Chapter 23
Cable TV Valuation

Introduction

Cable television (also called CATV or community antenna television) began broadcasting in 1948. It was developed to reach communities unable to receive television signals due to terrain or distance from TV stations. Cable systems located their antennas on hills, mountains, or other areas that provided good reception. This enabled them to pick up television signals and distribute them by cable to subscribers for a fee.

Originally, most cable systems offered 10 or fewer channels. However, the development of satellite communications broadly expanded the number and types of programs available. Cable stations could send their signal to the communications satellites that would reflect the signal back to the cable systems. The cable systems process the signal and transmit it through the cable to the subscribers. This enabled the development of "superstations," special programming such as ESPN, and premium channels such as HBO and Showtime. The large selection of cable channels made cable television attractive to almost all municipalities.

In 1950, there were only 70 cable systems serving 14,000 subscribers. In 2001, cable has expanded to 9,924 systems with 67 million subscribers. As of October 2001, Wisconsin had 260 cable systems providing service to 1,293,315 basic subscribers according to the National Cable & Telecommunications Association (NCTA). Today, most cable systems offer at least 54 channels. Some systems use dual cables to offer 72 or more channels. In addition to off-air and satellite programs, most cable systems provide access channels for public and institutional use.

The cable television industry's growth was restricted during the 1960's and early 1970's due to strict regulation by the Federal Communications Commission (FCC). These restrictive policies were developed in response to concerns from local television channels. The broadcasting of distant channels by cable systems competed with local channels. The industry's development was frozen until 1972, when FCC deregulation modified the restriction of broadcasting distant signals. The Cable Act of 1984 deregulated the industry and spurred investment in cable plant and programming. In addition, delivery of broadcasting via satellite continued to expand. Deregulation resulted in rapid growth, expansion and investment in the cable services industry.

The Cable Act of 1996 is a comprehensive rewrite of the federal communications law. This Act represents the first extensive rewrite of the law since 1934. Sweeping changes in the law opened up competition for the first time in local telephone markets. Some cable service providers began offering wire-line and wireless telephone and data services in addition to their television services.

Since 1996, the cable industry has invested $55 billion to upgrade its infrastructure. Cable services have been expanded to include interactive and high definition digital services, advanced broadband services including high-speed Internet access, digital video, interactive television and competitive local telephone services. This industry continues to expand by

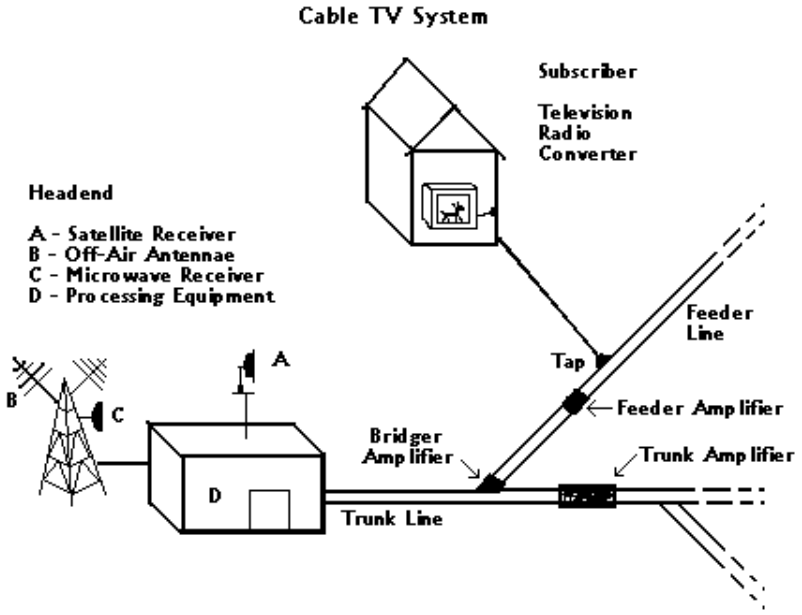
providing high quality innovative programming. This Act encouraged competition by allowing telecommunications firms to provide cable services.

The Department of Revenue (DOR) is responsible for the assessment and taxation of telecommunication providers. Please see WPAM Chapter 10 for detailed information. Personal property may be assessed at the local level or by the DOR. Please see WPAM page 10-33 for guidelines for classifying personal property of companies performing multiple activities. Examples include separate and distinct cable television activity (non-telecommunications) at a locally assessed telephone company.

Definition

Cable television is an antenna system linked to individual subscribers by cable. The cable antenna receives broadcast, microwave, and satellite signals, processes the signals, and distributes the signals through the cable to subscribers. Amplifiers placed throughout the cable boost the signal and allow it to be transmitted over the length of the cable system. The main difference between cable TV and regular broadcast television is that cable TV sends the signals through a cable rather than through the air. Each cable TV system consists of a headend, distribution system, and subscriber connection. Cable firms typically own the land on which they locate the headend. However, they do not own the land on which they install the distribution system. Cable firms use utility rights of way on which to install the cable. If existing utility lines are strung on overhead poles, the cable distribution line will follow. If the utility lines are underground, the cable lines must also go underground. The following sections explain the cable television distribution system. Figure 23-1 provides an aid to understanding the system.

Figure 23-1



Headend

Each cable TV system has a headend. This is an electronic control center that receives and processes the signal and then feeds it into the distribution system. The location of the headend is carefully chosen to assure good signal reception. Hilltops, mountains, and the tops of tall buildings are all good locations. At the headend, there is a 100 to 500 foot tower with an antenna mounted on it for each broadcast signal it receives. There are also one or more satellite dishes to receive signals sent through satellite communications. The signal passes through a processing amplifier that separates the sound and picture. It adjusts the sound and picture to provide the highest quality and prevent interference with adjacent channels. The amplifier reassembles the picture and sound and transmits the signal through the distribution system.

Distribution System

The cable industry has invested significant resources to upgrade its distribution systems to fiber optic cables. Fiber optic cables increase channel capacity, decrease the need for amplifiers, provide better picture quality, and reduce power outages. Prior to the Cable Act of 1996, most cable systems did not use fiber optics since these cables are significantly more expensive than coaxial cable.

The distribution system carries signals from the headend to the subscribers' homes. The first distribution systems used coaxial cable from .25 to 1.0 inch in diameter. These cables consisted of layers with an inner conductor of copper or copper-clad aluminum surrounded by an insulator such as foam or polyethylene enclosed with a layer of aluminum and then encased in plastic sheathing.

The major arteries of the distribution system are the trunk lines. The trunk lines carry signals from the headend to the far end of the cable system. The cable used for trunk lines is .5 to 1.0 inches in diameter. The trunk is the longest cable run (up to 10 miles).

Feeder lines, which carry signals to homes, connect like branches off the trunk line and are .41 to .5 inches in diameter. Each feeder line connects to the trunk line by a Bridger amplifier. The Bridger amplifier draws signal power from the trunk line for distribution. It also protects the trunk line from electronic disturbances in the feeder lines.

Both the trunk line and feeder lines have electronic amplifiers installed along the lines. This is necessary because the signal carried by coaxial cable weakens as it passes through the cable. Weakening of the signal, or attenuation, causes a snowy picture on the TV screen. Installing amplifiers along the system boosts the signal to remedy this problem. Trunk amplifiers are located about every 1,800 feet along the trunk line (about 3 per mile). Feeder cable amplifiers, or line extenders, are located as necessary. It is also necessary to locate power supplies every 3-4 miles along the cable system to power the amplifiers. One power supply provides power for 60 amplifiers.

Subscriber Connection

After installing cable lines, the main distribution cable passes by all homes. As people decide to subscribe, the feeder line connects to the subscriber's home by a subscriber drop. A subscriber drop is drop cable (typically .25 inches in diameter) that runs from the feeder line to the subscriber's home. The drop cable runs from a room wall connector to the subscriber's TV antenna terminals by a matching transformer.

When cable was first available, many television sets are unable to receive all of the channels that the cable signal carries. These sets required a converter to convert the signal on the cable to one standard VHF channel. The television set remains tuned to this channel, and the converter tuner serves as a channel selector for the television.

The assessor must be aware of who owns the subscriber drops and converters. In most cases, the cable TV firm owns the drops and converters and is subject to assessment for them. In some cases, the subscriber owns the drops and converters. The assessor cannot assess these drops and converters to the cable TV firm. The assessor can assess the drop to the subscriber to the extent that it adds value to the real estate. The converter is exempt as household furnishings under sec. 70.111(1), Wis. Stats.

Signal Carriage

Broadcast Signals

The FCC requires cable TV systems to carry certain television broadcast signals if the stations request it. In general, cable TV must carry all television stations, which broadcast in the area served by the cable system. This includes noncommercial educational television. In addition, cable systems will also receive microwave and satellite signals as well as non-broadcast signals. Sec. 70.111(25), Wis. Stats., exempts Digital Broadcasting Equipment owned and used by radio and television stations and cable television systems defined in sec. 66.0419(2)(d), Wis. Stats.

Non-Broadcast Signals

A non-broadcast channel is any channel, which is not a licensed over-the-air broadcast station. Two types of cable channels fall into this category. They are origination and access channels. Origination channels are channels on which the cable operator provides the programming. Access channels are open to individuals or groups within the community who provide the programming. Both origination and access channels typically provide community-oriented programming such as local news, local sports, public announcements, and government meetings. Origination programming may also include specialized programming purchased by the cable operator.

Microwave

Microwave carries TV channels in situations where coaxial cable is not economically feasible or physically possible. It is useful when the terrain between the headend and the point of distribution is hilly or includes bodies of water. Microwave is especially useful for spanning long distances to bring signals from distant markets.

The three most useful applications of microwave by cable systems are Cable Television Relay Service, Multi-Point Distribution Service, and microwave via satellite

Cable Television Relay Service (CARS)

Cable Television Relay Services are privately owned microwave systems used in connection with cable TV systems. The acronym CARS refers to Community Antenna Relay Service, which was the former name of this service.

There are two types of CARS microwave transmission - long haul and local distribution service. Long haul systems transmit a few channels over a long distance (generally 100 miles or more). Local distribution service transmits many channels to a number of receiving sites within 30 to 40 miles.

Microwave systems carry television channels may use either frequency modulation (FM) or amplitude modulation (AM). FM is better for long haul applications because it allows the repeating of the signal without significant noise degradation. FM uses the frequency spectrum inefficiently and therefore, it can carry only one channel per transmitter-receiver. Long haul applications locate a transmitter near the source station and radiates the signal toward the distant receiver. Microwave transmissions over great distances require repeaters every 25 to 35 miles to relay the signal to the headend.

Local Distribution Service

Local Distribution Service (LDS) is a method of inter-connecting cable systems when a large municipality requires more than one headend. It allows several contiguous cable systems in neighboring communities to share local programming. It also provides for transmitting several TV channels from one headend to locations 15 to 40 miles away. LDS uses AM systems because AM systems can carry as many as 80 channels at one time. An AM system consists of a transmitter and transmitting antenna and a receiver and receiving antenna for each community served by the system. AM transmitters are very expensive; however, AM receivers are relatively inexpensive. This makes it cost effective to transmit from one headend site to many receiving sites.

Multi-Point Distribution Service

Multi-Point Distribution Service (MDS) is a common carrier that transmits private TV programming to selected customer locations. MDS uses a centrally located transmitter to send a signal on higher microwave frequencies than those used by conventional broadcast stations. MDS uses AM to send one channel with a maximum range of 10 to 25 miles, depending on the size of the transmitter.

The transmitter site includes a transmitter, antenna, and transmission lines. It frequently includes an earth station to allow access to satellite programming. The receiving site includes a receiver, antenna, converter, and transmission lines. A typical application is a centrally located transmitter that sends a pay service, such as HBO, to high-density buildings such as hotels and apartment buildings.

Satellite

Satellite communication basically the same as microwave transmission, except the repeater is in the sky. A TV signal, such as ESPN, HBO, or "superstations," is sent to a satellite. The satellite reflects the signal back to the cable system. The cable system requires an earth station to receive and process the satellite signal. An earth station consists of a satellite receiver dish, a low noise amplifier, and a video receiver. The satellite dish receives the signals and passes them through the low noise amplifier to the video receiver. Fiber optic cable carries the output from the video receiver to a modulator that generates a standard VHF signal. The headend combines the satellite signals with other TV signals and puts them on the coaxial cable for distribution.

The cable systems pay a fee for each of the signals that it receives from the satellite. The development of satellite communication created the technology necessary to generate a large number of cable channels. The large number of cable channels fueled the demand for cable television that led to the rapid growth of cable systems.

Regulation

The Federal Communications Commission (FCC) has limited regulatory authority over cable television. The purpose of the FCC is to preserve local broadcast service and promote equitable distribution of broadcast services.

Before a cable television system can operate in a municipality, it must obtain a franchise from the municipality. A franchise is a license that contractually states the rules governing the operating of the cable television system.

The Telecommunications Act of 1996 removed the barriers for providing cable and telecommunication services. The 1984 Cable Act deregulated cable television leaving only a few regulations governing the granting or operating of a franchise. It is beyond the scope of this section to discuss the franchise process.

Data Collection and Review

To assess a cable TV system properly, the assessor needs to gather information on the assets involved in operating the cable TV system. WPAM Chapter 15 details Data Collection and Review procedures for all types of personal property. The assessor should refer to this chapter for guidance. In addition, the DOR has developed a form for the cable TV firm to report its personal property. The form can be found at the following address: http://www.dor.state.wi.us/forms/govtvc/pa-016.pdf or in WPAM Chapter 17.

When interviewing the owner or agent of the cable TV firm, the assessor should ask specific questions about the cable TV system. The following are examples of questions the assessor should ask. How long has the company been operating? What is the number of potential subscribers? How many subscribers does the cable system have? What type of equipment does the system use? What are the system boundaries? How many miles of cable are there? Where is the headend located? Is there more than one headend? Is the cable overhead or underground? Where are the taps, couplers, splitters, amplifiers, and power supplies located? In addition, the assessor should be aware that rapid technological advances may cause accelerated obsolescence. The assessor should allow the cable TV firm to prove any rapid obsolescence and how it affects the value of the cable equipment.

Cable Television Valuation

The assessor may use two methods in valuing cable television. One method is to develop separate values for the real and personal property. This is the same approach used to value other commercial property. The second method is to value the cable television system as an entity (called unit valuation) using the market and income approaches. Then split that value between the real property, personal property, and non-assessable assets. This section will explain the two methods and detail the problems of unit valuation.

Real Estate

The assessor may value the real estate of the cable TV system by the market, cost, or income approaches to value. The approach to use depends upon the information available.

The assessor should value the land in the same manner as other land and should reflect the market value of other land in the area.

Typically, the buildings of a cable system will be similar to other commercial buildings. Part of the building will consist of typical office area. The cable system also requires an area for the electronic equipment. This will usually be a large warehouse type area.

The cable system real estate may have some unusual features. This may include unusual power supplies for the electronic equipment and additional storage buildings for vehicles and cable equipment. In addition, there may be additional costs for laying the cable and installing concrete supports for towers and antennas.

The assessor may apply the cost approach by using a cost manual or recent actual construction costs. When using the actual costs for new systems, include all productive and necessary costs incurred to make the cable system operational. The following are examples of some of these costs.

1. Interest on construction loans or other interest in building the system. All interest expense directly related to constructing the project should be capitalized and included in the cost.

2. Project development costs.

3. Management and insurance costs incurred during construction.

4. Legal fees and taxes.

5. Leasing costs, promotion, and publicity.

6. Sales staffs' salaries and commissions.

7. Costs associated with installing the distribution system. This includes labor, tree trimming, pole rearrangement and trenching incurred while installing the distribution system. The assessor should make sure that these costs are capitalized and included with the distribution system.

The procedures for applying the market and income approach are the same as for other commercial property. The assessor should refer to WPAM Chapter 9 - Commercial Valuation for more information on applying these two approaches. The assessor should remember that there might be special items associated with cable television. These include special wiring, installing cable, and foundations for towers and antennas. These items may make it difficult to find comparable sales and rentals.

Personal Property

The assessor may value the personal property by either the cost or market approach. The cost approach to value involves the use of Composite Conversion Factors. WPAM Chapter 16 contains a detailed explanation of Composite Conversion Factors. This approach multiplies the original cost of the equipment by the proper factor for the type of equipment and year of acquisition. Cable television equipment may experience obsolescence due to technological advances, which may cause a rapid decline in the equipment's value.

The Department recommends the following guidelines for economic lives that the assessor may use for various equipment. Due to changes in cable technology, the assessor may discover that other economic lives may be appropriate. The assessor should realize that if equipment is there and useful to the operation, it has some value.

Recommended Economic Life

5-Year Life - Subscriber Converters

8-Year Life - Service and Test Equipment - oscilloscopes, meters, analyzers, and cable testing equipment. Mobile and Remote Location Equipment - cameras and equipment for processing and transmitting the signal to the headend and located at a remote location or in a mobile van, antennas, and earth station antenna.

10-Year Life - Studio Program Origination Equipment - cameras and equipment used to process the signal located at a fixed or permanent site such as the headend. Distribution System - coaxial cable and cable connecting hardware, amplifiers, subscriber drops, and taps. Headend Electronic Equipment - preamplifiers, modulators, demodulators, and other equipment used to process the signal for transmission through the distribution system.

12-Year Life - Metallic cable.

17-Year Life - Fiber optic cables and poles.

25-Year Life - Towers.

The assessor may also use the market approach to value cable television personal property. This approach involves searching the market to determine the resale value of equipment. The market approach may be less reliable since most sales involve trade-ins, obsolete, or surplus equipment. Frequently, cable systems keep older equipment as back up for emergencies. This equipment still has value and the assessor must include it in the assessment.

Unit Valuation

When the cable industry values a cable system for sale or other purposes, it values the system as a whole, or unit. The industry bases the unit valuation on the income or market approaches. The assessor may use either of these approaches provided there is adequate information. The problem with unit valuation is splitting that value between real property and personal property. The assessor must develop a separate value for the real or personal property. The assessor then subtracts this value from the unit value to yield a value for the other type of property. For example, assume that the assessor determines the unit value to be $2,500,000. If the value of the land and buildings is $500,000, then the value of the personal property is $2,000,000.

Another problem that the assessor will encounter with unit valuation is that not all personal property is assessable. Intangibles such as the value of the franchise are exempt. Motor vehicles are exempt because of a special tax. The assessor must account for these exempt assets as an expense in the income approach or as a deduction from the unit valuation. This ensures that the assessor does not assess exempt property.

The assessor must also be sure to assess only those assets located in the municipality. If the headend is in another municipality, the assessor may only assess the distribution system that is in the municipality. Another problem concerns the Multiple System Operator (MSO). An MSO operates more than one cable system. The assessor must carefully analyze the income and expense statement to eliminate information applying to other municipalities.

For example, assume that the headend is outside the municipality and only the distribution system is assessable. By developing a unit value, the assessor values both the headend and

the distribution system. The assessor must determine a separate value for the distribution system. The assessor can do this in several ways.

One way is to develop a total value for the cable system. Then determine the value of everything outside the assessor's jurisdiction and subtract it from the value of the system. Assume that the total value of the cable system is $1,500,000. The assessor determines that the value of the part of the system outside the municipality is $1,000,000. Then the value of that part of the distribution system located in the municipality is $500,000. In addition, the assessor must make sure to eliminate the value of all intangible and other exempt assets from the value of the system.

Another method is to value that part of the distribution system located in the municipality by the cost approach. This involves determining the year of acquisition and acquisition cost of that part of the distribution system. The assessor multiplies the acquisition cost times the proper Composite Conversion Factor to yield the value of the distribution system.

The Income Approach to Value

The income approach values cable television systems the same way as other commercial property. WPAM Chapter 9 discusses the principles of the income approach. This section applies these principles to cable television. The first step is to develop the gross income for the property.

On March 14, 2002, the FCC issued a declaratory ruling and notice of proposed rulemaking stating cable modem service (Internet access over a cable system) should be classified as an interstate information service and is subject to FCC jurisdiction. This ruling impacts the franchise fees municipalities can collect from cable operators since revenues from cable modem service are not to be used in computing franchise fees from cable operators. Municipalities receiving franchise fees on cable modem services will lose revenues as a result of this ruling.

Next, the assessor determines the operating expenses and deducts them from the gross income to give the net income. Then the assessor develops a capitalization rate and applies it to the net income to yield a value for the property.

The income approach may not be applicable during the first few years of the cable system due to the large start-up costs connected with constructing the system. In addition, the cable system cannot add subscribers until the cable reaches them. It may take several years for the cable to reach the entire municipality. Operating expenses amount to 50 percent of gross revenue for mature systems. Maturity may occur any time from the third to fifth year of operation at which time the income approach may be appropriate.

The assessor may use any of several techniques to develop an income approach to value. One commonly used technique is to develop a Discounted Cash Flow for the length of the franchise period, typically 15 years. The difficulty with this technique is to make an accurate estimate of income and expenses for 15 years. This technique is not demonstrated here because of space requirements.

Gross Income

The first step is to determine the gross income for the property. This is the amount received for the basic cable service, any premium channels (e.g., HBO, Showtime), and any additional or miscellaneous income. Additional income includes installation charges and sale or rental of converters. The assessor should also be aware of any potential rate increases, expense increases, and increases in the number of subscribers. The assessor should review the income approach every two to three years to ensure that it reflects current conditions.

Assume that a community has 10,000 basic subscribers at $30 per month, 5,000 premium subscribers at $8 per month, and miscellaneous income of $25,000 per month.

10,000 @ $30/Month X 12 Months	=	$3,600,000
5,000 @ $8/Month X 12 Months	=	480,000
25,000/Month X 12 Months	=	300,000
Gross income		$4,380,000

Operating Expenses

The next step is to determine the operating expenses. This can be done by analyzing the income and expense statement for the cable system to determine the proper expenses. Assume that the cable television system has submitted the following report.

Salaries and wages	$525,000
Repairs and maintenance	150,000
Advertising	75,000
Origination and programming fees	800,000
Insurance	50,000
Office expenses	130,000
Taxes	75,000
Mortgage payments	400,000
Net Operating Expenses	$2,205,000

Taxes are not a legitimate deduction, whether they are property or income taxes. The property tax will become a part of the capitalization rate. The income taxes are not a result of the value of the real and personal property. Mortgage payments are not a legitimate deduction either. Therefore, a reconstructed expense statement would show the following:

Salaries and wages	$525,000
Repairs and maintenance	150,000
Advertising	75,000
Origination and programming fees	800,000
Insurance	50,000
Office expenses	130,000
Net Operating Expenses	$1,730,000

The Net Operating Income is the Gross Income minus the Net Operating Expenses.

$4,380,000 - $1,730,000 = $2,650,000

Capitalization Rate

The final step is to calculate the capitalization rate and apply it to the net operating income. There are several methods of calculating the capitalization rate. One of the simplest is by the use of sales. The assessor divides the net operating income of the sales property by its sales price to give a capitalization rate. For example, a property that sells for $3,000,000 has an annual income of $450,000. The capitalization rate is $450,000 divided by $3,000,000, which equals .15, or 15%. The larger the number of sales, the higher the confidence in the rate. Because, the assessor rarely has several sales of cable television systems available for analysis, other assessors should be contacted for comparable sales or use other properties that provide a similar type of investment.

The assessor may also develop the capitalization rate by the band of investment method. In this method, the assessor determines the rate of return investors require on their equity (cash outlay). This is the equity rate. The assessor must also contact lenders to obtain current interest rates and the percentage down payment required of the investor. The next step is to multiply the equity rate times the percent of equity and the interest rate times the percent of value loaned. The sum of these products is the discount rate. The assessor can estimate the debt to equity ratio by studying financial reports of cable systems or by contacting the FCC.

Example:

Equity rate 15%
Mortgage Rate 11%
Down payment (or Equity) required 25%

Amount of Equity	.25 x 15% = .0375
Amount of Mortgage	.75 x 11% = .0825
Discount Rate	.12 or 12%

The assessor must also add the effective tax rate for the municipality. This is the tax as a percent of value and is calculated as follows:

Tax rate per $1,000 of assessed value	$27.78
Times the Level of Assessment	x 90%
Tax rate per $1,000 of full value	$25.00
Divide by 1,000	÷ 1,000
Tax rate per $1.00 of full value	.025 or 2.5%

Capital Investment Recapture

Real and personal property have a finite life; at some future time they will have no value. Thus, the investor requires a return of the capital, also called recapture. The assessor must provide for recapture in the capitalization rate. WPAM Chapter 9 and numerous appraisal

texts discuss recapture in more detail. The simplest way to provide for recapture is the straight-line method. This method assumes the recapture of the asset's value in equal yearly amounts over the projection period. A projection period is the length of time for which the income is forecast and is often the economic life of the asset. In valuing cable television systems, the income projection period is often the length of the franchise period. Assume that the franchise is for 15 years. The capital recapture rate is 100% divided by 15 years or 6.7% per year.

The capitalization rate is the sum of the discount rate, the effective tax rate, and the capital recapture rate.

Discount rate	.120
Effective tax rate	.025
Capital recapture rate	.067
Capitalization rate	.212

The value of the cable system by the income approach is the net operating income divided by the capitalization rate.

$2,650,000 divided by .212 = $12,500,000

This is not the value that the assessor may use for the cable television system. The assessor must follow several additional steps before the valuation process is complete.

1. Usually, the assessor must make separate assessments for real and personal property. The assessor must derive a value for either the real or personal property. Then subtract it from the total value to yield the value of the other part.

2. The value of the cable system is more than the value of the real estate and personal property. The total value of the system includes the value of intangible assets, such as the franchise, and non-assessable assets, such as motor vehicles. The assessor must not include the value of these assets in the assessment. Determining the value of these assets is very difficult. One way is to determine the value of the real and personal property (tangible assets). Then subtract that value from the total value of the enterprise to yield the value of the intangible assets. However, if the assessor has to determine the value of the tangible assets, there is no need to calculate the value of the intangible assets. In addition, certain tangible assets, such as motor vehicles, are exempt. The assessor must subtract the value of any motor vehicles from the value of taxable real and personal property. Although the motor vehicles are exempt, the electronic equipment located in mobile vans is assessable as personal property.

3. To properly apply this approach all property of the system must lie within the physical boundaries of the municipality. For example, assume that the headend is outside of the municipal boundaries. The assessor can value the system in either of two ways. One method is to deduct the amount of income applicable to the headend form the Gross Operating Income. The other method is to determine the value of the headend. Then deduct this value from the total value of the cable system. The assessor will find it very difficult to use either of these methods. Therefore, this approach may not be applicable unless all property of the system lies within the municipality.

Continuing with the income approach, assume that the assessor develops the following information. The market approach indicates that the value of the land and improvements is $300,000. The value of intangible assets (franchise) is $1,500,000. The cost approach indicates that the value of nontaxable assets (motor vehicles) is $150,000. The assessor can determine the value of the taxable personal property as follows:

Value of the Cable System		$5,777,500
Via the income approach)		
Less: Intangible Assets	$1,500,000	
Real Property	300,000	
Nontaxable Personal Property	150,000	
		1,950,000
Value of Taxable Personal Property		$3,827,500

Direst Sales Comparison Approach

Wisconsin courts regard the Direct Sales Comparison Approach as the preferred way to estimate market value. According to sec. 70.32, Wis. Stats., the assessor, in determining the market value of a property, "shall consider recent arm's-length sales of the property to be assessed if according to professionally acceptable appraisal practices those sales conform to recent arm's length sales of reasonably comparable property; and all factors that, according to professionally acceptable appraisal practices, affect the value of the property to be assessed." The difficulty in valuing cable systems is finding sales that are truly comparable. The actual selling price of a cable system depends on several factors.

1. **Potential for expansion.** The greater the potential for expansion, the higher the price per subscriber. When purchasing a cable system, investors look not only at the present subscriber base but also at the potential for attracting new subscribers. The system that has the greater potential for expansion will usually sell for more per subscriber.

2. **The capacity of the cable system.** The average cable system carries 54 channels. As the number of channels increases, the price will increase. A system with more than 54 channels and equipment for two-way communication should sell for more.

3. **The age and condition of the cable television system.** Older systems will usually sell for less than newer systems. This is especially true if the purchaser will have to make a large investment to replace deteriorated or obsolete equipment. A system that requires replacement of the coaxial cable in the distribution system will sell for less. A system with top quality, state-of-the-art new equipment will command a higher price.

4. **The number of years remaining for the franchise.** Assume that the cable system franchise is approaching its expiration date. The purchaser may have the added expense of negotiating a franchise extension or a new franchise. This may be a problem if the municipality seeks dramatic changes that will require additional investment by the purchaser.

These are some of the elements involved in determining the sales price of the cable television system. Compare the following two systems. One system carries 12 channels, is

17 years old, serves 90% of its market, needs to replace 75% of its capital assets, and has 2 years remaining on its franchise. The other system is 3 years old, serves 40% of its market, offers 72 channels has two-way communication, and has 13 years remaining on its franchise. It's obvious that there will be a wide difference between the selling prices of the two systems. The first system has many negative factors. It will sell for much less than the second system.

The assessor must also be sure that the sale includes only the cable television system. Sometimes the enterprise will include other businesses. These include cable construction firms, sales or manufacture of cable equipment, or ownership of other media such as television stations. Sometimes the enterprise will include several franchises that are awarded and in various states of construction.

The assessor must also try to find those sales that are most comparable to the subject. The following are some items that the assessor should consider:

Does the sale have the same penetration, or percent of the market, as the subject?

- Is the sale property the same age as the subject?
- Does the sale offer the same services, or number of channels, as the subject?
- Is the sale's market the same size and character as the subject?
- Does the sale have the same distribution system as the subject? Are they above ground or below ground?
- Does the sale charge rates similar to the subject?
- Does the sale have the same remaining life for its franchise as the subject?

The assessor should analyze these factors when comparing the sales to the subject. Sales that are similar to the subject provide a reliable estimate of market value. The more similar the sale, the more reliable the estimate.

Example:

The subject property is 5 years old with 10 years remaining on its franchise. It has 4,000 subscribers, or 25% of the potential market. The system offers 34 channels, 3 of which are pay channels. It uses an underground distribution system. The system charges $14 per month for basic cable service and $12 per month for each pay channel.

Sale No. 1:

This cable system is 6 years old with 9 years remaining on its franchise. It has 5,000 basic subscribers, or 30% of the potential market. The system offers 30 channels, 1 of which is a pay channel. It also has an underground system. The system charges $12 per month for basic cable services and $12 per month for the pay channel. The system sold for $10,000,000, or $2,000 per basic subscriber.

Sale No. 2:

This cable system is 4 years old with 11 years remaining on the franchise. It has 3,500 basic subscribers, or 20% of the potential market. The system offers 34 channels, 3 of which are pay channels. It also has an underground distribution system. The system charges $15 per month for basic cable service and $12 per month for the pay channels. The system sold for $7,700,000, or $2,200 per basic subscriber.

In comparison to Sale Number 1, the subject is newer, carries more channels, and charges slightly more per month than the sale. However, the sale has more subscribers. In comparison to Sale Number 2, the subject has more subscribers than the sale. However, the sale property is newer and charges a higher fee. Both carry the same number of channels.

In analyzing the data, the assessor may reason that all of the properties are rather similar. The subject is better in some areas and poorer in others. The sales provide a narrow range of values ($2,000 - $2,200 per subscriber). Therefore, the value of the subject is $2,100 per subscriber or $8,400,000 (4,000 subscribers times $2,100).

In using this approach, the assessor must make sure that the comparables are truly comparable. For example, how would the assessor make adjustments for the following situations? The subject has 36 channels and the sale has 72 channels. The subject has 25% of its potential market and the sale has 75%. The subject has a 3-year-old distribution system and the sale has a 20-year-old distribution system. It is extremely difficult for the assessor to make adjustments for wide differences in property characteristics. It is similar to the valuation of residential property. An assessor should not use properties that sell for $150,000 as comparables for a $50,000 home.

When using the direct sales comparison approach, the assessor encounters the same problems as in using the income approach. The assessor must still develop separate values for real and personal property. The assessor must be sure not to value intangible property (the franchise) or property that is not assessable (motor vehicles). The assessor must also be sure that all cable system property is within the physical boundaries of the municipality.

Assume that the direct sales comparison approach indicates a value of $8,000,000 for the cable system. The value of the intangibles is $2,000,000. The assessor has used the cost approach to determine the value of the personal property. The value of the taxable personal property is $5,500,000 and the value of the nontaxable personal property is $200,000. The assessor can calculate the value of the real estate as follows:

Value of the Cable System (by the direct Sales comparison approach)		$8,000,000
Less: Intangible Assets	$2,000,000	
Taxable Personal Property	5,500,000	
Nontaxable Personal Property	200,000	
		$7,700,000
Value of the Real Estate		$300,000

The assessor must still split the value of the real estate between the land and the improvements. Through sales analysis, the assessor has found that land in the area of the

cable system is selling for $20,000 per acre. The cable system has 3 acres, which are worth $60,000. Therefore, the improvements are worth $240,000 ($300,000 - $60,000).

Summary

There are several methods available to the assessor to value a cable television system. These are unit valuation and the separate valuation of real and personal property. The assessor must be aware of the special problems encountered when using unit valuation. For example, the assessor must deduct the intangible assets (franchise) and non-assessable assets (motor vehicles). In addition, the assessor must place separate assessments on the real and personal property. This requires the assessor to develop separate values for the non-assessable assets of the unit value. Then subtract these values to arrive at the value of the assessable assets. This is a difficult and complex process.

The assessor may also value the cable system by deriving independent values for the real and personal property. The real property can be valued by any of the three approaches to value: cost, income, or sales comparison. The assessor can use the cost or comparable sales to value personal property. The method used by the assessor to value the cable system will depend on the available information. The goal is to develop a market value that is both accurate and defensible.

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Glossary

Access Channels-Channels set aside for programming by groups and individuals within the community. Educational, religious and public access channels are common. The number and kind of access channels are determined by each community's needs.

Addressable Programming-Programming directed to specific television sets, so these sets, and no others, can receive the programming.

Amplifier-An electronic device, usually solid-state and transistorized, mounted at prescribed distances on the cable to intensify a weak signal.

Antenna-A device fixed to a metal tower located on a site that can receive incoming signals.

Broadband-A cable system that offers many frequencies for the transmission of both audio and video signals.

Cable-The means used to carry signals to subscribers' homes. It consists of a trunk cable and a distribution cable.

Cable Antenna Television (CATV)-A system including antennas, coaxial cables or other electrical conductors, and other electronic equipment. It receives and distributes radio and/or television signals, directly or indirectly, off the air, to subscribers for a fee.

Cablecasting-All television programming originating on a cable system.

Cable Consortium-A group of communities that agree to form one entity to seek a mutually beneficial cable arrangement for all.

Cable Franchise-The right given by a city, village or township to a company to install television cables along public rights-of-way to offer information, entertainment and other services to subscribers.

Cable Mile-A linear mile of cable as measured on the street or easement.

Cable Television-The technology of distributing television signals to homes, businesses and institutions by wire (cable) instead of through the air.

Channel Capacity-The number of TV stations that a CATV system is capable of receiving and distributing to subscribers.

Channel Utilization-Or channels in use. The total numbers of channels within a system's channel capacity that receive and distribute standard broadcast, microwave and satellite signals. This includes channels used to distribute local programming of events, news, etc.

Coaxial Cable-Copper or copper-sheeted aluminum wire surrounded by insulation, used by cable systems to transmit signals.

Connect Drops (Also referred to as Housedrops)-The portion of a CATV distribution cable from the cable tap to a subscriber's house plus the portion within the subscriber's home.

Converter-A small electronic device placed in a subscriber's home, which permits the television receiver to accept additional cable channels. It also serves as a remote channel selector during the operation of the television receiver.

Direct Broadcast Satellite (DBS)-A small satellite dish providing one-way multi-channel digital video and audio service to residential customers.

Distant Signals-Broadcast signals that originate at a point too far away to be received by an ordinary antenna.

Distribution System-The equipment needed to carry signals from the headend to the subscriber. This includes amplifiers, trunk and feeder cable, subscriber taps, drop cable and assorted equipment.

Drops-These are the cable connections between the subscriber TV set and the tap on the cable for the CATV system.

Dual Trunk-The use of two cables instead of one to transmit twice the usual number of cable signals.

Earth Station-Facilities that use antennas and other equipment to transmit, receive and process communications beamed to each by satellite.

Educational Access Channel-Refers to a channel on which educational institutions are the only designated programmers.

FCC-Federal Communication Commission-The governmental agency regulating both public and private uses of communication technology.

Fiber Optic- thin, transparent fibers that can transmit data, voice, and images by the passage of light. In telecommunications, fiber optic technology has virtually replaced copper wire.

Forced Conversion-An involuntary conversion of all or a portion of a CATV distribution system from overhead to underground. Usually passage of local ordinances brings about forced conversions.

Franchise-A license to operate a cable television system that contractually states the rules governing operation of the cable system.

Franchise Fee-The amount paid by a cable operator to a community for the right to operate a cable system.

Fully Dedicated Systems-A cable system that is ready for use; i.e., all taps are installed on cable for housedrop connections.

Government Access Channel-Any channel where local government institutions are the main designated programmers.

Hardware-The actual equipment used to construct a cable system such as headend, antennas, videotape recorders, cameras, etc.

Headend-The central electronic control center where off-the-air and satellite signals are received, reprocessed and fed into the cable along with locally produced programs.

Local Origination-Programs produced locally by a cable company, usually on topics of interest to the viewers in that area. For example, a live broadcast of a program at State Fair would be a "local origination" broadcast.

Main Distribution Cable-A cable branching off the trunk line and passing the homes of actual and potential subscribers.

Megahertz-A unit used in cable technology to measure the capacity of coaxial cable to carry television signals.

Microwave-Point to point broadcast transmission of signals. Some systems receive signals at a distant antenna location and connect via microwave to the system headend.

One-way Transmission-Signal goes one way only. Examples of one-way transmission are cable television, radio or paging equipment.

Origination Equipment-The cameras, lights, video recorders, projectors, scanning devices, etc., that a CATV system uses to telecast local programming, such as time-weather, news and local events to subscribers.

Pay-Per-View-The ability to purchase cable programs on one or more channels on an individual basis. Subscribers viewing pay-per-view programs pay for the cost of the specific programs watched.

Pay TV-Special TV programming, (e.g., HBO, Showtime), without commercial advertising and for which an extra monthly fee is charged in addition to the standard programming fees.

Penetration-The percentage of cable subscriber homes within a community.

Plant-The total number of miles of cable (underground or aerial) in a CATV system.

Pole Re-arrangements-The process of spacing utility lines and CATV cable on a pole in a sequence regulated by the Public Utilities Commission. This re-arrangement often involves adding crossarms or replacing the pole.

Pole Rental-A fee paid to a utility company for the right to use its pole.

Premium Channel-Also known as "pay channel". Optional channel for which an additional monthly subscription fee allows unlimited viewing of programs featured each month on that channel.

Program Origination Equipment-A class of assets which may include, but is not limited to, cameras, film chains, video tape recorders, lighting, and remote location equipment; it excludes vehicles.

Public Access-The channel space available to individuals or community-based groups to enable them to develop and cablecast programming of their own.

Receiver Terminal-These terminals are part of microwave systems for transmitting television signals great distances.

Service and Test Equipment-A class of machines including, but not limited to, oscilloscopes, field strength meters, spectrum analyzers, and cable testing equipment.

Spur Repeater-Units that branch off the main “trunk line" of a microwave system. If trunk repeaters are located so that signals are beamed from east to west, the spur repeaters might branch off and run north to south.

Subscriber Drop-A thin coaxial cable which connects the subscriber's home television with the cable distribution system.

Superstations-Independent broadcast stations whose signals are beamed to a satellite and then relayed to cable TV systems across the U.S. and who pay to receive the signals.

Taps-The point on a distribution cable at which housedrops are attached.

Telecommunications Services-Is the two-way transmission of voice, video, facsimile or data messages, including telegraph messages.

Tier-A level of cable service available to the consumer.

Transponder-A portion of a cable satellite that permits a television signal to be received and transmitted back to any number of earth stations.

Trenching Costs-The cost of digging a trench, filling it after placement of cables, and repaving streets as necessary.

Trunk Line-The cable running from headend to distribution cable.

Trunk Repeater-Units placed every 25 to 35 miles to relay microwave signals to a receiver terminal.

Two-Way Cable-A cable installation that has the ability to carry signals in two directions; from the transmission center (headend) to cable subscribers as well as from cable subscribers or other remote locations back to the headend.