A TV 4 times sharper than HD

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Now that you've got a high-definition TV, you may want to start saving up for a super-high-definition one.

Television manufacturers, ever eager to shore up their business with new technology, are gearing up to roll out sets with what's known as 4K screen resolution. These TVs, which should start to hit store shelves in the United States later this year, have about four times the resolution of 1080p screens, the current standard for high-definition sets.

Regardless of the size of its screen, a 1080p TV has about 2 million pixels arrayed across 1,920 vertical columns and 1,080 horizontal rows. Although electronics manufacturers haven't yet settled on a standard, 4K resolutions generally have at least 7 million pixels - and sometimes a lot more - arranged across about 4,000 columns and 2,000 rows. All those extra pixels allow 4K televisions to display images in much finer detail than HD-TVs.

I got to see some prototype 4K TVs at the Consumer Electronics Show in January and more recently at the offices of Marseille, a Santa Clara, Calif.-based chip company that has designed a 4K video processor. On bigger screen sizes at close distances, the difference between 1080p and 4K is stunning.

At a close viewing range, HD video on a big screen can look pixilated, and colors and images can blur into the background. By contrast, 4K video looks super sharp, almost lifelike.

Marseille showed me one demo comparing the two resolutions side by side. It reminded me of a similar demo I saw several years ago that compared the high-definition video stored on Blu-ray DVDs to the standard-definition video on regular DVDs. The difference was so great I immediately wanted to have the higher-resolution screen and video.

But most consumers will likely want to wait for 4K. The first 4K TVs will likely be outrageously expensive. Toshiba's 55-inch 4K television, for example, is already available in Japan for a cool $10,000 or so.

Marseille says its 4K video processor would only add about $10 to the cost of a TV or Blu-ray player. But that's not the big cost issue for manufacturers. Instead, it's the display technology, said Paul Gagnon, an analyst at NPD DisplaySearch, a market research firm.

The ability to cram that many pixels into a relatively small space is on the cutting edge of display manufacturers' capabilities, he said. Because they are still perfecting the manufacturing of such displays, they're likely to churn out a lot of defective and unsellable displays, which will ramp up the cost of the ones that can be sold.

"That problem that we see is that it's just super-expensive," said Gagnon, adding that in the near future, "We don't show that dropping that much."

Indeed, DisplaySearch projects that manufacturers will only sell about 5,000 4K TVs this year worldwide and won't sell more than a million per year until 2015.

The other thing that will likely give consumers pause is the paucity of 4K content. Consumer have a hard enough time finding 3-D content to view on newer stereoscopic TVs, but they will have difficulty finding anything at all in 4K.

That situation isn't likely to change anytime soon, Gagnon said. Manufacturers of Blu-ray discs aren't focused on 4K and neither are broadcast television networks, he said. And the bandwidth required to stream 4K video would be enormous.

Even if those problems can be solved, some critics say consumers don't need or want 4K. If you watch TV on a smaller screen or sit across the room from it, you likely won't notice the difference between 4K and HD, they say. That conforms to my experience: the further away I was from Marseille's demo, the less noticeable were the differences between the 4K and HD images.

But the first HD sets faced similar hurdles. They were ridiculously pricey, and there was little HD content. And consumers unfamiliar with HD video often had a difficult time distinguishing between it and standard resolution video. Eventually, the industry solved those problems, and 4K could as well.

Marseille executives note that consumers already have plenty of 4K content in the form of digital pictures. Most cameras sold these days shoot at a resolution of 8 megapixels or better, which is right in line with what 4K televisions can display. And while it may be many years before your favorite shows are available in 4K, chips such as the one designed by Marseille can upscale HD video so that it approximates 4K resolutions.

And consumer demand for higher resolution TV screens could grow. The average screen sold has gotten ever larger over the years. Consumers can now find and buy 70- and even 80-inch sets at relatively reasonable prices.

Meanwhile, Apple's latest iPhones and its new iPad have shown the benefits of displays with lots of densely packed pixels.

"As Apple demonstrated with the new iPad, pixel density is something people are interested in," said Gagnon, adding that it could "plant the seed for that 4K market coming down the line."

More information: Troy Wolverton is a technology columnist for the San Jose Mercury News.