
Broadcast and Sound Engineering Technicians and Radio Operators

Significant Points

- Job applicants will face keen competition for jobs in major metropolitan areas, where pay generally is higher; prospects are expected to be better in small cities and towns.
- Technical school, community college, or college training in broadcast technology, electronics, or computer networking provides the best preparation.
- About 29 percent of these workers are in broadcasting, mainly in radio and television stations, and 15 percent work in the motion picture, video, and sound recording industries.
- Evening, weekend, and holiday work is common.

Nature of the Work

Broadcast and sound engineering technicians and radio operators perform a wide variety of tasks. Their duties include setting up and maintaining the electrical equipment used in nearly all radio and television broadcasts, concerts, plays, sound recordings, and movies. There are many specialized occupations in this field.

Audio and video equipment technicians set up and operate audio and video equipment, including microphones, speakers, video screens, projectors, video monitors, and recording equipment. They also connect wires and cables and set up and operate sound and mixing boards and related electronic equipment for concerts, sports events, meetings and conventions, presentations, and news conferences. They may set up and operate associated spotlights and other custom lighting systems. They also are needed to install and maintain equipment in many large businesses and universities that are upgrading their facilities with audio and video equipment.

Broadcast technicians set up, operate, and maintain equipment that regulates the signal strength, the clarity, and the ranges of sounds and colors of radio or television broadcasts. These technicians also operate control panels to select the source of the material. Technicians may switch from one camera or studio to another, from film to live programming, or from network to local programming.

Sound engineering technicians operate machines and equipment to record, synchronize, mix, or reproduce music, voices, or sound effects in recording studios, sporting arenas, theater productions, or movie and video productions.

Broadcast and sound engineering technicians and radio operators perform a variety of duties at small stations. At large stations and at the networks, technicians are more specialized, although job assignments may change from day to day. The terms “operator,” “engineer,” and “technician” often are used interchangeably to describe these workers. They may monitor and log outgoing signals and operate transmitters; set up, adjust, service, and repair electronic broadcasting equipment; and regulate fidelity, brightness, contrast, volume, and sound quality of television broadcasts.

Technicians also work in program production. *Recording engineers* operate and maintain video and sound recording equipment. They may operate equipment designed to produce special effects, such as the illusion of a bolt of lightning or a police siren. *Sound mixers* or *re-recording mixers* produce soundtracks for movies or television programs. After filming or recording is complete, these workers may use a process called “dubbing” to insert sounds. *Field technicians* set up and operate portable transmission equipment outside the studio. Because television news coverage requires so much electronic equipment and the technology is changing so rapidly, many stations assign technicians exclusively to news. *Chief engineers*, *transmission engineers*, and *broadcast field supervisors* oversee other technicians and maintain broadcasting equipment.

Radio operators mainly receive and transmit communications using a variety of tools. These workers also repair equipment, using such devices as electronic testing equipment, hand tools, and power tools. One of their major duties is to help ensure communication systems remain in good condition.

Work environment. Broadcast and sound engineering technicians and radio operators generally work indoors in pleasant surroundings. However, those who broadcast news and other programs from locations outside the studio may work outdoors in all types of weather or in other dangerous conditions. Technicians doing maintenance may climb poles or antenna towers, and those setting up equipment do heavy lifting.

Technicians at large stations and the networks usually work a 40-hour week under great pressure to meet broadcast deadlines, and may occasionally work overtime. Technicians at small stations routinely work more than 40 hours a week. Evening, weekend, and holiday work is usual because most stations are on the air 18 to 24 hours a day, 7 days a week. Some technicians need to be available on call whenever the station is broadcast-



Broadcast technicians set up, operate, and maintain electrical equipment.

Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2008	Projected Employment, 2018	Change, 2008-2018	
				Number	Percent
Broadcast and sound engineering technicians and radio operators ..	27-4010	114,600	123,600	9,000	8
Audio and video equipment technicians	27-4011	55,400	62,400	7,000	13
Broadcast technicians.....	27-4012	38,800	39,400	700	2
Radio operators	27-4013	1,000	1,100	100	9
Sound engineering technicians	27-4014	19,500	20,700	1,200	6

(NOTE) Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

ing; technicians must handle any problems that occur during this time.

Technicians who work on motion pictures may be on a tight schedule and may work long hours to meet contractual deadlines.

Training, Other Qualifications, and Advancement

Broadcast and sound engineering technicians, as well as audio and video equipment technicians, should have some kind of formal training related to their field. Radio operators do not need an education beyond high school and can usually learn their jobs through several months of on-the-job training.

Education and training. Audio and video equipment technicians should complete a technical-training program related to the field, which may take several months to a year to complete. Many recent entrants to the field have also received an associate degree or bachelor's degree, although it is generally not required for entry-level positions. In addition to coursework, experience in high school or college audiovisual clubs can provide a student with good training for this occupation. Working as an assistant is a useful way to gain experience and knowledge for an entry-level employee.

For broadcast technicians an associate degree in broadcast technology, electronics, computer networking, or a related field is generally recommended. Because of the competitiveness of the broadcast industry, many jobs require a bachelor's degree. A four-year degree also gives employees much better prospects for advancement in the field.

Most entry-level employees find jobs in small markets or with small stations in big markets and can transfer to larger, better paying stations after gaining experience and learning the necessary skills. Small stations usually value more general skills since they have fewer employees doing less specialized work. Large stations almost never hire someone without previous experience, and they value more specialized skills. Working at a college radio or television station can be very advantageous for prospective employees.

Sound engineering technicians usually complete a vocational program, which can take about a year, although there are shorter programs. Prospective technicians should take high school courses in math, physics, and electronics. Technicians need to have excellent computer training to be successful in this field.

Radio operators are not usually required to complete any formal training. This is an entry-level position that generally requires on-the-job training.

In the motion picture industry, people are hired as apprentice editorial assistants and work their way up to jobs requiring higher level skills. Employers in the motion picture industry usually hire experienced freelance technicians on a picture-by-picture basis. Reputation and perseverance are important in getting jobs.

Continuing education to become familiar with emerging technologies is recommended for all broadcast and sound engineering technicians and radio operators.

Other qualifications. Broadcast and sound engineering technicians and radio operators need skills in information technology and electronics since most recording, editing, and broadcasting are done on computers. Prospective technicians must have manual dexterity and an aptitude for working with electrical, electronic, and mechanical systems and equipment.

Certification and advancement. Licensing is not required for broadcast technicians. However, certification by the Society of Broadcast Engineers is issued to experienced technicians who pass an examination, and the certification may help with advancement.

Experienced technicians can become supervisory technicians or chief engineers. A college degree in engineering is needed to become chief engineer at large television stations.

Employment

Broadcast and sound engineering technicians and radio operators held about 114,600 jobs in 2008. Their employment was distributed among the following detailed occupations:

Audio and video equipment technicians	55,400
Broadcast technicians.....	38,800
Sound engineering technicians.....	19,500
Radio operators	1,000

About 29 percent of broadcast and sound engineering technicians and radio operators worked in broadcasting (except Internet broadcasting), and 15 percent worked in the motion picture, video, and sound recording industries. About 13 percent were self-employed. Television stations employ, on average, many more technicians than radio stations. Some technicians are employed in other industries, producing employee communications, sales, and training programs. Technician jobs in television and radio are located in virtually all U.S. cities; jobs in radio also are found in many small towns. The highest paying and most specialized jobs are concentrated in New York City, Los Angeles, Chicago, and Washington, DC—the headquarters

of most network and news programs. Motion picture production jobs are concentrated in Los Angeles and New York City.

Job Outlook

Employment is expected to grow about as fast as the average through 2018. But people seeking entry-level jobs as technicians in broadcasting are expected to face keen competition in major metropolitan areas. Prospects are expected to be better in small cities and towns.

Employment change. Overall employment of broadcast and sound engineering technicians and radio operators is expected to grow by 8 percent over the 2008–18 decade, which is about as fast as the average of all occupations. Projected job growth varies among detailed occupations in this field. Employment of audio and video equipment technicians is expected to grow 13 percent, about as fast as average. Audio and video equipment is in heavy demand in many new buildings, especially new schools, and in existing schools as well. Many new technicians will be needed, not only to install, but to maintain and repair the equipment as well. A growing number of companies will plan permanent departments employing audio and video technicians. An increase in the use of digital signage will also lead to higher demand for audio and video equipment technicians. In the motion picture industry, employment for these workers will grow because they are needed to install digital movie screens.

Employment of broadcast technicians is expected to grow by 2 percent, signifying little or no change, and employment of sound engineering technicians is expected to grow by 6 percent, which is slower than average. Advancements in technology will enhance the capabilities of technicians to produce higher quality radio and television programming; however, this improved technology will also increase the productivity of technicians, which may hold down employment growth. Jobs in radio and television broadcasting will also be limited by further consolidation of stations and by labor-saving advances, such as computer-controlled programming. In the cable and pay portion of the broadcasting industry, employment is expected to grow as the range of products and services expands, including cable Internet access and video-on-demand. An area in which technicians will be in increasing demand over the next several years is mobile broadcasting.

Job prospects. People seeking entry-level jobs as broadcast technicians are expected to face keen competition because of the large number of people attracted by the glamour of working in television or radio. Competition will be stronger in large metropolitan areas where pay is generally higher and the number of job seekers usually exceeds the number of openings. Prospects for entry-level positions are expected to be better in small cities and towns, provided that the jobseeker has appropriate training.

Earnings

Television stations usually pay higher salaries than radio stations, commercial broadcasting usually pays more than non-commercial broadcasting, and stations in large markets pay more than those in small markets.

Median annual wages of audio and video equipment technicians in May 2008 were \$38,050. The middle 50 percent earned between \$28,130 and \$51,780. The lowest 10 percent earned less than \$21,500, and the highest 10 percent earned more than

\$66,030. Median annual wages in motion picture and video industries, which employed the largest number of audio and video equipment technicians, were \$39,410.

Median annual wages of broadcast technicians in May 2008 were \$32,900. The middle 50 percent earned between \$22,900 and \$49,340. The lowest 10 percent earned less than \$17,510, and the highest 10 percent earned more than \$66,550. Median annual wages in radio and television broadcasting, which employed the largest number of broadcast technicians, were \$29,220.

Median annual wages of sound engineering technicians in May 2008 were \$47,490. The middle 50 percent earned between \$32,770 and \$69,700. The lowest 10 percent earned less than \$23,790, and the highest 10 percent earned more than \$92,700.

Median annual wages of radio operators in May 2008 were \$37,120. The middle 50 percent earned between \$27,890 and \$48,200. The lowest 10 percent earned less than \$19,240, and the highest 10 percent earned more than \$61,290.

Related Occupations

Other occupations that need the electronics training necessary to operate technical equipment include:

- Electrical and electronics installers and repairers
- Engineering technicians
- Science technicians

Broadcast and sound engineering technicians also may operate computer networks, as do:

- Computer support specialists

Other occupations that screen incoming calls on some live radio and television programs are:

- Communications equipment operators

Sources of Additional Information

For career information and links to employment resources, contact:

- National Association of Broadcasters, 1771 N St. NW., Washington, DC 20036. Internet: <http://www.nab.org>

For information on certification and links to employment information, contact:

- Society of Broadcast Engineers, 9102 North Meridian St., Suite 150, Indianapolis, IN 46260. Internet: <http://www.sbe.org>

For information on audio and video equipment technicians, contact:

- InfoComm International, 11242 Waples Mill Rd., Suite 200, Fairfax, VA 22030. Internet: <http://www.infocomm.org>

The Occupational Information Network (O*NET) provides information on a wide range of occupational characteristics. Links to O*NET appear at the end of the Internet version of this occupational statement, accessible at <http://www.bls.gov/ooh/ocos109.htm>