

CONVERSION TO DIGITAL

Practical Help for the Transition from Analog to Digital TV



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Washington Area Computer Users Group

Fairfax County Government Center

Presented by

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Next year, the television industry will undergo its biggest change since color was introduced in the 1950s



The DTV Transition Deadline

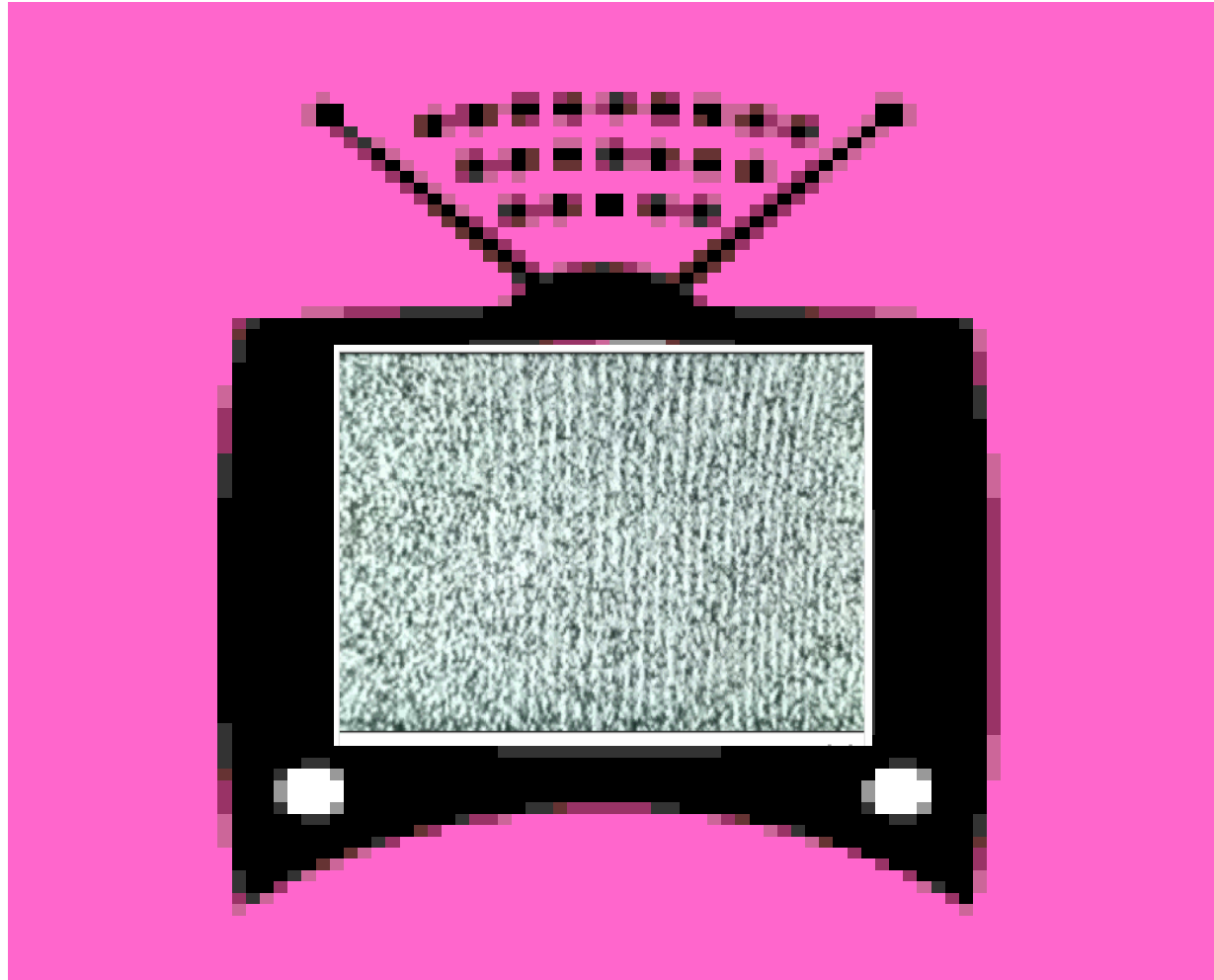
**Today, most full-power TV stations are broadcast in two formats:
Digital and Analog**

February 2009

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

After February 17, 2009, all full-power stations will broadcast only in a digital format or “DTV”

Analog Channels After 2-17-09



Over-the-Air Digital Channels

Local Broadcaster	Network Affiliation	Analog Channel	Digital Channel
WJLA	ABC	7	39
WUSA	CBS	9	34
WRC	NBC	4	48
WTTG	FOX	5	36
WETA	PBS	26	27
WBDC	WB	50	51
WDCA	UPN	20	35
WPXW	PAX	66	43

Why Are Full-Power TV Broadcast Stations Switching to All-Digital?

- ❑ Analog spectrum is being re-allocated for Public Safety use
- ❑ Digital is more efficient, so TV stations can offer:
 - ❑ Better picture and sound
 - ❑ More programming options (multicasting)
- ❑ Analog spectrum auctioned for advanced wireless services

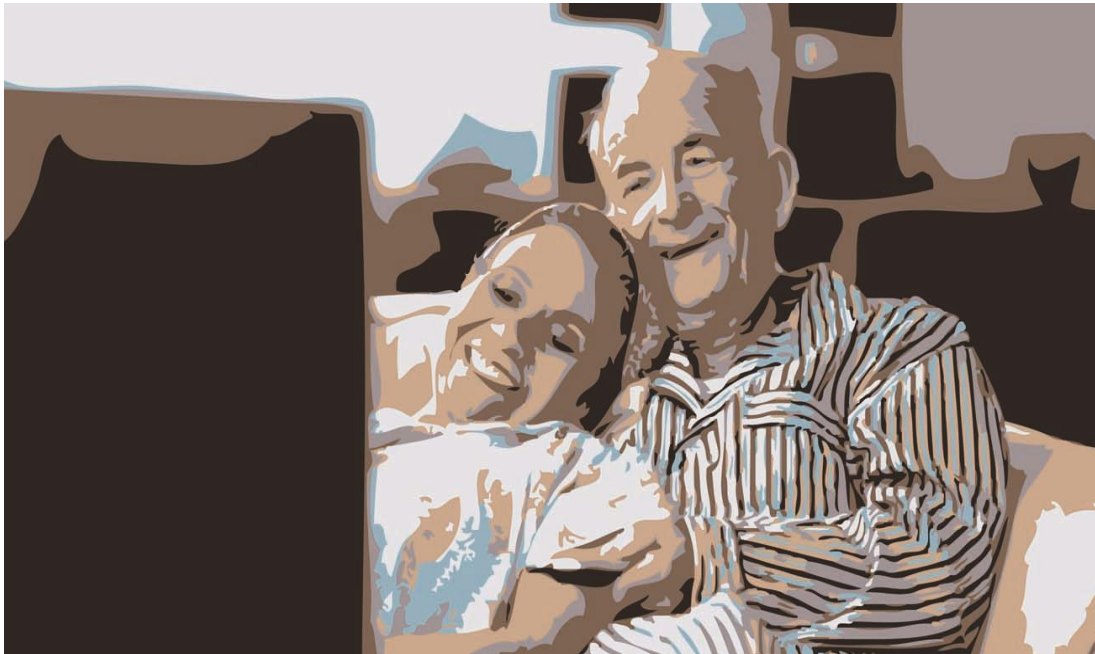


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Who Will Be Affected?

The change will affect every household that currently receives free over-the-air (“OTA”) TV stations through antennas connected to their televisions or to their PC-TV cards or devices equipped with analog-only tuners.



Households that subscribe to cable, satellite TV, or telephone company television services generally will not be affected.

What Do I Need To Do To Be Ready For The DTV Transition?

You have four options:

- 1. Buy a digital television (a TV with a built-in digital tuner) or a digital TV tuner card or device for your PC.**

OR

- 2. Subscribe to a paid TV service (such as cable, satellite TV, or telephone company television, e.g., FiOS).**

OR

- 3. Connect your analog TV to a digital-to-analog converter box.**

OR

- 4. Use a combination of the above (for example, if you don't want to buy a new DTV or pay for an extra cable box for an analog-only TV set in a guest room).**

Purchase a DTV

- ❑ **Buy a digital television (a TV with a digital tuner “built in”) or a digital TV tuner card or device for your PC.**
- ❑ **You do not need a high definition TV (HDTV) set to view DTV.**
 - **The transition is from analog to digital, not from analog to high definition or HDTV.**
 - **DTV and HDTV sets are not the same.**
 - ❑ HDTV is a form of DTV that provides higher resolution pictures and multichannel audio.
 - ❑ A DTV can be either a standard definition (SDTV) or a high definition (HDTV) set.
 - ❑ SDTVs are comparably priced to analog TVs.
- ❑ **You can view HDTV broadcasts on SDTVs and analog TVs connected to digital-to-analog converter boxes, just not in full HDTV quality.**

Subscribe to a Paid Service Like Cable, Satellite TV, or FiOS

Reception of local broadcast stations and certain access channels on analog-only sets will continue to be supported by most cable and satellite providers for at least three years.

If you are already a subscriber, contact your provider about any additional components (such as a digital set-top box) that you may need to watch digital broadcast programming.

Important Notes:

A converter box does not allow viewers to receive subscription cable and satellite TV channels for free. You must continue your subscriptions if you wish to continue to receive such channels.

If the cable or satellite TV company loses power or service, viewers might not be able to receive TV stations, even in emergencies or for alerts.



Purchase a Converter Box

You can continue to receive free over-the-air broadcasts using your analog TV set through the use of a digital-to-analog converter box.

\$40-80 retail cost





DTV Converters

The Converter Box Approach To DTV Reception on Your Analog-Only Set

Digital-to-Analog Converter Boxes (DTV Converter Boxes)

When full service analog ends:

- Many viewers will have already acquired DTV receivers
- But many viewers will also want to continue to receive TV service on one or more of their existing analog-only TV sets.

The solution for continued use of analog-only TVs is a converter box:

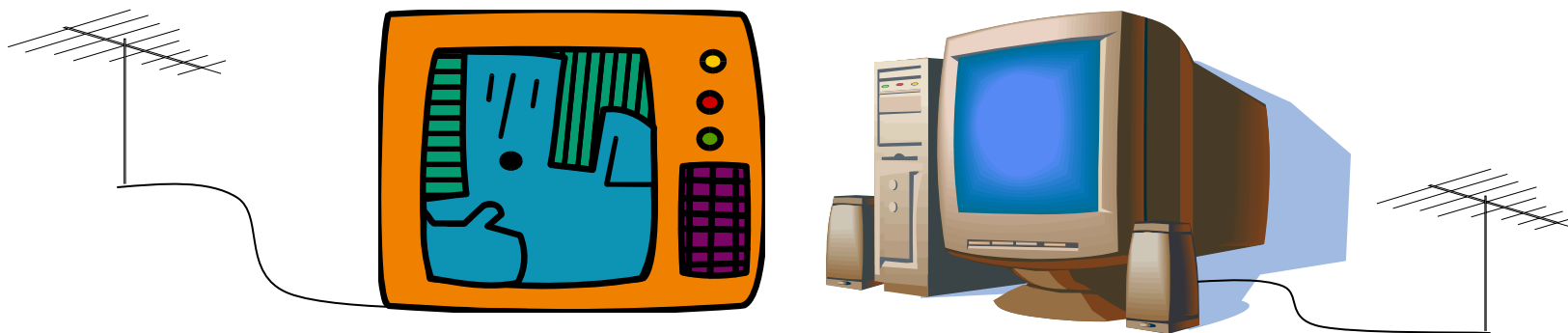
- Receives DTV signals over-the-air for free;
- Converts the signals for display on analog TV sets;
- Passes converted signals to another device, and
- Provides better picture and more channel capacity.

Important Note: A converter box will allow viewers to receive OTA digital channels for free, but not the subscription channels of cable and satellite TV companies for free. Viewers that wish to continue to receive such channels should contact their service providers.

Do I Really Need a DTV Converter Box?

Converter boxes are needed for analog-only TV sets or analog-only PC-TV tuner cards or devices that receive TV stations through antennas.

- These include sets labeled “Digital Monitor,” “HD Monitor,” “Digital Ready,” and “HD Ready”



A converter box is not needed for sets that:

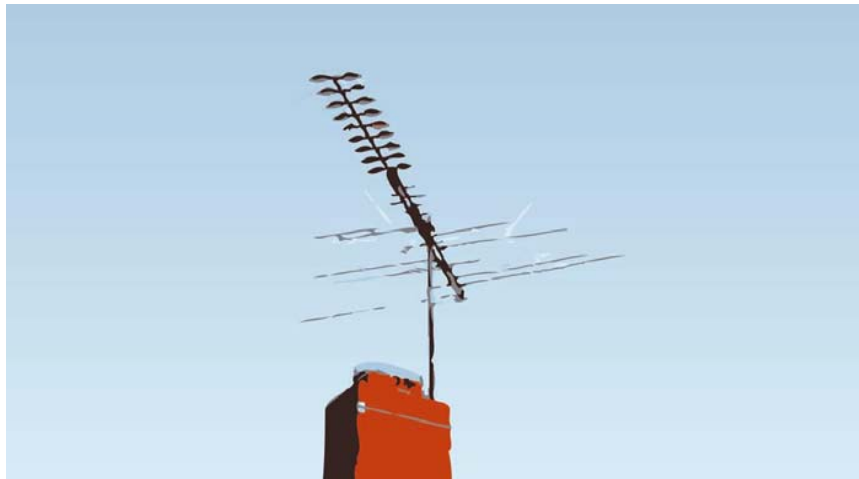
- Have a DTV tuner (check owner's manual)
- Are used with a pay service such as cable or satellite TV

How Do I Tell if I Have an Analog or Digital TV Set?

- ❑ If your set or PC-TV tuner card/device is more than 5 years old, it is likely analog-only.
- ❑ To determine whether your TV set or PC-TV device can receive OTA digital broadcast signals, check your manual or look on the device for an indication that it has a built-in “Advanced Television Systems Committee” or “**ATSC**” tuner. Analog-only sets are built only with a “National Television Systems Committee” or NTSC tuner.
- ❑ You can also go to the manufacturer’s website and check the capabilities of the TV set or PC-TV tuner device by model number.
- ❑ Even some TV sets, PC-TV tuner cards and related devices (VCRs, DVRs) sold this year may be analog-only. Analog-only devices still on store shelves and available online are required by law to have a consumer notice alerting potential buyers of the February 17, 2009, transition date.

Do I Need a Special Antenna To Receive DTV Over-the-Air?

In general, dependable reception of DTV will require the same type of equipment that is used to receive good analog TV reception. If you currently require a roof-top



antenna to receive good analog reception on VHF channels (2-13) and UHF channels (14-51), the same antenna will be needed and should work fine to receive DTV signals.

For information about what types of antennas will work at your location, visit <http://www.antennaweb.org>.



NTIA Converter Box Program

NTIA Converter Box Program

Government Coupons for Converter Boxes

- Coupon program established by Congress
- Administered by the “National Telecommunications and Information Administration” (NTIA)

Coupon Program Provides:

- Eligible households may obtain up to two \$40 coupons
- Eligible converter boxes contain only features necessary for conversion of broadcast DTV signals for display on analog-only TV receivers. Eligible boxes do not include “advanced features” such as HDTV capability or digital outputs.

NTIA Coupon



NTIA Coupon Program Rules

Household Eligibility

- ❑ All U.S. households eligible to receive up to 2 coupons
- ❑ Coupons issued on a first-come, first-serve basis
- ❑ Number of coupons limited by available funds
- ❑ Forms to request coupons must be mailed by March 31, 2009

Coupon Restrictions

- ❑ One coupon may be applied per converter box
- ❑ The coupons must be redeemed at certified retailer:
www.dtv2009.gov/VendorSearch.asp
- ❑ Coupons expire 90 days after issuance!

To Apply for Digital-to Analog Converter Box Coupons, You Can:

- A. Visit www.dtv2009.gov
- B. Call 1-888-388-2009,
1-877-530-2634 (TTY),
1-866-495-1161 (Spanish TTY)
- C. Send the coupon form (attached) by mail to:
P.O. Box 2000
Portland, OR 97208-2000
- D. Send the coupon form by facsimile to:
1-877-388-4632

Converter Box Analog Pass-Through

While the majority of consumers in the U.S. can receive the programming of full-power TV stations, there are three other categories of broadcast stations available for free over-the-air: “Low-Power TV or LPTV,” “Class A,” and “Translator” stations. Currently, there is no statutory deadline for these other stations to convert to digital broadcasting, and they may continue to broadcast analog signals after February 17, 2009.

In the Washington area, these stations include channels 6, 23, 25, 47, 49 and 58.

Consumers who want to view programming from these stations should look for digital-to-analog converter boxes that have “analog pass-through” capability.

If your box does not have analog pass-through capability, you can use additional parts and wiring (an antenna splitter and cables) to route analog signals around the converter box, but it is easier to buy a converter box with the pass-through capability.



LPTV Stations in Washington, DC

Channel 23: WDDN-LP - Daystar Television Network

Channel 25: WZDC-LP - Telemundo

Channel 47: WMDO-CA - TeleFutura

Channel 49: WWTD-LP - WUFO-TV Network

Channel 58: WIAV-LP - multicultural with Asian-origin

Channel 64: WZDC-LP - Telemundo



Connecting a Converter Box

Connecting a Converter Box

Contents of a Typical Carton

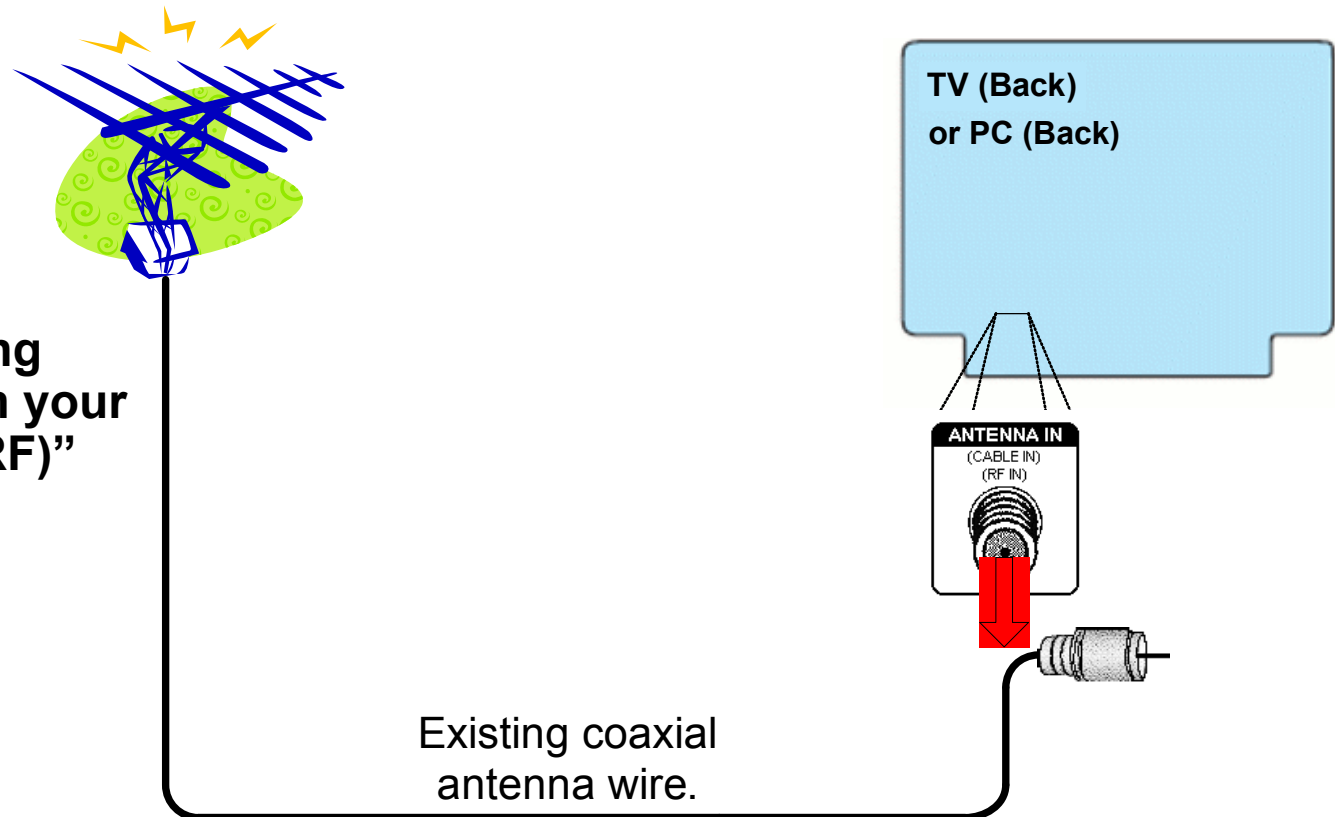


Connecting a Converter Box

Basic Converter Box Connections

Step ①:

Unplug the existing antenna wire from your TV “Antenna In (RF)” connector.

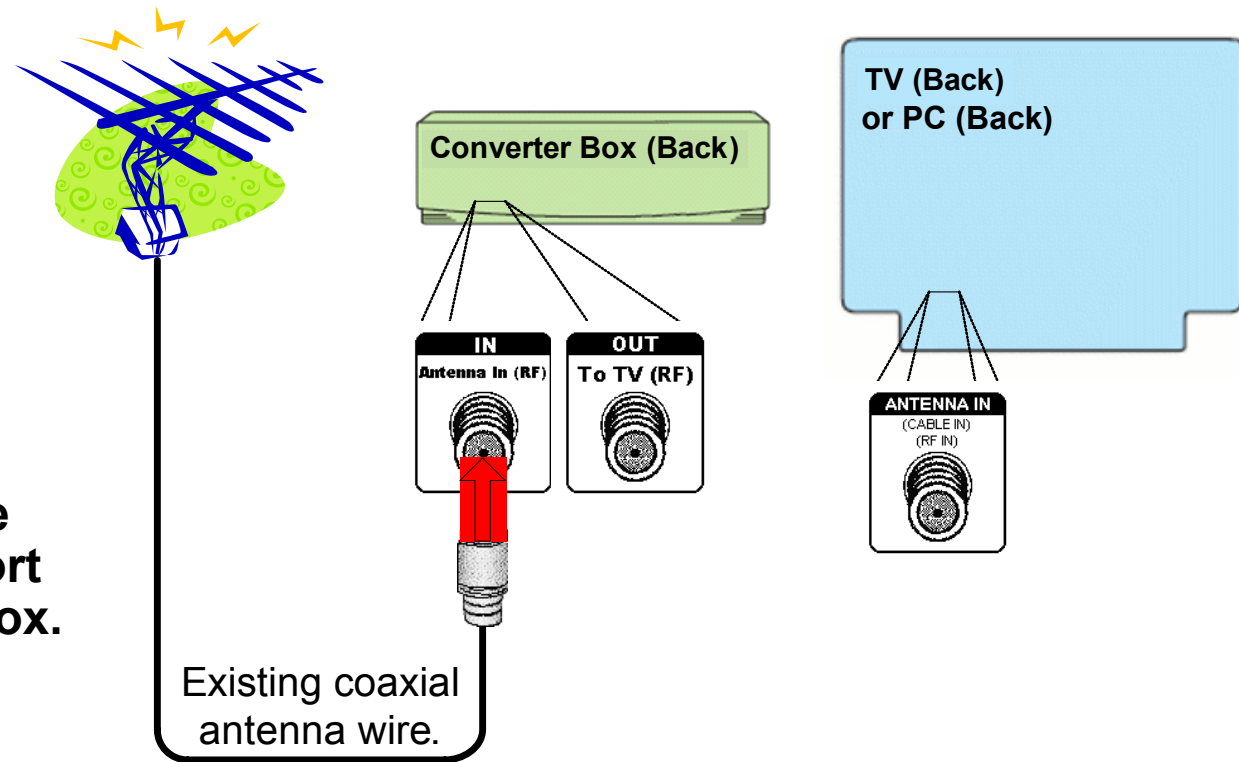


Connecting a Converter Box

Basic Converter Box Connections

Step ②:

Plug the existing antenna wire into the “Antenna In (RF)” port on your Converter Box.

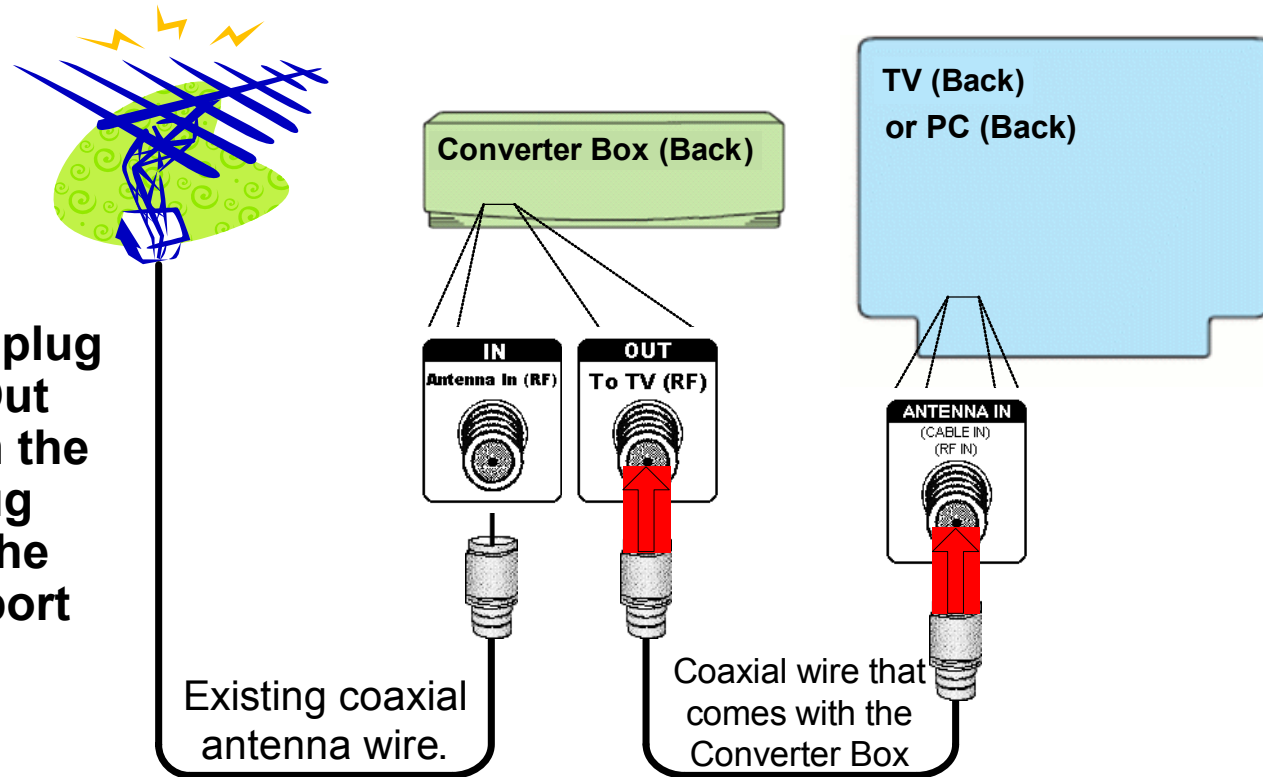


Connecting a Converter Box

Basic Converter Box Connections

Step ③:

Take the wire that comes with your Converter Box and plug one end into the “Out To TV (RF)” port on the Converter Box. Plug the other end into the “Antenna In (RF)” port on your TV.



Step ④:

Plug the power cords on your Converter Box and TV into a power outlet

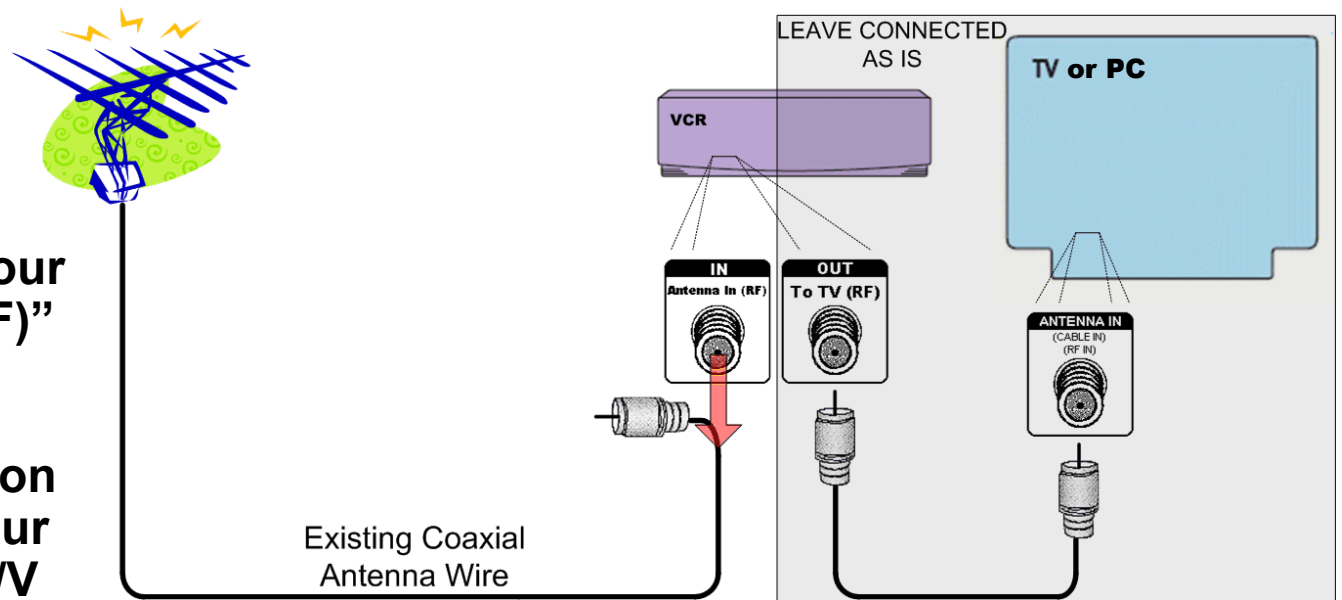
Connecting a Converter Box

Converter Box Connections with DVR/VCR

Step ①:

Unplug the existing antenna wire from your VCR "Antenna In (RF)" port.

Leave your connection from your VCR to your TV as is (either an A/V cable or coaxial wire).

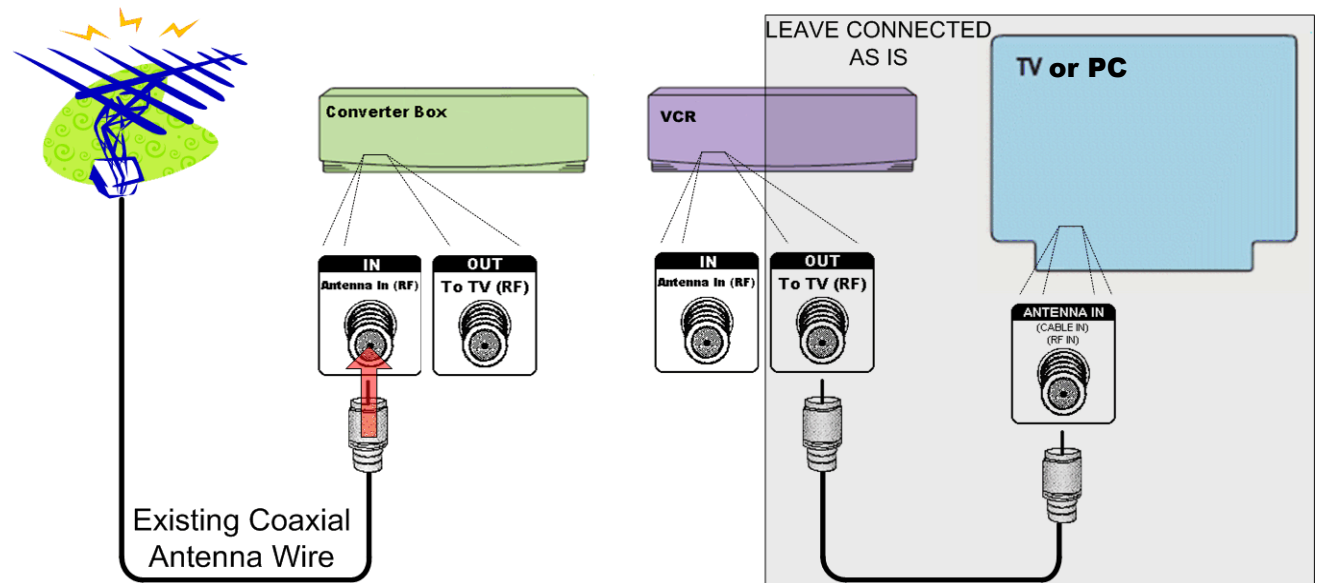


Connecting a Converter Box

Converter Box Connections with DVR/VCR

Step ②:

Plug the existing antenna wire into the “Antenna In (RF)” port on your Converter Box.



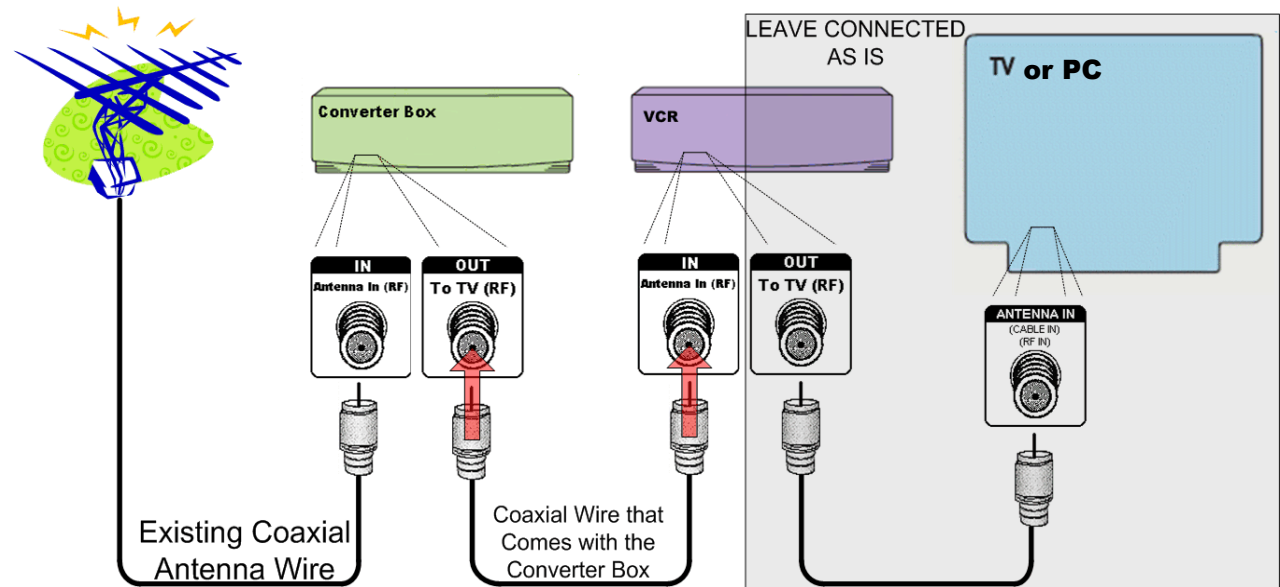
Connecting a Converter Box

Converter Box Connections with DVR/VCR

Step ③:

Using the wire that comes with your Converter Box, plug one end into the “Out To TV (RF)” port on the Converter Box.




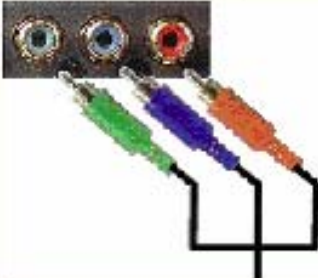

Plug the other end into the “Antenna In (RF)” port on your VCR.



Step ④:

Plug the power cords on your Converter Box, DVR/VCR and TV into a power outlet

COMPARISON OF VIDEO CONNECTIONS

QUALITY	CABLE AND CONNECTOR	CONNECTION DESCRIPTION	AUDIO CONNECTION REQUIREMENT	RESOLUTION (W x H)
BASIC		<u>COAXIAL (RF)</u> - The video and audio signals are both carried over one cable. Used for antenna and cable signals.	The audio signal is carried on the cable but is in an analog format. A separate connector (digital coax or optical toslink) would be needed to transmit a digital audio signal	SDTV: ≤ 720 x 480 No HDTV
GOOD		<u>COMPOSITE</u> ("yellow plug") - The video signal is carried through a single "pin". This connection type is the one that is most commonly found on video devices.	A separate audio connection is required. Audio in analog format requires RCA connectors (similar to the composite video connector, but color coded red and white, for right and left stereo). Audio in digital format would require a coax or toslink (optical) connector.	SDTV: ≤ 720 x 480 No HDTV
BETTER		<u>S-VIDEO</u> - The video signal is split into two signals, giving you an even better quality picture. For example, text displayed on-screen using this connection is noticeably sharper than composite or coaxial (RF).	A separate audio connection is required. Audio in analog format requires RCA connectors (similar to the composite video connector, but color coded red and white, for right and left stereo). Audio in digital format would require a coax or toslink (optical) connector.	SDTV: ≤ 720 x 480 No HDTV
ONE OF THE BEST		<u>COMPONENT</u> - The video signal is split into three signals, two color and one black and white, giving you the best picture. Use component video to take advantage of the superior picture found in such signal sources as HDTV and progressive DVD.	A separate audio connection is required. Audio in analog format requires RCA connectors (similar to the composite video connector, but color coded red and white, for right and left stereo). Audio in digital format would require a coax or toslink (optical) connector.	SDTV: ≤ 720 x 480 HDTV: ≤1080i (1920 x 1080 interlaced)
ONE OF THE BEST, BETTER THAN COMPONENT DIGITAL	 HDMI 29.5mm DVI 30.5mm	<u>DVI and HDMI</u> - both of these connectors are digital. DVI carries only video information, while HDMI both audio and video in digital form.	A separate audio connection is required when using DVI video connectors. A separate audio connection is required. Audio in analog format requires RCA connectors (similar to the composite video connector, but color coded red and white, for right and left stereo). Audio in digital format would require a coax or toslink (optical) connector. HDMI connections carry both video and audio in a digital format.	SDTV HDTV: ≤1080p (1920 x 1080 progressive)



Using a Converter Box

Using a Converter Box

1. Turn on both your TV (or PC) and your converter box.
2. Tune your TV (or PC-TV tuner card/device) to channel 3 or 4 (whichever is not used in your area).
3. Set the output of the converter box to the same channel that your TV or PC-TV device is tuned to (channel 3 or 4).
4. Using the remote that comes with your converter box, press the button that accesses the converter box's channel “set-up” function.
5. Follow the on-screen set-up guide to scan for available DTV channels.
6. Exit the set-up function.
7. Select a channel to view using the converter box (or remote control).



Converter Box Special Features

- Closed Captions
- Video Description
- Parental Controls/Program Blocking

Closed Captioning

- ❑ **Closed captioning displays the audio portion of television programming as text on the TV screen.**
- ❑ **Most over-the-air programming must be closed-captioned.**
- ❑ **Converter box captioning capabilities**
 - All converter boxes can receive traditional closed captions and pass them through to your TV or PC-TV tuner device automatically.
 - Most converter boxes will generate advanced captions through the converter box itself, enabling viewers to change the way captions appear on the TV, such as caption size, *font* (style), caption color, background color, and opacity.

Closed Captioning

- ❑ **To watch traditional analog closed captions, activate your analog TV or PC-TV tuner card receiver's captioning feature as if there were no converter box.**
 - The converter box converts captions as well as audio and video.
- ❑ **To watch advanced captions, use the set-up function on the converter box (some boxes have a button on the remote control; check the instruction manual):**
 - Some converter boxes will turn off the analog captions when the digital captions are activated, other boxes do not
 - If you have a box that does not turn off the analog captions when the digital captions are activated, you need to turn off the captioning on your analog TV receiver – otherwise both sets of captions will be displayed.

Video Descriptions

- **Video descriptions are designed to assist persons with vision disabilities and provide a voice-over that narrates what is happening in the video portion of the broadcast. Stations are not required to create video descriptions, but may do so voluntarily.**
 - **Analog TV Standard**
 - Video descriptions are transmitted on the “Second Audio Program” (SAP) channel.
 - **Digital TV standard**
 - Multiple audio channels can be used for video descriptions, other language channels and other uses.
- **To listen to video descriptions with a converter box, follow the instruction manual to activate the appropriate audio channel**
 - **Each box has its own method for activating alternate audio channels.**

Parental Controls/Program Blocking “V-Chip”

- **Converter boxes provide for control of access to programs based on the same ratings systems used with the analog TV standard.**
 - Use the program blocking feature in the box rather than that in the TV
- **The parental control/program blocking function is controlled through the converter box’s set-up/menu feature.**
 - Access to this function requires entry of a password
- **Follow the box’s instruction manual to set the program blocking function to the level of your choice.**
 - Settings can be re-adjusted as children mature

Using a Converter Box

Watching TV with a Box and DVR/VCR

1. Turn on your TV (or PC), converter box, and DVR/VCR. If you plan to watch pass-through channels, turning on the converter box may be optional.
2. Tune your TV (or PC-TV tuner card or device), converter box, and DVR/VCR to channel 3 or 4 (whichever is not used in your area).
3. Using the remote that comes with your converter box, press the button and access the converter box's channel “set-up” function.
4. Follow the on-screen set-up guide to scan for available DTV channels.
5. Exit the set-up function.
6. Select a channel to view using the converter box (or remote control).

Using a Converter Box

Recording with a Converter Box and DVR/VCR

1. Turn on your TV (or PC), converter box, and DVR/VCR.
2. Tune your DVR/VCR to channel 3 or 4 (select the same channel as the output of the converter box).
3. Select a channel to record using the converter box.
4. You can view the program being recorded on your TV or PC-TV tuner card.
5. To watch the recorded programs later, use the DVR/VCR in the normal fashion (the converter box has no effect).

Important Notes:

Converter boxes are not able to support devices that automatically select programs to record from multiple available channels.

In order to save energy some converter boxes will automatically turn off after a predetermined time if not adjusted. This can disrupt timer activated recording.

Additional Information

- ❑ **General information about DTV and the transition as presented by the FCC:**
<http://www.dtv.gov/>
1-888-CALL-FCC (1-888-225-5322)
- ❑ **Information about antennas – what will work where – as presented by the Consumer Electronics Association and the National Association of Broadcasters:**
<http://www.antennaweb.org>
- ❑ **Information about the converter box coupon program as presented by NTIA:**
<http://www.DTV2009.gov>
1-888-DTV-2009 (1-888-399-2009)
- ❑ **Information about the DTV transition from the National Association of Broadcasters:**
<http://www.dtvanswers.com>
- ❑ **Information about the DTV transition from the DTV Transition Coalition:**
<http://www.dtvanswers.com>

Information from Washington Area Television Stations

- ❑ <http://www.weta.org/digital>
- ❑ <http://www.nbc4.com/digital/index.html>
- ❑ <http://www.myfoxdc.com>
- ❑ <http://www.whut.org>
- ❑ <http://www.mhznetworks.org>
- ❑ <http://www.upn20wdca.com>
- ❑ <http://thecwdc.trb.com>
- ❑ <http://www.wusa9.com>
- ❑ <http://www.wjla.com>
- ❑ <http://digitaltelevisionnow.org/mpt>



**TV CONVERTER BOX
COUPON PROGRAM**
PO Box 2000, Portland, OR 97208-2000

Form Approved
OMB No. 0960-0024



Apply online:
www.DTV2009.gov

Apply by phone:
1-888-DTV-2009 (1-888-388-2009)
Deaf or hard of hearing callers:
1-877-530-2634 TTY - English
1-866-495-1161 TTY - Spanish

Fax applications to:
1-877-DTV-4ME2

Mail applications to:
PO Box 2000, Portland, OR 97208

**ALL APPLICATIONS MUST BE
SUBMITTED BY MARCH 31, 2009.**

COUPON APPLICATION All information must be filled out. Please type or print clearly.
This Application is to apply for a \$40 Coupon which can be used towards the purchase of a TV converter box.

1. Your Name and Address.

NAME

First Middle Last

**HOME
ADDRESS**

Street Address Apt #

City State Zip

If the US Post Office does not deliver mail to your Home Address, provide as much information as you can above regarding your Home Address and provide your Mailing Address below.

**MAILING
ADDRESS**

If different than above Street Address - or - P.O. Box # Apt #

City State Zip

2. TV Service: Check the statement below that best describes your household.

- ☐ All or some of the TVs in my house are connected to one or more pay services, such as cable or satellite.
☐ None of the TVs in my house are connected to one or more pay services, such as cable or satellite.

3. Coupons Requested: How many coupons do you want? ☐ ONE - OR - ☐ TWO

4. Signature: By signing below, you declare that the above is true and correct.

Signature Date

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