Al Gore introduces National Science Foundation Authorization Act, supporting computer network research	*Richard Wiggins, Al Gore and the Creation of the Internet, F 1, 2000) www.firstmonday.dk/issues/issue5_10/wiggins/*
1986	Private	Clifford Stoll of Berkeley, detecting a 75 cent accounting error, uncovers the allegedly Russian sponsored hacker "Hunter" who had been using the Berekly systems to attack sensitive US information over the network. The investigation of the hacker led to	*President's Working Group on Unlawful Conduct on the Inte Electronic Frontier: The Challenge of Unlawful Conduct Inv the Internet (March 2000) .*
1986		First Interop conference (for vendors implementing TCP/IP)	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1987	Govt NSF	NSF enters into a cooperative agreement with Merit Network, Inc for the operation of NSFNET	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1987	Private UUNET	UUNET founded by Rick Adams and Mike O'Dell	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1987	Private	IBM VM Christmas Card Trojan Worm released	*The "Good Times" Virus is an Urban Legend, CIAC Notes (L 1994) ciac.llnl.gov/ciac/notes/Notes04c.shtml*
2-Nov 1988	Private	Morris Worm released	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
October 1988	Private	2400 Baud Modem Virus Hoax released	*Hoaxbusters, Information About Hoaxes .*
September	Private	First Interop conference (for	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page; T*

1988		vendors implementing TCP/IP)	*Future History of the Internet, Communications of the ACM, 1997)*
1988	Govt DOD	CERT established by DARPA in response to Morris worm	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1988	Govt	US Government releases procurement requirement that OSI must be supported in IT	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1988	Govt Congress	Al Gore introduces National High-Performance Computer Technology Act of 1988	*Richard Wiggins, Al Gore and the Creation of the Internet, F 1, 2000) www.firstmonday.dk/issues/issue5_10/wiggins/*
1988		CSNET and BITNET merged to become Corporation for Research and Educational Networking (CREN)	*CSNET, Living Internet livinginternet.com/i/ii_csnet.htm*
1988		Publication of Kahn, Towards a National Research Network	*Richard Wiggins, Al Gore and the Creation of the Internet, F 1, 2000) www.firstmonday.dk/issues/issue5_10/wiggins/*
October 1989	Private	"AOL Service Launced for Macintosh and Apple II"	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
1989	Govt NSF	NSF, ARPA fund Gigabit Testbed by Kahn and Cerf at CNRI	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1989	Private MCI	"Internet opened to commercial mail through MCI mail"	*Larry Roberts, Internet Chronology 1960-2001 www.packet.*
1989	Private	World Wide Web developed by Tim Berners-Lee at CERN	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); A Little History of the World Wid (2000) http://www.w3.org/History.html*
1989	Private	First commercial dial up ISP: World world.std.com	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel http://www.TheWorld.com/world-general-faq.shtml#ABOUT*

1989	Private AOL	"Steve Case wins contest to rename the Quantum online service & America Online is born. The AOL service is launched including e-mail, games, special interest forums, plus a groundbreaking feature allowing AOL members to communicate in one-on-one, real tim	*AOLTW Timeline http://www.aoltimewarner.com/corporate_information/timeli*
1990	Govt DOD	ARPANet Terminated	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1990		Archie, first search engine, developed at McGill University	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001); Richard T. Griffiths, Chapter Tw ARPANet to WWW, The History of the Internet*
August 1991	Private	Tim Berners-Lee WWW files made available on The Net via FTP	*A Little History of the World Wide Web, W3C (2000) http://www.w3.org/History.html*
February 1991	Private	"DOS Version of AOL Launched"	*BroadNet Alliance: The Importance of BroadNet (July 2002)*
1991	Govt	BOCs permitted to fully enter the enhanced services market.	
1991	Govt NSF	NSF permits private and commercial access to NSFNET backbone	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1991	Govt	Gore Act passed creating National Research and Education Network	*TCMHC: Internet History 1962-1992 computerhistory.org/exhibits/internet_history/index_page*
1991	Govt Grant NSF	NSF permits private / commercial+E24 access to NSFNET backbone	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
		Phil Zimmerman	

1991	Private	releases PGP	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1991		Mark McCahill releases Gopher	*Richard Wiggins, Al Gore and the Creation of the Internet, F 1, 2000) www.firstmonday.dk/issues/issue5_10/wiggins/*
December 1992		50 websites world wide	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1992	Govt FCC	Cable Television Consumer Protection and Competition Act	
1992	Private	Mark Andreesen develops MOSAIC at University of Illinois	
April 1993	Private	CERN declares that WWW technology will be freely available	*A Little History of the World Wide Web, W3C (2000) http://www.w3.org/History.html*
December 1993		150 websites world wide	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
February 1993	Govt NSF	Marc Andreesen's Mosaic Browser released, alpha version while at at National Center for SuperComputing Applications, Illinois	*A Little History of the World Wide Web, W3C (2000) http://www.w3.org/History.html*
1993	Govt Congress	US National Information Infrastructure Act	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1993	Govt	NSF creates InterNIC. ATT awarded contract for directory and database services, Network Solutions Inc awarded contract for DNS registration, General Atomics/CERFNet awarded contract for information services	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
19-Apr 1994	Private	"Spring employee registers the domain name MCI.NET (first namejacking?)"	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*

1-Oct 1994	Private	W3C Founded	*A Little History of the World Wide Web, W3C (2000) http://www.w3.org/History.html*
25-Oct 1994	Govt Congress	CALEA signed into law	*CFP 2002 Calendar*
14-Dec 1994		First meeting of the W3C	*CFP 2002 Calendar*
December 1994		3000 websites world wide	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
March 1994	Private	Mosaic founded by Marc Andreesen and Jim Clarke (becomes Netscape)	*A Little History of the World Wide Web, W3C (2000) http://www.w3.org/History.html*
1994	Private Netscape	Netscape 1.0 released	
1994	Private	"Good Times Virus" Hoax released	*The "Good Times" Virus is an Urban Legend, CIAC Notes (L 1994) ciac.llnl.gov/ciac/notes/Notes04c.shtml*
1994	Private AOL	"AOL links to Internet for first time"	*AOLTW Timeline http://www.aoltimewarner.com/corporate_information/timeli*
1-Feb 1995	Govt Congress	Senator Exon introduces the Communications Decency Act	*CFP 2002 Calendar*
15-Mar 1995	Govt Contract NSF	"First registered domain Symbolics.com is assigned"	*CFP 2002 Calendar*
18-Sep 1995	Govt NSF	NSF contract with NSI amended, permits NSI to charge for DNS registration	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
December 1995		25,000 websites world wide	*Richard T Griffiths, The Origns and Growth of the Internet a Wide Web (October 2001)*
1995	Govt NSF	NSF establishes very high spee Backbone Network Service vBNS	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1995	Govt Contract NSF	"NSFNET Reverts back to a research network"	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
	Govt Grant National		

1995	Endowement for Humanities	Listserv funded	*Richard T Griffiths, History of Electronic Mail, (October 20(*
1995	Private MS	MS releases Windows 95 with Internet Explorer	
1995	Private	Prodigy Founded	*Richard T Griffiths, History of Electronic Mail, (October 20(2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timeline/*
1995	Private	Netscape IPO released	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
8-Feb 1996	Govt FCC	Telecommunications Act of 1996	
30-Sep 1996	Govt Congress	Child Pornography Prevention Act	*2467 Keeney Memorandum - Recent Amendments to the Fed Pornography and Abuse Statutes - 18 U.S.C. § 2252A www.usdoj.gov:80/usao/eousa/foia_reading_room/usam/ttitt*
2-Oct 1996	Govt Congress	E-FOIA Act	*CFP 2002 Calendar*
1996	Private	IAHC releases proposed plan to establish 7 new top level domain names	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
1996	Private AOL	"AOL publicly traded on NYSE for first time"	*AOLTW Timeline http://www.aoltimewarner.com/corporate_information/timeli*
26-Jun 1997	Govt Court	US Supreme Court unanimously strikes down Communications Decency Act as unconstitutional abridgement of free speech	
13-Jul 1997	Private	"Kashpureff corrupts DNS caches redirecting www.internic.net traffic."	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
1997	Govt	WIPO Compyright Treaty	
1997		ARIN established	*PBS Nerds 2.0.1 Timeline www.pbs.org/opb/nerds2.0.1/timel*
30-Jan 1998	Govt Reg DOC	DOC releases Green Paper	*CFP 2002 Calendar*
23-Oct	govt	COPA passed as part	*FAQ on COPA Commission www.copacommission.org/comn*

1998	Congress	of omnibus budget bill	
28-Oct 1998	Govt Congress	DMCA signed into law	*CFP 2002 Calendar*
1-Feb 1999	Govt Court	COPA declared unconstitutional by district court	*CFP 2002 Calendar*
9-Mar 1999	Private	CNN interview between Wolf Blitzer and Al Gore in which Gore stated "I took the initiative in creating the Internet." Gore was referring to his support of legislation to fund national information infrastructures such as NSFNet. This quote quickly became	*Richard Wiggins, Al Gore and the Creation of the Internet, F 1, 2000) www.firstmonday.dk/issues/issue5_10/wiggins/*
2-Jul 1999	Govt DOC	"NSI web site redirected to CORE with ICANN glue record."	*Sean Donelan, Timeline of events with the domain name syst www.donelan.com/dnstimeline.html*
9-Dec 1999	govt court	David Smith enters guilty plea for disseminating the Melissa virus.	*The Cmputer and Telecom Coordinator Program, US Attorn 2001) www.usdoj.gov/criminal/cybercrime/usamay2001_8.h*
September 1999		DeCSSS program created.	*Lev Ginsburg, Anti-Circumention Rules and Fair Use, 2000 4*
1999	Private Netscape	Netscape releases source code and declares it open	
1999	Private AOL	AOL acquired Netscape	*AOLTW Timeline http://www.aoltimewarner.com/corporate_information/timel*
1-Mar 2000	Govt State	First Internet election, Arizona democratic primary.	*CFP 2002 Calendar*
16-May 2000		"Internet2 backbone network deploys IPv6"	*CFP 2002 Calendar*
20-Oct		COPA Commission	

2000	govt	released its final report	*COPA Commission www.compacommission.org*
2000	Govt Court	Universal City Studios, Inc. V. Reimerdes, 11 FSupp2d 294 (2000)	
11-Jan 2001	Private AOLTW	AOLTW Merger Completed	*AOLTW Timeline http://www.aoltimewarner.com/corporate_information/timeli*
16-Apr 2002	Govt Court	Supreme Court strikes down the Child Pornography Prevention Act, making illegal virtual kiddie porn, as unconstititonal	*Ashcroft v. Free Speech Coalition, No. 00-795 Slip Op (April*
31-May 2002	Govt Court	US District Court for the Eastern District of Pennsylvania ruled that the Children's Internet Protection Act, as it applies to libraries, is facially unconstitutional as a violation of the First Amendment.	*USAC, Court Overturns Certain CIPA Requirements with Re (6/5/2)*

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Networking Desk Reference

Brief Telecommunications History

Date	Event
1835	Samuel F. B. Morse invents the telegraph.
January 1, 1845	First telegraph line, Baltimore - Washington, D.C. First telegraph message, "What hath God wrought".
August 5, 1858	Cyrus W.Field instrumental in laying the first transatlantic submarine cable from Dowlas Bay Valentia, Ireland to Trinity Bay Newfoundland.
1865	Western Union formed by Hiram Sibley.
May 17, 1865	International Telegraph Union formed.
1874	Emile Baudot creates the 5 bit BAUDOT telegraph code.
March 10, 1876	Alexander Graham Bell invents the telephone. First telephone message "Mr. Watson, come here,I want you."
1877	Bell Telephone Company formed. First line Boston to Summerville.
1878	First switchboard 21 Subscribers New Haven, Connecticut. Bell telephone system formed by Theodore N. Vail.
1885	AT&T formed from Bell Telephone and Western Electric.
1896	Almon B. Strowger invents the first automatic telephone switch, the step-by-step Strowger Switch.
1896	Guglielmo Marconi invents the radio.
1900	Michael Pupin invents induction coil loading enabling long distance cable transmission of voice.
1901	First transatlantic radio transmission by Marconi.
1906	Lee DeForest invents the vacuum tube triode.
1920	First regular commercial radio broadcasting station KDKA, Pittsburgh, PA. 1020 kHz.
1927	Public transatlantic telephone radio.
November 18, 1929	Vladimir Zworykin demonstrates first electronic television.
1931	First commercial microwave across the English Channel.
1932	Radiotelegraph Conference and the International Telegraph Union merge to become the International Telecommunications Union (ITU).
1946	ENIAC first electronic computer.
1947	Transistor invented at Bell Laboratories.
1956	TAT-1 first transatlantic telephone cable.
1959	Texas Instruments (TI) develops integrated circuitry.
1962	TELSTAR first telephone communications satellite.
1963	COMPAC first transpacific submarine telephone cable.
1971	Intel develops first microprocessor.
1866	Post Roads Act - assigned regulatory responsibility for the telegraph industry to the U.S. Postmaster General.
1910	Mann-Elkins Act - placed telegraph and telephone companies under the regulation of the Interstate Commerce Commission (ICC).
1912	Radio Act - allocated frequencies, established licensing of radio stations and provided rules for radio use.
1913	Kingsbury Commitment - an agreement between the Department of Justice and AT&T settling an antitrust suit. The agreement specified that AT&T would allow independent carriers to connect with the AT&T long distance network, AT&T would divest itself of Western Union and cease to acquire small independent telephone companies.
1921	Graham-Willis Act - exempted telephone companies from the Sherman Antitrust Act of 1890.
1934	Communications Act - formed the Federal Communications Commission (FCC) as the regulatory agency for telecommunications providers engaging in interstate and international telecommunications.
1956	Consent Decree - settlement of Justice Department suit that limited AT&T to providing regulated communications services and network or customer premises equipment. Sometimes referrred to as the Final Judgement.
1968	Carterfone Decision - FCC ruling that allowed non-AT&T equipment to be attached to the public telephone network provided the equipment met certain technical and operational specifications.
1969	MCI Decision - FCC ruling that permitted Microwave Communications Inc. (MCI) (and any other carrier) to construct long distance facilities in competition with AT&T .
1971	Computer Inquiry I - a study of the differences between the data processing industry and the communications industry attempting to establish distinctions between regulated and unregulated services.
1971	"Open Skies Policy" - a policy established by the FCC that allowed free competition in satellite communication.
1971	VAN policy - an FCC policy that fostered the offering of services by third parties that use common carrier networks creating value added networks (VANs).
1979	Computer Inquiry II - a study in which the FCC classified data processing into basic services, or communications services which would be regulated and enhances services that would be unregulated.
1982	Consent Decree - the agreement that ended the Justice Department's antitrust suit against AT&T. It required AT&T to divest itself of certain operations. Often referred to as the Modified Final Judgement (MFJ).

This is the CBS section of The Broadcast Archive

Maintained by:
Barry Mishkind - The Eclectic Engineer
Last Updated 2/14/03

CBS history started on January 27, 1927, as United Independent Broadcasters, Inc.

Even before United got started, the Columbia Phonograph Co. had become interested in the venture. **The Columbia Phonograph Broadcasting System**, which was to act as sales agent for United, was organized in April of 1927. United contracted to pay each of the original 16 stations $500 per week for 10 hours of radio time. Soon the Sales agent could not sell enough air time and the network was near collapse after only a few months.

The Columbia phonograph company then withdrew from the project with the sale of all capital stock which United bought and then renamed the company the **Columbia Broadcasting System**. William S. Paley and his family then bought the majority of CBS stock and the network began to grow. In 199x CBS was sold to Westinghouse.

Sunday, September 18, 1927: CBS made its first network broadcast at 3 PM EST.

- 16 stations were on board for Opening Day.
- Originating station: WOR Newark (the first control room was in the men's room)
- Other Stations:
  - WEAN Providence
  - WNAC Boston
  - WFBL Syracuse
  - WMAK Buffalo-Lockport
  - WCAU Philadelphia
  - WJAS Pittsburgh
  - WADC Akron
  - WAIU Columbia
  - WKRC Cincinati
  - WGHP Detroit
  - WMAQ Chicago
  - KMOX St. Louis
  - WCAO Baltimore
  - KOIL Council Bluffs
  - WOWO Fort Wayne

12/15/28: WABC New York (O&O) replaces WOR.

CBS featured its own 22 piece symphony orchestra, led by conductor Howard Barlow. Master of Ceremonies on opening day was Major J. Andrew White, who also served as Vice President of the new chain. The Opening Day programming featured a performance of "The King's Henchman", performed by a cast of performers from the Metropolitan Opera. Other programs featured classical selections by members of the New York Philharmonic, and the Philadelphia Symphony Orchestra, among others.

Columbia was known as the "**Purple Network**" (from the color coding on the AT&T diagrams).

Among the first networks to truly realize the power of news and to develop its use, **CBS News through WWII** is Frank Absher's look at the rise of network news.

Other interesting events in the CBS timeline:

January 1941, CBS started a Latin American net of 39 longwave and 25 shortwave stations in 18 countries.

1946: Flagship AM station in New York City changes calls to WCBS.

1975(?): along with the other networks, CBS sought the youth market with RadioRadio. These newscasts ran at :50.

November 1995: Acquired by Westinghouse.

June 1996: CBS Radio was made part of newly acquired Infinity Broadcasting, and then "spun off" as a CBS subsidiary.

December 1997: Westinghouse is officially renamed CBS Corporation.

2000: Acquired by Viacom.

BACK TO THE HOME PAGE

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An important note about this resource:

We have used many sources, including FCC files, university lecturers, historical publications and more, and have tried to be as accurate as possible, not repeating many of the myths of the industry (such as the Uncle Don Story) nor histories "manufactured" by promotion departments. However, I can not and do not guarantee total accuracy of what is in the FAQ. If you do see an error or omission, please inform me at: this email address. (be sure to fix the anti-spam part)

The accuracy and expansion of this resource depend upon our SHARING our efforts.

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- ***Thanks a megaWatt!***

NATIONAL BROADCASTING COMPANY

U.S. NETWORK

The fortunes of the National Broadcasting Company (NBC) have always been closely tied to those of its parent company, Radio Corporation of America (RCA). Unlike CBS, which was formed as an independent programming enterprise, NBC came into existence as the subsidiary of an electronics manufacturer which saw programming as a form of marketing, an enticement to purchase radio and television receivers for the home. The power and influence of a national network aided RCA as it lobbied to see its technology adopted as the industry standard, particularly during the early years of television and in the battle over color television.

RCA was formed after World War I when General Electric signed an extensive patents cross-licensing agreement with Westinghouse, AT and T, and United Fruit. The product of this alliance, RCA was owned jointly by the four companies and was created for the purpose of marketing radio receivers produced by G. E. and Westinghouse. As the alliance unraveled during the late 1920s and early 1930s, due to internal competition and government antitrust efforts, RCA emerged as an independent company. In November 1926, RCA formed NBC as a wholly-owned subsidiary. Shortly thereafter, RCA added a second network, and the two networks were designated NBC-Red and NBC-Blue.

RCA, which had been merely a sales agent for the other companies emerged in the 1930s as a radio manufacturer with two networks, a powerful lineup of clear channel stations, and a roster of stars who were unequaled in the radio industry. From this position of power RCA research labs under the direction of Vladimir Zworykin set the standard for research into the nascent technology of television. NBC began experimental broadcasts from New York's Empire State building as early as 1932. By 1935 the company was spending millions of dollars annually to fund television research. Profits from the lucrative NBC radio networks were routinely channeled into television research. In 1939 NBC became the first network to introduce regular television broadcasts with its inaugural telecast of the opening day ceremonies at the New York World's Fair of 1939. RCA's goal was to produce and market receivers and programs, to become the driving force in the emerging industry.

RCA's dominance of the broadcast industry led to government scrutiny in the late 1930s when the FCC began to investigate the legitimacy of networks, or "chain broadcasting" as it was then called. The result was the 1941 publication of the FCC's Report on Chain Broadcasting which criticized the network's control of a majority of high-powered stations and called for the divorcement of NBC's two networks. RCA took the decision to court, but failed to overturn the FCC's findings. In 1943 RCA sold its Blue network to Edward J. Noble, and this network eventually became ABC.

After World War II, RCA moved quickly to consolidate its influence over the television industry. While CBS tried to stall efforts to establish technological standards in order to promote its own color-TV technology, RCA pushed hard for the development of television according to the existing NTSC

Programming under Kintner followed the network's traditic reliance on dramas and comedy-variety. NBC formed a st alliance with the production company MCA-Universal, wh drama series came to dominate the network's schedule w into the 1970s. After introducing movies to prime-time wit *Saturday Night at the Movies* in 1961, NBC joined with M Universal to develop several long-form program formats, including the ninety-minute episodic series (*The Virginian* made-for-TV movie (debuting with *Fame Is The Name of t Game* in 1966), and the movie series *(The NBC Mystery Movie*, which initially featured *Columbo, McCloud,* and *McMillan and Wife*).

During the late 1970s, after decades of battling CBS in th ratings, NBC watched as ABC, with a sitcom-laden sched took command of the ratings race, leaving NBC in a distar third place. To halt its steep decline, NBC recruited Fred Silverman, the man who had engineered ABC's rapid rise Silverman's tenure as president of NBC lasted from 1978 1981 and is probably the lowest point in the history of the network. Instead of turning around NBC's fortunes, Silver presided over an era of steadily declining viewers, affiliate desertions, and programs that were often mediocre (*BJ a the Bear*) and occasionally disastrous (Supertrain).

At the depths of its fortunes in 1981, mired in third place, recruited Grant Tinker to become NBC chairman. A cofou of MTM Enterprises, Tinker had presided over the specta rise of the independent production company that had produced *The Mary Tyler Moore Show, Lou Grant*, and *H Street Blues*. Tinker led NBC on a three-year journey bac respectability by continuing the commitment to quality programming that had marked his tenure at MTM. Along v his chief programmer, Brandon Tartikoff, Tinker patiently nurtured such acclaimed series as *Hill Street Blues, Chee St. Elsewhere,* and *Family Ties*. The turning point for NBC came in 1984 when Tartikoff convinced comedian Bill Cos to return to series television with *The Cosby Show*. Netwc profits under Tinker climbed from $48 million in his first ye $333 million in 1985.

By the mid-1980s NBC generated 43% of RCA's $570 mil in earnings--a hugely disproportionate share of the profits single division of the conglomerate. In the mergermania o 1980s, RCA became a ripe target for takeover, particularl given the potential value of the company when broken int various components. General Electric purchased RCA--ar with it NBC--in 1985 for $6.3 billion. When Tinker stepped down in 1986, G.E. chairman John F. Welch, Jr. named fc G.E. executive Robert E. Wright as network chairman. Ba on the continued success of the series left behind by Tink NBC dominated the ratings until the late 1980s--when its ratings and profits suddenly collapsed, leaving losses of $ million in 1991 and just one show, Cheers, in the Nielsen 10.

Rumors warned that G.E. was about to bail out, selling NE Paramount, Time Warner, Disney, or perhaps even a syndicate headed by Bill Cosby. G.E. management came

technical standards established in 1941. The FCC agreed with RCA, though the two networks continued to battle over standards for color television until the RCA system was finally selected in 1953. Throughout this period, network television played a secondary role at RCA. In the early 1950s NBC accounted for only one-quarter of RCA's corporate profits. NBC's most important role for its parent was in helping to extend the general appeal of television as the market for television sets boomed.

Throughout the 1950s and 1960s, NBC generally finished in second place in the ratings behind CBS. NBC's prime-time schedule relied heavily on two genres: drama, including several of the most acclaimed anthology drama series of the 1950s (*Philco/Goodyear Playhouse, Kraft Television Theater)*, and comedy-variety, featuring such stars as Milton Berle, Jimmy Durante, Sid Caesar and Imogene Coca, Dean Martin and Jerry Lewis, Bob Hope, and Perry Como. In spite of its dependence on these familiar genres, NBC was also responsible for several programming innovations.

Several key innovations are credited to Sylvester "Pat" Weaver, who served as the network's chief programmer from 1949 to 1953 and as president from 1953 to 1955. Weaver is credited with introducing the "magazine concept" of television advertising, in which advertisers no longer sponsored an entire series, but paid to have their ads placed within a program--as ads appear in a magazine. Previously, networks had functioned as conduits for sponsor-produced programming; this move shifted the balance of power toward the networks, which were able to exert more control over programming. Weaver expanded the network schedule into the "fringe" time periods of early morning and late night by introducing Today and Tonight. He also championed "event" programming that broke the routines of regularly-scheduled series with expensive, one-shot broadcasts, which he called "spectaculars." Broadcast live, the Broadway production of Peter Pan drew a record audience of 65 million viewers.

Former ABC president Robert Kintner took over programming at in 1956 and served as network president from 1958 to 1965. Kintner supervised the expansion of NBC news, the shift to color broadcasting (completed in 1965), and the network's diversification beyond television programming. Through RCA, NBC branched out during the 1960s, acquiring financial interest in Hertz rental cars, a carpet manufacturer, and real-estate holdings. The network moved aggressively into international markets, selling programs overseas through its NBC International subsidiary, which placed NBC programs in more than eighty countries. By the mid-1960s NBC had invested in thirteen television stations and one network in eight countries.

under intense criticism for its sometimes harsh cost-cuttin which many felt had damaged network operations, particu in the news division. G.E. was also blamed for misunderstanding the business of broadcasting. The netw suffered a series of public relations debacles, including a fraudulent news report on the newsmagazine Dateline an bungled attempts to name a successor to Johnny Carson host of the flagship *Tonight Show*.

But General Electric held onto NBC, and Robert Wright remained in charge. By 1996 NBC is once again the undisputed leader of network television with the five top-r shows most weeks. Under the programming of Warren Littlefield, NBC has solid hits in *Seinfeld, E.R., Frasier*, an *Friends*. G.E. has also spent a considerable amount of its money to guarantee NBC the rights to the most valuable televised sports events, including $4 billion for the rights t broadcast the Olympics until well into the twenty-first cent In addition, NBC has diversified substantially during the G era. The network owns minor stakes in cable channels su as Arts and Entertainment, Court TV, American Movie Classics, Bravo, Sports Channel America, and the History Channel. NBC founded a cable network, CNBC, a busine news channel which is valued at more than $1 billion. Fro this success it has spun off the cable network America's Talking, which will be converted to an all-news channel th to an alliance formed with computer software giant Micros And the network has invested $23 million in a Europe-bas cable and satellite network called Super Channel, which v extend NBC's global reach.

-Christopher Ande

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See also American Broadcasting Company; Columbia Broadcasting System; Sarnoff, David; Sarnoff, Robert; Kir Robert; Wright, Robert