



Innovation and Regulation: The Social Negotiation of Technical Change

By Michael A. Anthony and Jim Vibbart

APPA executives can drive innovation in technologies that reduce the total cost of facilities ownership. After all, a \$100 billion industry—one that is frequently

used as a lever in implementing public policy—should have some influence in the facilities supplier market. It means getting into the mix where leading practice documents characterize risk and

establish regulatory frameworks.

In this issue's feature article by Rich Davis and John Saidi, we learn about how an industry wrote itself a revenue stream. A two-year effort begun by the University of Michigan Plant Operations, carried forward by APPA's Code Advisory Task Force, and merged with other, like-minded organizations¹, resulted in successful regulatory intervention in NFPA 25². The result: a 75 percent reduction in fire pump testing costs that saves \$10 million annually to the educational facilities industry alone.

Many regulations intended to solve one problem create another as they scale up. The current Green Energy zietgiest, is an example. Speculators are eager to write checks in the tens of billions when what is actually needed is a multitude of smaller checks on the order of thousands of dollars. This is a problem of mismatched scale.

The next version of ASHRAE 90.1 will ask for 50 percent of 120V outlets to be connected to a timer. Specifics are available at: https://osr.ashrae.org/Public%20Review%20Draft%20Standards%20Lib/90%201bs_2007__1stPPRDraftFINAL.pdf.

To receive American Recovery and Reinvestment Act (ARRA) funding, states must conform to the latest and greatest building energy codes. One state's effort to receive ARRA funding is available at: <http://www.energy.gov/media/3930GranhholmMichigan.pdf>.

Because states are under pressure, APPA institutions may be under pressure to translate the promise of 90.1(bs) into energy savings and jobs creation. Two questions:

- Will this increase use of extension cords to non-timed outlets?
- Will this double the number of outlets so that occupants conform to the 50 percent requirement?

The net effect of 90.1(bs) might be more energy wasted farther upstream the supply chain as the electrical industry uses more labor and more natural resources to install and manufacture extension cords,

conduit, wires, circuit breakers and receptacles. Conversely, 90.1(bs) might drive innovation. Writers of the 2011 National Electrical Code are revisiting calculation methods that determine the number of receptacles and the sizes of transformers. Two proposals meant to reconcile the competing requirements of energy conservation and fire safety can be found on Pages 177 and 187 of the NFPA 70 Report on Proposals are available at: <http://www.nfpa.org/assets/files/PDF/ROP/70-A2010-ROP.pdf>.

ASHRAE 90.1(bs) could drive innovation that expands DC circuiting, eliminating power blocks at the end of electronic end-use equipment. Investment in the so-called Smart Grid, or in the reliability of the last mile of power distribution, could be disrupted by the prospect that automobiles and trucks (that carry 90 percent of U.S. fuel supply at any given moment) could morph into a massive backup power system—a system that would increase Homeland Security by eliminating the risk in the U.S. power grid becoming a weapon of mass destruction.

Innovation and regulation is a manifestation of a reciprocal process: the social negotiation of technical change. Having a hand in writing the rules is one of the most efficient ways of driving innovation and reducing costs in the long run. But it is a long run. Code intervention moves along a three-, six-, and nine-year trajectory.

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PICK YOUR BATTLES

The first draft of any leading practice document is an ideal place to install controversial requirements. Thought leaders in any industry have to pick their battles. An imperfect document is usually better than no document at all. Twenty years and six revisions later, two things were happening in NFPA 25, both apparent opposites:

- Reliability improvements since 1991 were being ignored.
- Fire pump system innovations were being forestalled, effectively pushing reliability improvement into operation and maintenance budgets.

APPA's arguments before the NFPA technical committee acknowledged that installed systems always need maintenance, but the cost has to be risk informed and set against the gathering pace of development in newer, smart building technologies. The lesson relearned is that the political aspects of standardization are inescapable. You need the right "touch"—not too little; not too much. The best regulatory framework allows room for flexibility and provides platforms for negotiating agreement. Proof points are needed along the way.

Different industries respond to innovation differently. Many entrepreneurs can be intimidated by the inertia of many industries, including ours. The software industry is very quick to adapt to market needs and sometimes even creates the market. The life science industry on the other, engages in licensing activity because of early-stage risk. The chemical process and communications equipment industries respectively, prefer trade secrets and lead time to market.³ Energy startups demand more money, more time, more late-stage risk (see sidebar). In our industry we use none of these. We take a process that works. Find its flaws. Remove those flaws. Do it at half-cost.



"These new regulations will fundamentally change the way we get around them."

CONCLUSION

Innovation and regulation are facets of the same overall process of technical change. It is important to understand them together as well as separately. Risk regulation literature offers cautionary messages about unthinking

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legal compliance. Danger lies in simplification and encapsulation of leading practices in quantitative or one-size-fits-all practices. Perfect compliance with regulations can have perverse consequences; just as non-compliance will land you in court. Regulatory ad-

vocacy provides APPA with a real-time partnership with regulatory agencies to calibrate risk, and provides a growth platform for innovation. 💰

NOTES

1. Stanford University, U.S. Department of Energy, U.S. Veteran's Administration, U.S. General Services Administration, and Edison Electric Institute.
2. *NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. National Fire Protection Association, Quincy, Massachusetts.
3. *Preserving Vital Patent Law*. *Washington Times*, December 20, 2009. C. Nard, Case Western Reserve University. A. Morriss, University of Illinois, Urbana-Champaign.

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