

[Energy Efficiency](#) | Jeff St. John | **June 29, 2009**

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## Making Building Automation Brainier

Scientific Conservation says its software can boost the energy savings of a typical building automation system by 25 percent. Making buildings more energy efficient is a focus for many, including Energy Secretary Steven Chu.

Energy Secretary Steven Chu calls it the "Goldilocks problem" of building automation systems – buildings can be too hot, or they can be too cold, but very rarely are they just right.

**Scientific Conservation Inc.** says it can fix the problem. Formed by veterans in the business of automating HVAC, lighting and other building systems to save energy, the Berkeley, Calif.-based startup makes software that picks up the efficiency slack in those systems – a process known as "automatic continuous commissioning."

The idea is to combat the "energy drift" that occurs in building automation systems by constantly sensing where they're wasting energy and adjusting accordingly, said Andrew Colman, SCI's chief technology officer. (The company is pronounced "sky," by the way.)

"If you have a building that's perfectly tuned up with a brand new building automation system, and then you leave it alone and people go about doing what they do – tweaking thermostats, leaving things on, adjusting things – the building is going to drift downward in its energy efficiency to the tune of about 17 percent over one or two years," he explained. Clogged filters, off-kilter temperature sensors and a host of other problems add to the drift, he said.

That ends up wasting money on unnecessary energy bills, as well as shortening the lifespan of HVAC systems by commanding that they do things like run hot and cold simultaneously, he said.

Fixing that is called "re-commissioning," and nowadays it's mostly done manually, with engineers walking through the buildings to check systems and make adjustments, he said. LEED certification as well as common sense demands it be done every few years, and it's a lucrative after-market for the companies that install the systems – about \$4.5 billion in the United States, Colman estimated.

SCI is offering its subscription-based software as a service to do the same job. The software can detect where energy is being wasted, determine the cause of the problem, notify the person in charge and generate work orders for fixes, Colman said.

Others in the field build similar software, including **Prenova** and **Enforma**, both of which have former employees now at SCI. **Cimetrics** and **Tririga** have software to manage commercial or retail real estate energy use, and demand response providers like **EnerNoc** and **Comverge** like to integrate with building automation systems where they can.

In fact, managing building energy use is an increasingly competitive space. Incumbent market leaders are fighting it out with startups, as well as big new entrants like **Cisco Systems**, that promise better ways to do it (see **Cisco Jumps Into Energy Management for Computers, Buildings and Green Light** post).

Colman claims that SCI's software allows for a far more hands-off and nimble detection and

correction experience. A typical 100,000-square-foot office can save about \$30,000 a year on a \$15,000 software installation fee and \$9,000-per-year subscription, he said.

Clients such as Neiman Marcus, Hardee's, Santa Clara County and NASA have seen real-world results that can yield payback in as little as six months, he said. SCI's software is compatible with building automation systems by the heavyweights in the field, including **Honeywell, Johnson Controls, Siemens, Schneider Electric, Eaton, General Electric** and **Echelon**, giving it "automatic plug-in" capability with about 70 percent of the systems out there, he estimated.

SCI has been funded by friends and family to date, and is seeking to raise several million dollars in a series A round, Colman said. That should push the company into profitability, he said.

SCI also plans to release a "Platinum"-level service that integrates building automation control systems in the coming months, he said.

"The real heart of Platinum is a self-healing building," he said. While that will require customers to agree to an "outside-of-the-firewall" system controlling their buildings, Colman feels most customers are ready to make that leap.

Buildings consume about 39 percent of the energy produced in the United States. As head of the Department of Energy, Chu has made building efficiency a priority for the billions of dollars it plans to invest into both old-fashioned fixes like weatherization and research into what he calls "transformational energy technologies" (see **Green Light** post).

The Nobel Prize-winning physicist made the point last week at the **Edison Electric Institute's** annual convention in San Francisco. In a speech covering DOE's energy goals, Chu highlighted advances in building automation software as an area ripe for innovation, recalling how he used to have to reprogram the building automation systems in the labs he worked in to ensure a consistent temperature for proper experiments.

In a press conference after his Thursday speech, Chu floated the idea of the DOE putting research dollars into developing "open source" models for next-generation building control software.

That kind of development model could be a basis for U.S.-Chinese collaboration into new energy efficiency research, he added, since it would avoid some of the thornier problems of fighting over the intellectual property rights of the results.

China will be a critical market for building efficiency, since it's set to build 300 billion square feet of new buildings by 2020, the equivalent of the United State's current real estate stock (see **Green Building Entrepreneur: Build Green or Face Catastrophe**).

Beyond new technology, there are economic barriers to cross in the building energy efficiency battle, Chu noted. One is finding a way to bridge the tenant-landlord gap. If tenants pay the power bills, they probably don't want to spend money on upgrading a building they might not be in for long enough to pay back the investment.

On the other hand, "If the landlord pays the energy bill, the tenant will most likely run the air conditioner and leave the windows open," he said. "You have to align the incentives."

Given that energy efficiency offers faster paybacks than any other clean energy investment, entrepreneurs are busy testing ways to bridge the traditional gaps that have forestalled more investment in it (see [A PPA Model For Building Energy Efficiency?](#)).