

# When Everything Old Is New Again...

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If you are like me with some gray showing around the temples, then you may also recall what our industry was like in the early 1980s. If any device consumed two watts of electricity we looked for a way to get it reduced to one watt. ROI was our daily war cry and we left no stones unturned in our search for projects that would meet our internal company goal, typically a three-year ROI.

We retrofitted fluorescent light fixtures with early and unrefined polished reflectors so we could lamp down from four to two tubes. The shadows were horrible and the rooms were dim, truly a poor application unless the original fixture was a three tube and you had an engineered reflector. Our bosses took their blows over this change and of course handed same down to us, advising we had better come up with better improvements fast.

We converted our T-12 lamps to T-8, a good move although the T-8 of that day ran about 125% more in cost than did the T-12. So we often waited to do the retrofit until a group relamping was due and we could bury some of the retrofit cost in what would otherwise have been spent on the relamping. And when we did relamp we invariably faced complaints about the new color rendition.

We converted from magnetic to electronic ballasts, almost certainly a bad move in the early days of humming and smoking electronic ballasts coming from a variety of backyard manufacturers. Flicker and high infant mortality rates were the norm for these units, and again the complaints filtered down. Confidence in conservation measures took a solid hit.

Rare indeed was the company who would take a comprehensive approach and convert to two-tube, electronic ballast, T8 with reflector for maximum benefit. The reason was simple—ROI target wasn't met. Any one of those projects alone would normally fall under a two year ROI, but combined they were immediately defeated by poor financial performance.

I retrofitted the bathroom lighting of the western United States' largest office complex with first generation occupancy sensors. In fact I bread boarded the circuit and had it manufactured. It's still in service today. We were immediately jokingly crucified in the largest metropolitan newspaper for rationing how long we allowed people to spend in the stall.

We all installed these amazingly complex and huge devices called Variable Speed Drives, the prototypes of today's modern Variable Frequency Drives. Pretty much smoked every motor we converted within a few months. For years those VSD units sat collecting dust, all the circuits bypassed so the replacement motors were running conventionally.

We replaced all screw-in incandescent lights with the great new PL technology. Horribly expensive because of hard-wired ballast, these first generation lights had one color available, a very hot and unappealing pure white. Rated at 20,000 to 30,000 hours by the manufacturers, the infant mortality rate was easily above fifty percent, and rare indeed was the unit that burned five thousand hours. Not that it mattered since we had to replace the PL with an incandescent because of the superior color rendition.

Stuck with incandescent, we affixed a diode to every bulb so they would use less power, only to learn that the electric waveform swinging through zero was needed to cool the filament. Our bulbs lasted only weeks with these diodes.

## **WHERE DID ALL THESE TERRIFIC TOYS COME FROM?**

The small entrepreneur. We aren't talking about an energy efficient turbo-modulator on a chiller backed by a world-class manufacturer. We're talking about cutting edge applications of breakthrough technology where the inventor can't afford manufacturing and distribution. So the one-man vendor stepped up and filled a new market

need.

And why did we do all this? First, of course, because we wanted to save money and we were in a recession where dollar conservation was endemic. Previously relegated to perhaps maintaining a well-balanced boiler efficiency, we finally had an opportunity to be heard and to perform in a manner visible to the highest level in our companies. It was our turn to shine.

We stumbled and we tripped—and we failed. But by the late eighties we had succeeded. We had weeded out the bogus claims. We had survived the several generation iterations of devices we now consider state-of-the-art such as PL technology and VFDs. We even created the recognized position of Energy Manager where no such role had previously existed. We created an industry.

And we were done. By the turn of the decade we had done what we could do, we had improved what could be retrofitted. Most new construction went in with sufficient efficiency at base building design that we had little to retrofit. Major mechanical/electrical contractors routinely handled equipment that was previously available only through the little Mom & Pop who originally pleaded with us to just give their product a try.

## **WHY? ROI!**

The reason is simple and it is the one thing that never changed—the ROI. Money drives what we do, and nobody suddenly declared that a ten-year ROI is a wonderful goal to achieve. So we had plucked the low hanging fruit—but that didn't mean we had achieved total energy efficiency. Left unexplored were all those big-ticket improvements that simply cost too much for a reasonable capital recovery period.

Ten years later, I find I am involved with utilities around the world, and in particular the present energy 'crisis' in California. And around the world various price caps are being lifted with staggering effect; often five- to six-fold increases in energy cost. Projections are for even greater near term increases in some regions. In no case are there projections for reduced costs going forward in the near term.

So now what happens to the ROI? Surprise! All those previ-

ously five- to seven-year projects suddenly meet the three-year model! A \$100,000 project considered under a ten cents per kW rate pays for itself much quicker than the same project under six cents per kW.

Dual source chillers. Turbo-modulators. Tower free cooling. Thermal storage. All the big-ticket applications are now starting to have a new appeal. Even very small on-site cogeneration, in the range of thirty-plus kW, now makes much more economic sense where both peak shaving and generation benefits are to be had.

I was thumbing through the recent *Energy User News*, and in page after page, I was struck with the impression that we are entering a new golden age of conservation/generation. In my consulting practice this is now the paramount theme for cost control. We have not forsaken supply-side approaches, but the need and justification for demand-side approaches is inescapable.

## **\$400,000,000 FOR ENERGY CONSERVATION**

In the past couple of years the various conservation rebate programs in California have dwindled, mirroring many other states that seem to feel conservation no longer requires any external incentive. Now, with a crisis upon us, we suddenly have \$400,000,000 allocated for conservation rebates in California. The money was allocated so fast they don't even have the programs in place to distribute the wealth.

And in many instances the cost of these improvements has come down over the years as well. VFDs are a pretty good deal now, and certainly will fall within the ROI model given new higher rates. The energy industry expects lower gas costs within the next two years, and combined with high electric costs and lower product costs, the dual source chiller is a solid consideration. Or steam absorption chillers tied to on-site generation. We used to huff and puff with excitement over concepts like this, but now they are financially and technologically viable.

The energy industry also expects electric rates to come under control within three years, following reduced gas cost. The thing to keep in mind is that these well-controlled electric costs will not be

lower or equal to what we have enjoyed under price freeze conditions. They will be improved over the dramatic spikes of today, but still higher than what we are used to paying. And so the conservation/generation model has some firm legs to stand upon.

## **NOW, ENERGY MANAGERS ARE WISER**

But this time around, unlike the early 1980s, we have experience to fall back on to help us avoid the same pitfalls we stumbled into twenty years ago. We are now specialized energy professionals who know how to qualify a product, a vendor and a contractor. We know how to effectively implement metering and valuation of our projects. We have multiple vendors to shop for price competitiveness. We know how to take advantage of rebate and incentive programs. We can speak enough of the CFO language to get our projects a proper respect and review.

**And now the public is aware—and even reasonably sympathetic!—to energy conservation.** Tenants in a building want to know what the management is doing to control energy costs. People are inundated by news about energy shortages and the need to conserve. They aren't really educated in this field well enough to do much at home, so they want to know something is being done at the office. Your job.

Your job has never been easier because you have internal and external support behind you. Your job is easier because you have market conditions/prices working to force conservation. Your job is easier because you have personal as well as vendor/manufacturer/contractor experience. Your job is easier because even the CEO wants to know what you are going to do so he can report to the Wall Street financial analyst who need something to hang their reports on.

**And... your job is more difficult than ever.** It is more difficult because the project dollars are bigger than ever before, and if you fail you have failed in a million dollar way that will not go without notice. It is more difficult because given the dollar size of your project it will receive scrutiny all the way to the top rather than just up to your immediate boss. You have to become a good salesman because your boss isn't going to do this presentation.

## YOU ARE MORE IMPORTANT

Your job is more difficult because everyone now assigns a new importance to your role, and there are some absolutely terrific people out there who are very good at this and who can be bought to come in and replace you. In California a good energy manager goes for \$150k a year plus benefits including stock options. So you had better perform.

**Your job is easier and at the same time more difficult** because at these dollar levels you are attractive to outside consultants who, with all good intentions, may well delay your projects for months of intense scrutiny. In the end you may find it easier to get a project approved if the consultants endorsed it, but you will never sail a project that received a poor evaluation. And for sure, you will have lost months of savings while the studies went on.

Not to say you should not engage the consultants. If your in-house expertise is either too time-constrained or perhaps lacking the appropriate expertise, the outside consultant can make your life a dream by getting a host of projects in front of the right people. And since the CFO probably hired the consultant it will be tough to refute the analysis of a viable project.

The ESCOs and Super-ESCOs of only a year or two ago, almost extinct now, are mounting a major new attack at your doorstep. They see the same thing evolving—a new era of physical projects. Always hoping for performance contracting, and particularly now that these will be major projects requiring significant financing, the ESCO approach seems to have some new impetus. Keep in mind that ESCOs often offer project financing in exchange for their portion of the benefit, and this may be an approach your company wants to investigate.

**So. Everything old is indeed new again, but that doesn't mean we have to suffer the same pains we did the last time around. You're smarter, the product is better, the consumer is informed, the squeeze is on again—and the time is now. Go out and enjoy the new golden era of conservation/generation.**

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### ABOUT THE AUTHOR

**Kevin D. Fraser** is president and CEO of Fraser Limited. He has

20 years of real estate experience in facilities management, construction, design (mechanical/electrical/plumbing) and consulting. A recognized expert in building systems and energy management, Mr. Fraser has specialized in multi-site facility operations and review, with a focus on energy acquisition and energy project design.

Prior to joining PG&E Energy Services as a national director Mr. Fraser served as an international corporate real estate consultant for Ernst & Young Kenneth Leventhal. He has held facilities and administration management responsibilities for David Rockefeller, Prudential Insurance, John Portman & Associates, Pacific Park Plaza and Wind River Systems.

Mr. Fraser is credited with writing and releasing the nation's first true open market RFP for deregulated electricity. He has led or participated in energy commodity and related services totaling billions of dollars, including the largest single energy services agreement in history. His experience includes representing the end user, intermediary, independent third party and supplier.

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