

## DTV - Broadcast Television in Transition, What does it mean?

Almost everyone has heard about high definition (HD) television, and digital television (DTV). Even broadcasters have mentioned the 'DTV transition' in some recent commercials. But aside from figuring out all the acronyms, how will this affect you, the consumer and facility manager?

The answer to the question is important, if only for this one fact. On February 17, 2009 analog TV broadcasting will cease. This means that the TVs we have used since the 1950s will be obsolete for receiving over the air signals. The old system that allows us to see channels 4, 5, 9, 19 etc. is going away. This system used an analog standard referred to as the NTSC broadcast standard. It is important to note that this affects over the air broadcasting, and is a legal mandate from the FCC. How its effect plays out with cable TV and other media will occur at a slower pace. It may be a little bit like 8 track tapes (anybody remember those?).



They eventually just went away. First, let's address why this is happening. The change to DTV is the result of a long drawn out process that has been in the works about 20 years. While the good news is we have digital HD TV available, the real reason is about commerce.

Communication consortiums wanted part of the frequency spectrum that TV broadcasters were not using very efficiently. Recently the FCC has received bids to sell the TV spectrum above 700 Mhz (TV channels 50) and higher. Also the DTV transition will eventually produce more open spectrum referred to as 'white space'. The FCC is

looking at ways that the 'white spaces' can be opened up for commercial use by non-broadcast operations.



Next let's clear up what is DTV or Digital TV? It is the

marketing name of standards for transmitting TV programming in a digital format. With DTV, bits are sent over the air instead of varying analog voltages. The actual standard is the ATSC standard (Advanced Television Systems Committee) which is a table of 18 possible formats. The TV you buy will take all these formats and reduce them to 1 to 4 formats that the TV is capable of displaying. I know this sounds confusing, but you don't need to worry about that. The multi-format design provides scalability. Scalability is useful so that a TV set designer can decide how a 7" TV displays an HD signal, or a 50" TV displays a standard definition (SD) signal. What is good to know is that DTV allows for High Definition or HD signals, but it does not require them.

One benefit of DTV is that images are clearer. So even when viewing standard definition images that are not high resolution HD signals, the picture looks better. The DTV signals are cleaner and crisper. Secondly, the DTV or ATSC standard basically allocates a digital broadcast 'pipe' for broadcasters to use. So through the use of advanced digital technology a broadcaster can broadcast two or more programs at once. If you have a DTV set at home you may have noticed that KCPT has four digital channels designated as 19-1 through 19-

4. Locally KMBC and KSHB broadcast weather continuously on their "- 2" channel.

Is there a downside to DTV? Other than the fact that it represents a forced change in the marketplace, DTV signals have one really different characteristic. DTV reception either works or doesn't work. The margin between good and bad reception is narrow. A marginal DTV signal will



break up and get 'blocky', and the audio may stutter. If the reception gets a little worse, the TV decides it has no signal. So with traditional analog broadcasting some TV stations looked good, and one or two may have been poor or noisy. With DTV you either have a great picture, a few random annoying blocks, or nothing. As an example I live near I435, but by a ridge that places my house in the 'shadow' of the transmitters located in Kansas City. I have an antenna that is on a 10' mast. By the way, the antenna is only 8"x18". In the summer the foliage from the trees makes it unlikely that I can watch KMBC-DT. After the leaves fall I can watch the TV show Lost in HD with about one to three glitches an hour.

One effect that these changes have produced is to impact the availability of some TVs and VCRs. Since the FCC changes are scheduled for 2009, there are also restrictions placed on devices that receive off air TV signals. Starting over 2 years ago there were regulations requiring large screen TVs to be DTV compatible. By late 2007 all TVs that were produced had

to be DTV ready. A result is that there have not been many inexpensive, small TVs available. The combined impact of cost for the new DTV receiver chip sets and RoHS (Restriction of Hazardous Substances) has made producing small, affordable TVs a challenge. RoHS limits manufacturing processes for environmental impact. Traditional CRT displays have lead in them, making them hazardous to manufacture and dispose of properly. So there is also a 'green' factor here relating to the acceptance of flat screen technology.



So what about TVs in your facility? If your facility has a Master

Antenna system (MATV) that redistributes off air signals for internal use, then all your users will need DTV ready TVs in 2009. Based on some technical requirements there may be a need to upgrade your MATV or RF distribution system. One little 'gotcha' is that while the DTV stations are still designated by their old call letter and channel numbers, the DTV signal is actually on a different channel. Broadcasters can't use the same frequency spectrum to transmit analog and DTV simultaneously, and the decision was made to keep the analog channel number as a reference to reduce consumer confusion. An example of how this works is that KCTV (Channel 5) actually broadcasts KCTV-DT channels on the spectrum previously reserved for UHF channel 24. A DTV TV displays it as KCTV 5-1 when you tune it in. This is why CATV head ends may have to be redesigned to accommodate the actual frequency spectrum used by the DTV signals.

If your facility receives programs from a cable provider the transition is easier. As an example, Time Warner's cable channels 2 through 76 are based on the analog standard. It is likely that they will continue this practice for a few years. Cable companies are delivering their version of digital signals in the higher numbered channels. One area of conflict between cable providers and over the air broadcasters is the use of the extra DTV channels. As an example KCPT provides 4 DTV channels during its daytime programming, and Channel 50 has 5. If a cable provider decides to carry all these DTV channels they will have to remove some of their existing programs, which is unlikely. The FCC is addressing this, and the idea of a cable provider carrying a signal that is 'materially equivalent' to the primary DTV broadcast channel that is transmitted. The details may be worked out in court.

What are your options? Well, aside from buying new TVs, there will be converter boxes available that enable an existing TV to receive DTV signals. Affordable converter boxes were announced at CES in January. The FCC also has a required program that households can receive a rebate coupon to help pay for a converter box (for details about the coupon go to [www.dtv2009.gov](http://www.dtv2009.gov)). We will have to wait, or check back with the FCC website in 2009 to see what is available. The concern is that people with low or fixed incomes may not know what to do in February 2009, or that they may fall prey to marketers telling them they 'have to buy a new digital TV'.

Here is one last comment. If your facility uses wireless microphones check to see what frequency they use. If they are on a frequency above 700 Mhz

plan on changing them in the next year or two. After the 700Mhz spectrum is sold there is a good chance that a new mobile phone, or 'strawberry' PDA, or 'red tooth' device will come out that uses this spectrum. When that happens wireless mics that use the same frequency may become unreliable.



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