The value of efficiency

**Dave Freeman** - June 18, 2013

Recently I had an interesting conversation with a few friends who work outside the technology industry. I am always interested in the perceptions of those outside our industry about what we do. In this case, we ended up talking about energy efficient appliances and why they cost more than the “less” efficient appliances. An opinion of one friend is that the more efficient appliances would never pay back the difference in price because they would not last that long. He had little hard data, other than recollecting looking at frontloading washing machines.

He recalled looking at one machine that had an estimated operation cost of just $6 per year, while another machine had an estimated cost of $10 dollars per year. These two machines were $100 apart in price. For him, it would take 25 years to pay back the difference in price. Of course, I could have argued that electricity cost would not stay at today’s level, but that would probably have been fruitless. Another friend, a real user in the group, and a mom, suggested that looking at an energy-efficient top loader would save about $200 and cost $8 per year to operate. In this case, the simple math says 100 years. She also pointed out that once you start the washer you always find another sock, so the top loaders are more efficient for clothing management. I heard of this sock issue before. From my experience, it seemed to be the drier that would eat them because I never seemed to find that missing sock.

We went on to discuss refrigerators and dishwashers, but the results were the same. The extra purchase price for higher energy efficiency, in their opinion, did not seem to pay back. However, they were motivated by saving the environment, so they would go for the more efficient appliance for that reason. Sometimes it is not just about the money.

This leads me to the 80 plus and the adoption rate for efficient power supply units (PSU). In June of 2012, the Northwest Energy Efficiency Alliance (NEEA) released a very detailed report on the market adoption of 80 plus certified desktops and notebooks.¹ The report was generally upbeat, but there were concerns. There was some disagreement about the number of desktops shipped with 80 plus power supplies. Navigant estimated that 48% of desktops were shipped with 80 plus supplies, while IDT estimated the number to be closer to 70%.

The costs of the 80 plus supplies have continued to decline and the incremental costs between levels also have shrunk. For example, the difference between 80 plus Base and 80 plus Bronze has declined to only $10. However, the price pressure on desktops continues to escalate while the demand by the
customer for more RAM and disk drive space has added to the anxiety. In one case, a manufacturer had decreased the percentage of low-end desk tops that ship with 80 Plus-rated power supplies in order to add more memory and drive capacity.

Assuming the Navigant share number, in 2011 there were about 13 million desktops shipped with 80 Plus-rated supplies, out of the about 27 million total desktops. A company to note is Apple, which ships 100 percent of their desktop with 80 Plus supplies. Figure 1 shows the 80 Plus market share for various desktop suppliers of the 13 million desktops.

![Figure 1. Percentage of market share of desktops with 80 Plus supplies, by supplier.](image)

There have been many articles, blogs, and discussions concerning what is the value of including 80 Plus power supplies in desktops and servers. A recent example is an analysis performed by Joel Hruska. He addressed the question: “Is it worth investing in a high-efficiency power supply?” The analysis included the purchase price of the power supply and the cost of electricity. He covered 80 Plus ratings up to Platinum. He also covered different energy profiles. His conclusion is that it “could” be a good investment, depending on how much energy you consume.

However, the decision could go back to the desire to be responsible with energy resources. Using less energy to perform the same task makes sense. I also think it is up to our industry to find ways to be more efficient without paying a higher price to do this. I am not talking about lower profits and austerity, but using our engineering genius to address efficiency in a more system-oriented manner. We have seen incredible efficiency numbers enabled by new semiconductor materials. They are expensive today, but their volume is also proportionally low. I think we will have the opportunity to close the price gap between the low- and high-end of 80 Plus in the near future. At that time it will be more about being responsible with resource, while also maintaining fiscal responsibility.

Let me know what you think the value of efficiency really is. We shouldn’t have to skimp on efficiency in order to make room for the other bells and whistles. If you happen to know where those
missing socks are, I would appreciate a heads up! If I can find a solution, then I could buy different colors and styles of socks instead of always the same style – just to cover the missing ones.

For more information about this and other power topics, visit TI’s Power House blog: 
www.ti.com/powerhouse-ca.

References