

“Cutting The Cord”

Get Better Television for Less Money

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History of Television

- Up until 1970 or so it was mostly Antenna.
- In Late 1970's cable TV entered the market.
- Earliest Internet was provided through phone lines – “Dial-Up”
- Around 1990 DSL was the popular Internet data source
- Around 2000, Cable Companies added Broadband Internet.
- Shortly thereafter, HD Television became available
- My First HD TV was a 40” Sony purchased from Amazon in 2006 for \$2500..

How Do We Receive Television

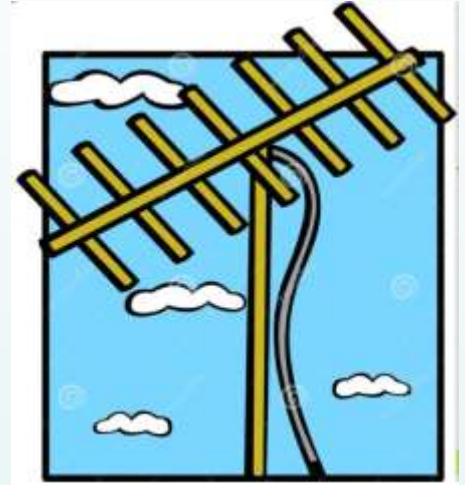
Six Ways to Get a TV Signal

- Over the Air – Use an Antenna
- Cable Provider – Xfinity or Wave
- Satellite Provider – DirectTV or Dish
- Fiber to Switchbox Provider – AT&T Uverse
- Digital Input – DVR, Blu-Ray, etc
- Internet (DSL or Broadband via Ethernet or Wifi)..


Over The Air

Remember the Good Old Days of Rooftop Antennas?

Over the Air Broadcasting Still Exists and there are some very good indoor antennas for sale



Amazon's Choice




[Upgraded 2019] 1byone Digital Amplified Indoor HD TV Antenna Up to 80 Miles Range, Amplifier Signal Booster Support 4K 1080P UHF VHF Freeview HDTV Channels, 10ft Coax Cable

★★★★☆ ~ 5,200

\$22⁹⁹

✓prime FREE One-Day. Get it Tomorrow, Jul 14



Logos for various TV channels: NBC, ABC, CBS, FOX, CW, and others.

DVR for “Over the Air” Broadcast

You can Purchase a Digital Video Recorder (DVR) to help you pause, save & replay Over The Air programs.

Amazon's Choice



Fire TV Recast, over-the-air DVR, 1 TB, 150 hours

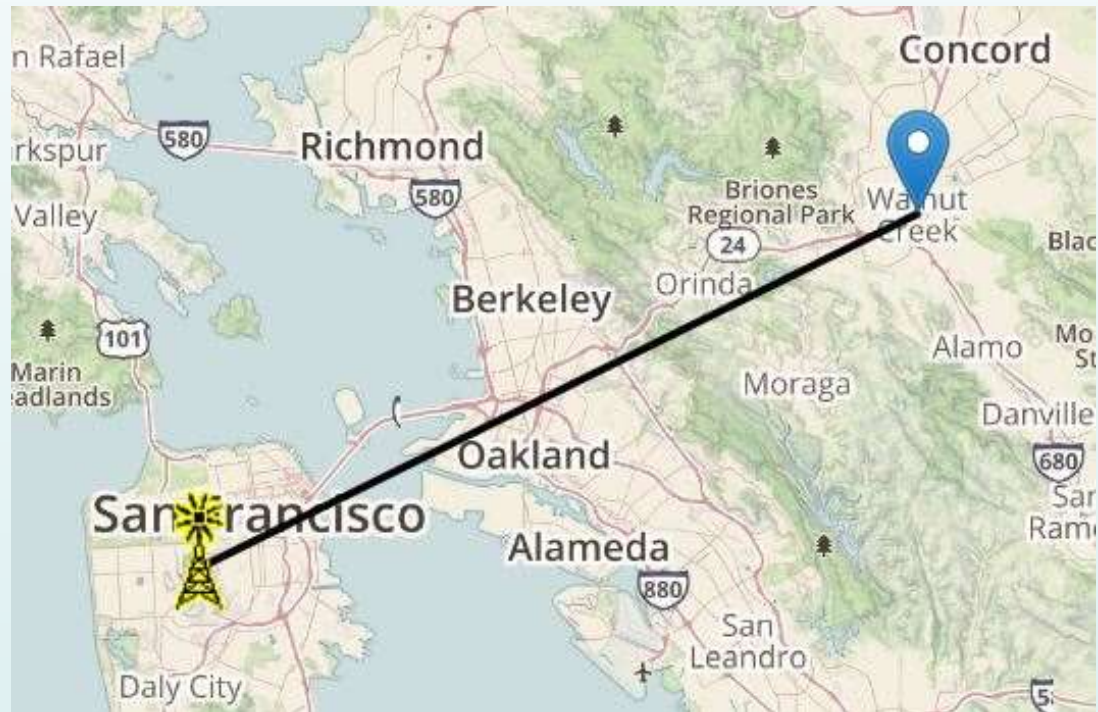
★★★★☆ v 1,743

\$279⁹⁹

✓prime FREE One-Day. Get it Tomorrow, Jul 15

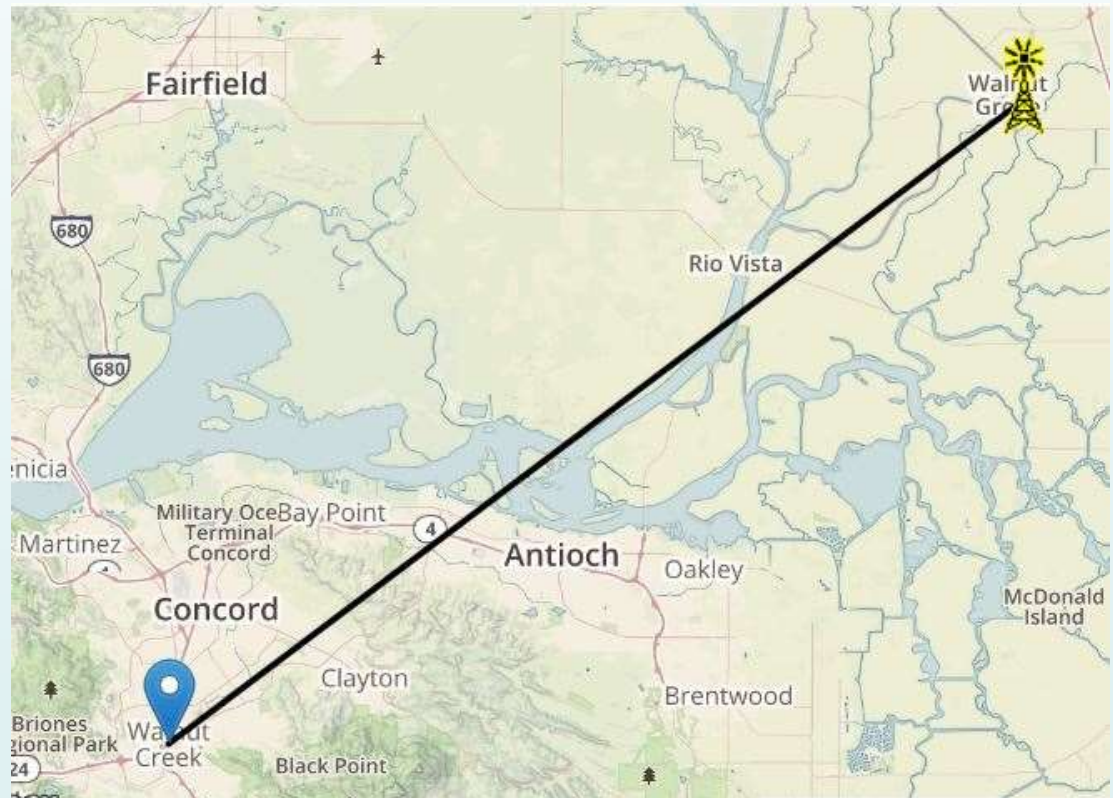
Where Are the Broadcast Towers?

ABC Towers are on Twin Peaks in San Francisco. Reception in Walnut Creek is problematic.



Where Are the Broadcast Towers?

CBS & NBC
Towers are in
Walnut Grove.
Reception in
Walnut Creek is
less than ideal.



Cable and Satellite Services in Our Area

- Wave – Cable
- Xfinity – Cable
- ATT Uverse – Fiber and Telephone Wires (+Sonic)
- Dish – Satellite
- DirectTV -- Satellite

Cable & Satellite Complaints

- All Services are Expensive (\$100+/month)
- Get 100's of channels I don't want
- Rates frequently go up
- Customer service for Xfinity & AT&T is terrible
- Xfinity won't run cable in your house, you must hire an electrician
- Satellite dishes can be unsightly
- Installers run cable in unsightly locations
- Sometimes get service interruptions..

Broadcast Television Delivery

- Live TV is a continuous stream which is broadcast to your house.
 - Delivered via Cable or Satellite
 - You can't pause it, go back, save it, etc (unless you have a set top DVR)
 - You can't skip commercials (can if it is pre-recorded by your set top DVR)..

Birth of Streaming Services

- Broadband Internet is now provided to most homes.
 - Internet uses the same cable as broadcast services.
- In 2010, Netflix began streaming it's service over the internet separate from the "TV Broadcasting Signal"..

Streaming is Different than Broadcast TV

- Streaming TV is delivered via the Internet
- Packets of info are pulled by you when you watch video, do email, download programs, etc, all at the same time.
- Video Programs are stored on a “Hard Drive in the Cloud” so that you can watch whenever you wish.
- Programming can be paused, backed up, etc since it is provided “On Demand”..

Why is there a Growing Number of Streaming Services?

- Most people have “Broadband” internet access now, so large potential market.
- Less equipment for the Provider
 - Can connect directly to the Modem (or router)
 - Can be hard wired or Wifi
 - DVR functionality can be provided in the “Cloud”
- More profit for the Provider..

Replacement Services for Cable or Satellite TV

- “YouTube TV” by Google
- “Sling” by Dish
- “AT&T TV” by AT&T
- “Flex” by Xfinity
- “Playstation Vue” by Apple
- HULU
- FUBO TV..

Primary “Add-On” Streaming Services

- Netflix (\$10) (117 new programs created last year)
- Amazon Prime (Free with Prime Membership)
- HBO (\$15)
- Cinemax (\$10)
- Starz
- Epix
- Various Sports Packages
- Many More..

Example Offerings

Channel	YouTube TV (\$50)	Sling (\$25)	PlayStation Vue (\$50-\$85)	Fubo (\$55)	Hulu (\$45)
ABC	✓		✓	✓	✓
CBS	✓		✓	✓	✓
Fox	✓	✓	✓	✓	✓
NBC	✓	✓	✓	✓	✓
CNN	✓	✓	✓	✓	✓
Discovery	✓		✓	✓	✓
ESPN	✓	✓	✓		✓
History	✓	✓		✓	✓

Offerings from “Add-On” Services

- HBO has HBO Now and HBO Go.
 - Go is delivered via a Cable or Satellite Service
 - Now is delivered via the internet
 - Can be watched on laptops, etc.
- Showtime has Showtime Now for streaming..

Second Golden Age of Television?

- Before DVR's we watched programs when they were broadcast.
- Until recently we had a manageable number of channels
- Streaming adds Thousands of Live Channels
 - Channels from all over the world
 - Sports from all over the world
- Many Thousands of On Demand Programs
- Many Thousands of Apps appearing
 - Games
 - Travel Advertisements
 - Real Estate Listing and Pics
- Is this Platform Overload?

Internet Speeds for Streaming

- Standard Definition TV – **2-3 MBPS**
- High Definition TV – **5-8 MBPS**
- 4K Ultra High Definition – **25 MBPS**
- Most people have at least **20 MPBS**
- Test your speed at [Speedtest.net](https://www.speedtest.net)
- If you run multiple TV's simultaneously, you'll need more speed..

How to Receive Streaming Services

- Use Apps on TV – Worst process since it is limited and slow
- Access a dedicated channel on existing service like Xfinity
 - Limited to “Add-On” channels such as HBO GO, etc.
 - Still fairly slow.
 - Doesn’t offer the multitude of specialty services available.
- Buy a dedicated device such as Roku, Amazon Fire, etc.
 - Picks up signal via Ethernet or Wifi
 - Plugs into a HDMI port on TV
 - Has a separate remote
 - Is quite fast..

Dedicated Devices for Streaming TV

- Four major devices on the market
 - Roku (my preferred device)
 - Amazon Fire TV
 - Playstation Vue
 - Apple Play
 - Probably More to Come..

Roku Ultra

Price on Amazon is \$89 but was \$50 on Black Friday. “Renewed” units are cheaper.



When you search using Voice, Roku shows all the services that offer a given program.

Streaming Service Guide Issues

- There are no Channel Numbers (Numbers are a holdover from the days when we had a rotary dial for 12 channels.)
 - Live Channels are listed by Call Sign, i.e. CBS, ABC, NBC, etc.
 - Some channels have copyrighted a number, e.g. ABC7 and CBS5, etc.
 - Non-live channels such as Netflix have no time dimension.
 - Those Programs are “On-Demand” and are sorted by genre, last watched, “Your Library,” etc..

Digital Video Recorder

- Cable and Satellite provide their proprietary DVR's (Digital Video Recorders.)
 - Great for pausing, skipping commercials, recording, etc.
- Streaming services provide a “Cloud” DVR.
 - Some have limitations on amount recorded and time saved.
 - You can point at any program and request all episodes be recorded immediately
 - Recorded programs are stored in “Your Library” to help you find stuff..

Websites Comparing Offerings

- CordCutters.com
- Thestreamable.com
- Clark.com/technology/tvsatellite-cable/
- Many more such as CNET, etc..

Do I Need to Change to Streaming?

- Absolutely Not! If you are happy with your current service, stay with it.
- Cable, Uverse & Satellite will be here for a long time.
 - Existing customers are very profitable since equipment is in place.
 - Rental equipment such as Modem and DVR is very profitable.
- Cable and Satellite have added Video on Demand channels to compete with Streaming
- You can always get “Add-On” streaming services for specialty viewing..

Why Keep What I Have?

- No change. If it isn't broken.....
- No new remotes. Keep what you have.
- No decisions to make.
- If you cancel and want to go back, there are issues.
- Can access "Add-On" streaming services anyway
 - Highly recommend Netflix
- Can keep recordings on hardware DVR forever
- Changing channels on Streaming Services has a 2-3 second lag.
- Caller ID shows on telephone screen
- Roku doesn't control my Soundbar, just my TV speakers
- Streaming Live Channels has a 2-3 second delay sometimes..

Downside of Streaming Services

- Have to learn a new way to navigate with remote
- May need to buy a Logitech Harmony remote if you have auxiliary devices.
- Cloud DVRs won't keep programs forever.
- Changing channels on Streaming Services has a 2-3 second lag.
- Caller ID will not show up on screen
- Need an open HDMI port on TV (unless you cancel you cable or satellite service)

Why Would I Want to Change?

- Lower cost. Price is about half or less.
- More Services from which to select.
- Want more sports or specialty channels.
- Want to watch TV on other devices.
- Get rid of the hardware DVR in favor of a Cloud DVR
- No contract. Can change services each month.
- You can watch sports of all kinds in all places..

Change is Coming!!

- AT&T will be offering AT&T TV with it's own set top box & remote
- Disney will be offering a streaming service
- Apple will be offering a streaming service
- T-Mobile will be offering T-Vision
- 5G is coming and may be used for internet in some households
 - A new Company is offering 80 MBPS service in Alameda for \$49/mo..

Suggested Next Steps

- Don't use Apps on your Smart TV, they are deadly slow.
 - Dedicated channels for Netflix, HBO, etc are also rather slow but easy to use.
- Buy a Roku.
 - Be sure to get one with a remote that controls power and volume.
 - Roku Streaming Stick+ or Roku Ultra for \$50+
 - If you don't have an extra HDMI port, buy a splitter
- Experiment with Free Channels on Roku
- Sign up for free trial on Replacement Services, e.g. YouTube TV, Hulu, etc..
- Subscribe to Netflix – it's Great!!

Preview Some Streaming Services

- I have a Trial Subscription of YouTube TV and HULU for demonstration purposes. Free for 7 – 14 days.
- You can get free trials of “Add-On” services like HBO if you like.
- I will be using a Roku Ultra for Demonstration..

YouTube TV Demonstration

- Cost is \$50/mo. (Owned by Google)
- Has all the local Network Channels
- PBS is coming later this year
- Cloud DVR stores Unlimited Amount
 - After 9 months, oldest recordings are deleted
- Most popular replacement for Broadcast TV
- Sign up is month to month.
- Trial subscription for 14 days is free. (may reduce to 7 days)..

HULU Demonstration

- Cost is \$45/mo.
- Has all the Network Channels
- Cloud DVR stores 50 hours indefinitely
 - If you fill up, it will delete the oldest recordings
 - If you want to increase to 200 hours, pay \$10/mo.
- Signup is month to month.
- Trial subscription for 7 days is free..

Live Streaming Demonstration

- Let's Demonstrate and Talk about YouTube TV and Hulu