In the old days of digital television, a year or two ago, choices were simple. If the screen measured under 37 inches diagonally, it would be a liquid-crystal-display panel. From about 37 to 43 inches, it would probably be a plasma panel. And larger sizes would be rear- or front-projection sets.

But as flat panels have grown, categories have blurred. For 50-inch screens, plasmas starting at about $3,000 are an alternative to projection models starting under $2,000. A bigger rivalry occurs between L.C.D. and plasma panels of around 40 inches, where prices are virtually identical. For example, the most popular plasma from LG Electronics, the 42-inch 42PC3D, sells for $2,000 and its 42-inch L.C.D., the 42LC2D, sells for $2,100.

So which television type is better: L.C.D. or plasma?

The first step in answering that is to get past antiquated stereotypes. Plasma, for instance, is still haunted by burn-in — the tendency to retain marks from images displayed on the screen for too long. Video games, for example, were hazardous to early plasma TV’s because they displayed static elements like score boxes.

But for modern plasmas, burn-in usually disappears after a few hours of displaying other content, according to David Katzmaier, a senior editor for home video and audio at the online technology publisher CNET. In fact, plasmas are sturdier over all than they used to be. Many new screens are expected to last 60,000 hours before losing half their brightness — the standard measure of a screen’s lifetime. (Modern L.C.D.’s are also rated for 60,000 hours.) That is over 23 years of watching TV seven hours a day, every day.

One stereotype does hold: L.C.D.’s are brighter than plasma panels and can better compete with strong ambient light. And L.C.D. screens do not reflect room light, as most plasmas do (though manufacturers are beginning to fix that problem). So sellers recommend L.C.D.’s for viewing in brightly lighted rooms. “The last thing we want is for someone to get a plasma and get a really horrible glare on it and take it back,” said John Zittrauer, a sales representative at the Best Buy in Chelsea.

But L.C.D.‘s are too bright for many settings. “I could take away 25 percent of the light on an L.C.D. panel and still have a blindingly bright picture,” said Kevin Miller, a home theater consultant who also writes TV reviews for CNET.

At CNET’s test center in Manhattan, Mr. Miller and Mr. Katzmaier were reviewing the 42-inch Vizio L42 HDTV L.C.D. ($1,600). To optimize picture quality, they reduced the backlight intensity to 10 on a scale of 1 to 100. (The default is 90.)

More important than brightness, according to Mr. Katzmaier and Mr. Miller, is the contrast ratio — the range between the brightest and darkest tones the screen can produce.
To demonstrate, they showed two best-in-class TV's: Sony's 40-inch KDL-40XBR2 L.C.D. ($3,500) and Pioneer's 50-inch PDP 5070HD plasma ($4,000). While both had been adjusted to produce the same light output, the Pioneer's screen looked brighter and showed more depth and detail. That was a result of a higher contrast ratio, said Mr. Miller, because plasmas can produce deeper blacks than L.C.D.'s.

Contrast ratio is the most important aspect of screen quality, according to the Imaging Science Foundation, a company that evaluates video products and trains technicians who service televisions. (Mr. Miller is an original member of the foundation and one of its instructors.) But vendor claims about contrast ratio may not be realistic.

For example, L.C.D.'s at CNET's lab had claimed contrast ratios ranging from 4500:1 to 7000:1. Mr. Katzmaier said the TV’s might be able to achieve those numbers, but not under real-world viewing conditions with settings optimized for image quality. “These very high contrast ratios are achieved often by very bright whites, which many viewers would find offensive,” he said. Mr. Miller estimates that in a realistic setting, plasma and L.C.D. TV's have contrast ratios between about 300:1 and 400:1.

Although plasma can produce more contrast than L.C.D., it does not always do so. And a plasma's contrast advantage fades away — literally — in bright rooms, where the ambient light overpowers dark tones. “Speaking about black levels in a bright room isn't really worthwhile,” Mr. Katzmaier said.

After contrast, color saturation and accuracy are the next most important quality factors. Though plasma panels used to beat L.C.D.'s on these measures, the technologies are now about equal. Over all, colors appeared very similar on the Sony and Pioneer sets at CNET's lab. And according to Mr. Katzmaier's measurements, the Sony actually came a bit closer to the HDTV color standards.

But colors look best when viewing the Sony — or any L.C.D. — head-on. The screen faded slightly when viewed from the side. The makers of L.C.D.'s are minimizing this side effect of the technology, and it was especially minor on the Sony model. But it was noticeable.

Plasma, in comparison, looks the same from any angle. So it is good for big screens viewed by crowds — say, in a sports bar. But even most L.C.D.'s show top-quality images within about a 30-degree arc. “That would be the width of the couch for most people,” said Al Griffin, senior reviews editor at Sound & Vision magazine.

The fourth criterion is resolution — the number of pixels that make up an image. In 42-inch sets, most plasmas and L.C.D.'s provide 768 screen lines, from top to bottom. But plasmas have 1,024 pixels per line, while L.C.D.'s have 1,280 or even 1,366 pixels. That makes 42-inch L.C.D.'s better for the high detail in video games, said Mr. Zittrauer of Best Buy. But for movies or sports, he says plasma's better contrast ratio outweighs its resolution deficit.

The starting point for high-definition is 720 lines, but the pinnacle is 1080p, which has 1,080 lines of 1,920 pixels. So far, plasma makers have been able to squeeze all those pixels only into screens of 50 inches or more — at great cost. Pioneer's 50-inch PRO-FHD1 lists for $10,000.

Some 1080p L.C.D.'s are smaller, down to 37 inches. And prices are not astronomical. The $3,500 Sony KDL-40XBR2, for instance, has 1080p resolution. It showed stunning images from a high-definition HD-DVD movie, in which individual strands of hair on the actors' heads were visible.

But those details looked equally clear on Pioneer's PDP 5070HD, which has about half as many pixels. To appreciate 1080p, viewers need a very high-quality source and a screen that is either big enough or close enough to show the detail. As the screen gets smaller, so does the distance.

“Thirty-seven-inch 1080p is not worth it,” said Mr. Griffin of Sound & Vision. “You’d have
to sit so close.” And even at close range, high-resolution L.C.D.’s might blur details in fast-moving video, because the screens do not refresh images as quickly as plasmas do.

In the end, the scorecard shows a slight advantage for plasma. The panels have higher contrast ratios, wider viewing angles and better display of movement than L.C.D.’s do. But L.C.D.’s perform better in bright light; and they have higher resolution — for those who can actually see it. On color, the technologies are matched.

The ultimate choice depends largely on where the TV resides and what it displays. Movies in dark rooms will probably look better on plasmas; games in bright rooms should look better on L.C.D.’s. But even the differences that do remain are smaller than they used to be. So screen technology is only one factor in choosing a set, along with price, style, brand and the particular level of quality in the particular model.

That is why some manufacturers, like LG Electronics, sell both technologies. As Tim Alessi, an LG spokesman, said, “We put both out there in the market, at similar prices, and let the customers decide.”

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