

Does Energy Efficient Technology Make Buildings More Energy Efficient? The Answer May Not Be So Obvious

February 7, 2012 by [Seth Jaffe](#)

ClimateWire had a [fascinating story](#) on Monday about federal efforts to increase the energy efficiency of buildings, which are estimated to consume about 40% of our nation's energy. The story concerns the less than inspiring named Greater Philadelphia Innovation Cluster for Energy-Efficient Buildings, which is seeking to substantially alter how building owners think about energy efficiency and the use of technology.

The problem facing GPIC, as it is known, is one with which I confess I was not familiar. According to the statistics from the Energy Information Administration:

“Over the past 20 to 30 years, every important building component has improved in energy performance. From air conditioners to lighting to windows, construction crews today have an array of green technologies at their disposal.

*Once they're put together, though, **the finished building performs no better than its predecessors of two or three decades ago. The parts have gotten better, but not the whole.**”*

It's not clear why this happens, but the theory is a combination of lack of coordination among different members of design teams, and a set of incentives that almost inevitably lead each individual component to be substantially oversized and thus incapable of taking advantage of the efficiencies provided by new technologies.

I have to say that this conclusion is sufficiently startling that I am skeptical. The EIA reports that, from 1986 to 1999, energy use per square foot of building did not change. Apparently, 1999 is the last year for which EIA has data. (Which of course is also troubling, in its own way.) It would be interesting to know if energy efficiency has increased at all since 1999.

Even if the situation is better than the EIA data suggest, it would not be surprising if the problem does exist, at least to some extent. If so, it raises some very interesting issues regarding government regulation of building efficiency. States such as California and Massachusetts are likely to start regulating building efficiency at some point as part of their broader plans to attain GHG emissions targets. Will they be able to do so in a way that actually leads to decreased energy use per square foot? Based on this article, simply requiring use of more efficient components may not lead to the outcomes the states want. On the other hand, regulations that actually affect the design process will be considered by building owners to be unreasonably intrusive.

This is definitely one to continue to watch.

