

Haitz's Law and Its Implications for LED Lighting

The materials and fabrication processes used to make LEDs are continually improving - resulting in brighter, more efficient light sources. Traditional lighting technologies such as fluorescent, incandescent, halogen, and high-intensity discharge are static and have not seen significant improvements for years.

Over the last 40 years LED performance has been improving at logarithmic rates, while the cost of light from LEDs has been simultaneously decreasing at logarithmic rates. This phenomena has been called Haitz's Law, named for Dr. Roland Haitz of Agilent Technologies, who first observed this phenomena. Haitz's Law states that every 10 years the price of LEDs decreases by a factor of 10, while the performance (measured in flux per unit) increases by a factor of 20. In recent years, this rate of has increased, as illustrated in *Figure A*, perhaps because of increased competition in the LED component market.

LED lighting can take direct advantage of Haitz's Law to deliver continually improving benefits to lighting customers. This will ensure that LED lighting captures an ever-increasing share of the traditional lighting market.

What does Haitz's Law Imply for the Future of Lighting?

- LEDs will continue to get brighter, run cooler, and become more efficient
- LED lights will continue to get less expensive
- LED fixture product generations will be measured in months, rather than years or decades for traditional lighting
- LEDs will capture more of the lighting market, displacing traditional technologies, until they become the dominant lighting technology

Figure A

