

All about HDTV

New manufacturing techniques have dramatically reduced the cost of High Definition Television (HDTV). HDTV offers significant improvement in picture quality, which is especially important in large screen TV. They also support the wider 16 by 9 picture format that is more pleasing to watch and better suited to movies than the old 4 by 3 format which required “letter boxing”. However, the many different technologies and conflicting claims have made the field very confusing. Given that a large screen HDTV can cost thousands of dollars, it is important to make the right choices. The following tries to bring some clarity into the situation.

There are two major kinds of HDTV technology, with variations within them. They are:

- Projection HDTV, including DLP and Liquid Crystal Display (LCD) (explained below)
- Flat panel HDTV, including plasma and LCD

In general, the projection sets are lower in cost and weight than the flat panel technology, but have somewhat lower picture quality (the difference in picture quality may or may not be visible).

Projection HDTV

There are two kinds of projection HDTV sets: Digital Light Processing (DLP) and LCD (not to be confused with flat panel LCD). Both use a high powered white light bulb as the light source. In the DLP technology, the light from the bulb is focused first on a proprietary chip from TI that has millions of tiny mirror (one for each pixel on the screen). To obtain color, the light is then sent through a rotating color wheel. The advantages of DLP technology are lower cost, less “hardware”, lower weight, and very smooth images. The disadvantages are narrower viewing angle and a somewhat thicker (from front to back) set.

The other kind of projection sends the light through a small LCD filter. The thickness is about the same as the DLP sets, and the viewing angle limitations are about the same. In both cases, the projection bulb needs to be replaced about every four years at a cost of about \$200.

Flat panel HDTV

Flat panel displays also come in two types: LCD and plasma. In both cases the sets are thinner (front to back) but heavier and more expensive than projection HDTV. In the past, plasma had higher quality, especially in the larger sizes, than LCD. But recently LCD has caught up in quality. In both cases the cost has dropped rapidly in the last few years, but LCD is now available at lower cost than plasma.

Screen Size

In addition to selecting the right technology, it is important to pick the right size. As a rule of thumb, the greater the viewing distance, the greater the size should be. I suggest that you pick the size so that the viewing distance is 2.5 times the screen size. Thus, for a viewing distance of 120 inches (ten feet) the screen size should be about 50 inches. (Men need much larger screens).

Resolution

There are several different resolution standards for HDTV. The highest resolution that is planned is 1080P, which stands for 1080 scan lines using progressive scanning techniques. The HDTV sets that have lower resolution will still work properly, but will not have the quite the clarity of the higher resolution sets.

Receivers

Some HDTV sets do not come with an HDTV receiver: these are called “HD Ready”. They are used with a set top box from Comcast, which costs about \$7 per month. The advantage is that you can get Channel One and the interactive features in addition to the high definition channels. The other kind of set comes with a built-in HDTV receiver at higher cost. These sets can use a CableCard. The CableCard plugs into the back of the set and receives the high definition signals. It is free from Comcast and they install it for a one-time charge of \$15. The drawback is that it does not receive Channel One or support interactivity. In both cases you will probably want to sign up for the high definition channels, at extra cost of course.

High Definition DVD Players

Once you have an HDTV set, you may want a high definition DVD player that can support the higher quality picture available on the HDTV set, although your present DVD play will still work. A new generation of high definition DVD players is coming on the market this fall using a new high capacity media. Unfortunately there are two competing standards. One is called blu-ray and the other is called HD DVD, which uses two layers. Players for these new media presently cost about \$500, but this will come down substantially in the next year or two. At this point it looks like blu-ray will win the standards war. You will need to buy all new high definition DVD disks to obtain picture quality improvement. A much less expensive compromise approach is to continue to use your current DVD disks but get a new DVD player which has “up conversion”, which can improve the quality of the picture from standard DVD disks.

There are two kinds of new interfaces for the high definition DVD players: DVI and HDMI. DVI, which is for video only, is the older interface standard which is now being phased out. I recommend the newer HDMI which carries both audio and video. There are adapters that will interface DVI into TV sets that require HDMI.

By the way, do not pay extra for “monster” or high quality DVI or HDMI cables. These are digital cables and all perform the same.

The high definition DVD players also support superior sound. You can of course play the DVD through the TV and get the usual stereo sound. Or you can play the sound

though a “home theater” sound system and get 5.1 sound with two speakers in front, two speakers in back, and one speaker in front of the TV set. These are available for about \$250 and up.