

Follow Us:

[Home](#)[About Us](#)[Contact Us](#)[Events](#)[Magazine](#)[Special Reports](#)[Register](#)[Login](#)[By Objective](#)[By Sphere](#)[By Solution](#)[Safe](#) | [Clean](#) | [Efficient](#) | [Profitable](#) | [Compliant](#) | [Closed-Loop](#)

Advertisement

[Article](#)[Comments \(0\)](#)

## Are New Light Bulbs Really a 'No Brainer?'

By **Bill Holmes, P.E.** July 24, 2013 11:40:37 am[Email](#)[Print](#)[Like](#)

4

[Tweet](#)

4

53

I came back to my engineering office completely exhausted. I had fielded question after question after question about one of the least significant engineering design changes I had been involved with since I had come to the F-15 Special Project Office at Wright-Patterson AFB.

I was a captain and just finished a presentation to a board of senior officers, requesting approval for a change order on a bolt that fastened part of the afterburner to the new Pratt & Whitney engine for the latest and most advanced Air Force fighter, the F-15. It was a very simple change, adding a shoulder to keep someone from over-tightening the bolt in the field, and I thought the meeting would be short and the approval automatic. It was a "no brainer." When I walked back into my office after about an hour, completely spent, my colleagues asked how it went. I told them. Ron, who sat directly across from me, explained what had happened.

Ron was this big, tough guy who had been the commander of all of the Air Force ROTC cadets at the University of Illinois. He was smart, a natural leader and had a great sense of humor. "It was too easy," he said, "So simple they actually thought they understood it; they wanted to feel like they were making a contribution, earning their pay by asking a lot of questions. If you had gone in requesting an alteration in the third-degree differential equation controlling the algorithm that determines the integration of the fuel flow equation with the enthalpy of the atmospheric conditions for any given altitude, they wouldn't have asked a single question. It would have been dead silence and you would have been back here in five minutes, after you had finished saluting and shining all of those colonel's shoes." He had a point.

Energy conservation is kind of like that. Nearly all the savings I have produced over the years have come from changes made to complex energy systems in boiler rooms and electrical rooms, scary places where few people go. Not from insulation or new windows or making people uncomfortable.

When I am asked where I look for energy savings, my response is that if you want to save energy, you look at everything that uses energy. You look at everything that is connected to the electric meter, the gas and water meters; anything that is connected to the wires or the pipes from the meters. And the bigger the piece of equipment, the more energy it uses and the more complex it is, the more opportunity it probably offers for savings. The windows aren't connected to the electric meter and neither is the insulation.

What about the lights? Of course they are connected to wires running through the building; of course, you should look at them. Everyone can understand a light; that's a "no brainer." Nobody is going to ask me about the part-load efficiency of the chillers or measuring the boiler stack temperature and adjusting the oxygen trim, or using outdoor air for free cooling depending on the difference between the outdoor and indoor enthalpy.

But light bulbs? Now, there is a great opportunity for savings. Let's put in energy efficient lights. You replace 100-Watt incandescent bulbs with 25-Watt fluorescents and save 75 Watts for every hour they are on. You know how many hours they are on each week and you know how much you will save. You

### Infographic: A Comparison of Energy-Efficient Lighting Technologies



## Sustainability Infographics



We here at Sustainable Plant love infographics. Aside from being easy to read and ingeniously designed, they are also incredible resources to have on hand, ready to share with others. With this in mind we've put together a collection some of our favorites from around the web. Check them out, pass them along and let us know if you have any other infographics you'd like us to share with the community. [View the gallery](#)

## Author Bio



### Bill Holmes, P.E.

**Bill Holmes, P.E.** founded Holmes Energy LLC [www.holmesenergy.com](http://www.holmesenergy.com) and developed the AutoPilot Monitoring-Based Commissioning (MBCx) System in 1979. He has a B.S. and M.S. in mechanical engineering and has done additional coursework and research for his PhD. He is a former Purdue professor and taught for several years in the Continuing Education in Energy Management Program at the University of Wisconsin.

Bill has produced savings from 20% to, in a few projects, more than 50% from low-cost, no-cost changes in management, operation, maintenance and control alone in all types of facilities including Industrial Plants owned by Fortune 500 Companies.

He is the recipient of a DOE Award for Energy Innovation and was the Indiana Energy

compare that with the initial cost and find that you will get your investment back in 10 to 15 years. When the local utility company and maybe the government kick in their incentive money, that period might come down to less than five years.

Of course, most of the work I have done using actual real-time and historical data from an energy monitoring system to simply tune up building energy systems through low-cost or no-cost changes had a payback of weeks or months, but let's not confuse the people who are so certain that installing energy-efficient lighting is the best way to save energy.

I was in one of my clients' buildings and walking down a hallway in a large high school, actually an underground tunnel between the main building and the gymnasium maybe a quarter of a mile away, and looking at the lights. At some point in the past the local electric utility had an incentive program that allowed the school to replace the original incandescent bulbs with new, energy efficient, screw-in fluorescents. The payback had looked good, particularly when the school's contribution to buy the new bulbs came from the capital projects fund. It made sense because that money was easier to get than money from the operating fund, which was the one used to pay the electric bill.

As I was walking along, looking at the ceiling, it was obvious that the lighting levels under the different fixtures varied quite a bit and the color of the light coming from the fixtures was not uniform. With all of the same energy-efficient bulbs, the lighting in the hallway should be uniform. Something wasn't right. So I got a ladder and start looking at the individual bulbs. It was 20 years ago but if my memory serves me, I found 23 different types bulbs in that hallway.

The schools sometimes ran out of money for parts midway through the year; they often had no money to buy the expensive replacements for the energy-efficient bulbs. So when a bulb burned out, whatever custodian was working at the time went to the supply room, took whatever bulb was on the shelf that would fit that fixture, and replaced the burned out bulb. It didn't matter if it was a 40-Watt spot or a 100-Watt flood or a 200-Watt bulb.

When the fluorescent bulbs were installed, the old incandescents were put in the storeroom. There was no way a school would throw away perfectly good bulbs. I wonder how that was factored into the ROI equation when the project was sold. And, of course, I forgot to mention, when those new energy-efficient bulbs were installed, they were saving so much money they just left them on 24 hours a day.

Saving money with new lights is a "no brainer" if I ever heard one.

**More from Sustainable Plant**

- [Should I Upgrade to Fluorescent or Wait for LEDs to Get Cheaper?](#)
- [Are You Ready for the End of Inefficient Lighting?](#)
- [New England's Largest LED Lighting Retrofit Promises Two-Year Payback](#)

**Relevant Tags**

buildings, carbon, conservation, electricity, lighting, maintenance, monitoring, return on investment, workforce,

**Add a comment**

You cannot post comments until you have logged in, and have an appropriate permission level. [Login here](#) or [register for a new account](#).

Manager of the Year in 1990. He has published numerous papers and been making presentations on his projects and methods for more than 25 years. Bill is a sculptor, a writer and a regular contributor to Sustainable Plant.

RSS Author Articles

**The Most**

Most Recent      Most Read      Most Commented

- [Nation's Largest Brewery Goes Landfill-Free](#) 10/18/2013 12:10pm
- [Infographic: The Dangers of Industrial Dust](#) 10/18/2013 11:44am
- [Compressed Air Systems: Friends or Foes of Sustainability?](#) 10/18/2013 10:29am

**Green or Green Wash?**

**Manufacturer Designates Eco-Certification for Electrical Devices**

The company's Acme electrical devices meet criteria established by the company for its Eco-Certified designation. Demonstrating its commitment for a better, cleaner environment, a company has developed an eco-certification designation for a variety of its industrial products, including the company's entire line of Acme electrical devices. The company's Acme electrical devices meet criteria established by the company for its Eco-Certified designation: The devices have a positive impact on...

[Read More >>](#)  
[Add Your Comment >>](#)

**Swisscleanwater Group**

Just selecting and buying a water filter isn't enough, you also need to know the ways to maintain it so that you can enjoy great service from the Clean water...

 Author  
2/9/2013 @ 10:44pm

[Read More >>](#)

**Supporters Corner**

1 of 7



**Baldor Electric**  
Our Job is Making Yours

2 of 7



**ABB**  
Together We Can Make the

