

AOI BUSINESS VIEWPOINT

Q4 2009 / Energy

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AOI Business Viewpoint is written for high-expectation business leaders who believe the business environment of Oregon affects decision making for their organization's strategies and profitability and who want to tip the balance sheet in their favor.

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Unpredictable: Impact of rising health care costs



Predictable: How you can continue to offer health coverage

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Energy Demand and Supply: Opportunities and Looming Threat



DAN HARMON

AOI Chairman of the Board

We understand the implications of energy supply on the prosperity of our individual businesses. However, I wonder if we understand the full threat to our prosperity, and that of all Oregonians, of the gap between future demand and our lagging supply.

I was reminded of this question as I was driving to work and following a couple in their Prius with a "4r Erth" license plate. While I admired their clever statement and individual effort, a plethora of questions ran through my head: Do they know that their home energy use accounts for substantially more pollution than their old gas guzzling car? Do they know that some devices when "shut off" are in "standby mode" and continue to consume about 8 percent of the total energy supply? Do they understand more will be asked of them as pressure mounts to reduce the use of hydro and coal power generation and energy demand outstrips supply? Will they someday buy an electric car and be shocked to learn they can re-charge their car only after 10 PM; will they then demand we increase our power supply so they have unrestricted charging? Do they know that solar and wind power, while good for carbon reduction, is costly and hardly makes a dent in the energy supply gap?

Oregon has a per capita carbon score of "45" with the 28th highest resident population—an admirable ranking mostly result-

ing from individual actions of both citizens and businesses. Just like the couple in the Prius, individual businesses are reducing their energy and carbon footprint while making their own statement in the process. Individual building owners are embracing LEED (Leadership in Energy and Environmental Design) as a standard practice and incorporating cutting edge technology to reduce energy consumption and environmental impact. These technologies range from Smart Control Systems to Photovoltaic and Solar Thermal Systems to Bio Waste Reduction Systems. Even federal and state governments are renovating their buildings. This is good news on the demand side given that buildings consume a majority of the business energy use. Like purchasing a Prius, however, these energy reductions are being applied mostly prospectively. Much more can be done. The greatest opportunity still lies ahead of us in a broad scale renovation of existing commercial, industrial and governmental buildings.

Reducing energy usage through process efficiency and reducing "standby power" demand are two relatively untapped strategies. Business must take a leadership role in the former and embrace a potentially broader opportunity in the latter. Although many of us have revised our management and production process to gain general operational efficiencies,

I doubt many of us have looked at our processes with a view of reducing energy consumption. Business as a whole uses 60 percent of the energy consumed in this country. Some experts estimate that businesses can reduce their energy consumption over 10 percent through relatively minor adjustments. In addition to reducing demand, businesses conducting such evaluations are certain to find cost savings make them more competitive.

Beyond reducing demand, we must increase supply, particularly electricity. By the year 2020, electrical demand will outpace supply by about 10 percent—a huge gap. Reductions in demand and increases in wind and solar may help, but opposition to hydro, coal, and LNG may widen the supply gap significantly and the Plug-In Hybrid Electric Vehicles may turn it into a chasm. All options must be on the table because it will take every source we have to meet the demand: yes, maybe even nuclear.

Affordable energy is the lifeblood of Oregon's prosperity. If we are smart, we can make sure it is used cost effectively and remains abundant. Without it, that couple in the Prius will have a lot more to worry about than some codger like me following too closely in a gas guzzling SUV.



THE NEW EFFICIENCY

Managing use proves vital in maximizing energy efficiency

By Jon Bell

The near-term future of energy efficiency is not likely to be defined by some newfangled solar panel integrated into building materials or a smarter water heater that knows the best time of day to heat itself up.

Granted, such innovations are in the works and will likely play a key role in future efficiency efforts down the road.

But right now, much of the focus on energy efficiency can be boiled down to one word: management—as in better management of the generation, transmission and utilization of energy.

“From my perspective, the biggest opportunity doesn’t look like technological advances,” says Kim Crossman, the Energy Trust of Oregon’s sector leader for industry and agriculture, “but really doing better with what we’ve already got.”

Certainly businesses and industries have

Much of the focus on energy efficiency can be boiled down to one word: management—as in better management of the generation, transmission and utilization of energy.

turned to technology—compact fluorescent bulbs, variable speed motors, solar panels—industrial customers to help identify ways to increase efficiency and better manage their use of energy. Solutions are often simple, from installing efficient T8 fluorescent light tubes to repairing leaky air compressor hoses and installing variable speed motors. Oregon Trail Electric Consumers Cooperative also works with its agricultural customers to improve efficiency of irrigation pumps and sprinkler systems.

Most of these kinds of fixes are often eli-

gible for some sort of financial incentive that can shave years off the payback time.

“We’ve seen literally hundreds of thousands of dollars in rebates for our members,” says Steve Schauer, member of manager services for OTECC. “We’ve also helped our members obtain business energy tax credits and other funding.”

Utilities also offer time-of-use pricing plans to encourage large customers to shift some of their usage away from peak hours, thereby easing the strain on the power system. Usage profilers also allow customers track how and when they’re using power.

A smarter, more efficient grid

Managing energy usage for greater efficiency also comes into play when customers generate their own power, as well. Utilities employ net-metering programs that credit customers for the energy they produce themselves via photovoltaic systems, biomass plants, or wind turbines.

"There are more and more folks who are putting in these renewable energy generators on their side of the meter to help offset the load," Schauer says.

PGE works with a network of some of its larger customers, a program of standby generation that can be dispatched to help meet demands during peaking periods. Joe Barra, director of customer energy resources for PGE, says the system comprises about 50 standby generators that serve as "virtual peaking plants." The generators have rendered the construction of a large peaking plant unnecessary while also allowing customers to continuously run their operations without interruption.

The system is one way PGE is working to improve grid connectivity, management and, ultimately, efficiency. As more and more distributed power sources come online, managing the grid will become an even bigger priority in terms of maximizing efficiency. That, in part, is leading the way toward a smarter grid: one that allows for better monitoring of power usage, load shifting, and even communication with machines and appliances.

OTECC has a pilot program in place that lets the co-op monitor usage via remotely-read meters. PGE is working with appliance manufacturers on smart appliances that can respond to signals from the utility and power up or down at optimal times. Similar technologies may one day find an entire building imperceptibly upping its thermostat by a few degrees during a heat wave in order to ease the load and maximize efficiency.

"There is intelligence being built into the distribution system already," Barra says. "A lot of the technology is there, so I'd say we're really on the cusp of this all starting to happen."

Opposite: The Pepsi-Frito Lay Warehouse in Kalamath Falls, Oregon is an example of combining energy efficiency with distributed generation. Photo courtesy of PacifiCorp.

Energy efficiency finds a good home in Oregon

State ranks near the top on everything from incentives to annual energy savings

■ When it comes to energy efficiency, it should come as no surprise — after years of innovative programs, statewide initiatives and quite a bit of good press — that Oregon ranks near the top of the heap when it comes to energy efficiency. The state provides generous efficiency incentives, facilitates distributed generation of renewable power like solar, wind and biomass, and has ambitious goals for a renewable portfolio standard. (Twenty-five percent of major utilities' retail sales will need to come from renewable energy sources by 2025, according to the Oregon Department of Energy.)

■ The American Council for an Energy-Efficient Economy ranked The Beaver State number 4 on its 2009 State Energy Efficiency Scorecard, an annual assessment that tracks states in six different areas: utility and public benefits efficiency programs, transportation, building energy codes, combined heat and power, state government initiatives and appliance efficiency standards.

■ Released in October, this year's scorecard put Oregon ahead of all other states in terms of major financial incentive programs for energy efficiency for the state's residential and business energy tax credits and rebate programs. Oregon also scored consistently in the top 10 on everything from the amount of electricity its efficiency programs saved (437,000 MWh in 2007) to its amount of per capita utility sector energy efficiency spending (\$69 million). The state also earned high marks for actively encouraging the deployment of combined heat and power systems, which generate electricity in a single, integrated system. One such setup: a 30 kilowatt microturbine at Lewis & Clark College that provides electricity for a campus building and uses waste heat from the turbine exhaust to heat the schools' swimming pool facility.

To view the full ACEEE scorecard, visit www.aceee.org.

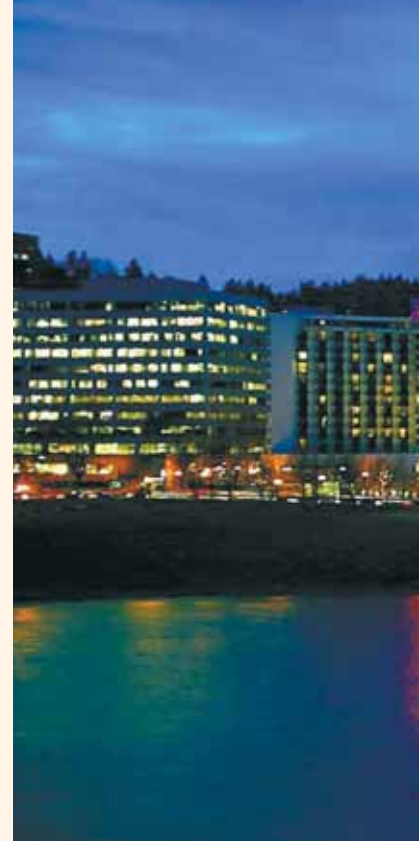


Jeff Moore, electrician with Ladco Electric, put the finishing touches on the Lookingglass Fish Hatchery lighting project installation that took over 6 months to complete. The Oregon Trail Electric Cooperative expects a savings of approximately 23,400 kWh's annually for the Army Corps of Engineers owned facility operated by the Oregon Department of Fish and Wildlife.

BRIDGING THE ENERGY GAP

In our forthcoming book, *Crossing The Energy Divide*, we make two closely linked and paradigm-challenging claims

By Robert U. Ayres and Edward H. Ayres



First, physical energy plays a far more fundamental role in economic productivity and growth than most of the top economic advisors to business and government have ever acknowledged. For reasons rooted in the pre-industrial economy of the 18th century, energy never got incorporated into the standard theory of economic growth relied on today. As a result, the standard economic models our leaders now use project unlimited growth without any requirement for physical energy inputs. Yet, as recent research now confirms, energy services are not just a large part of the economy; they are more than anything else what drives the economy. Capital and labor are essential, of course. But energy is what activates both workers and machines.

Second, the energy economy of the industrial world is so deeply fossil fuel-dependent that even the fastest conceivable growth of wind, solar, and other renewable-energy industries cannot substantially replace oil, coal, and natural gas for several decades at least. Given the very limited availability of renewables for years to come, it would be a great mistake to assume that simply by shifting as fast as possible to the energy industries of the future, we can quickly

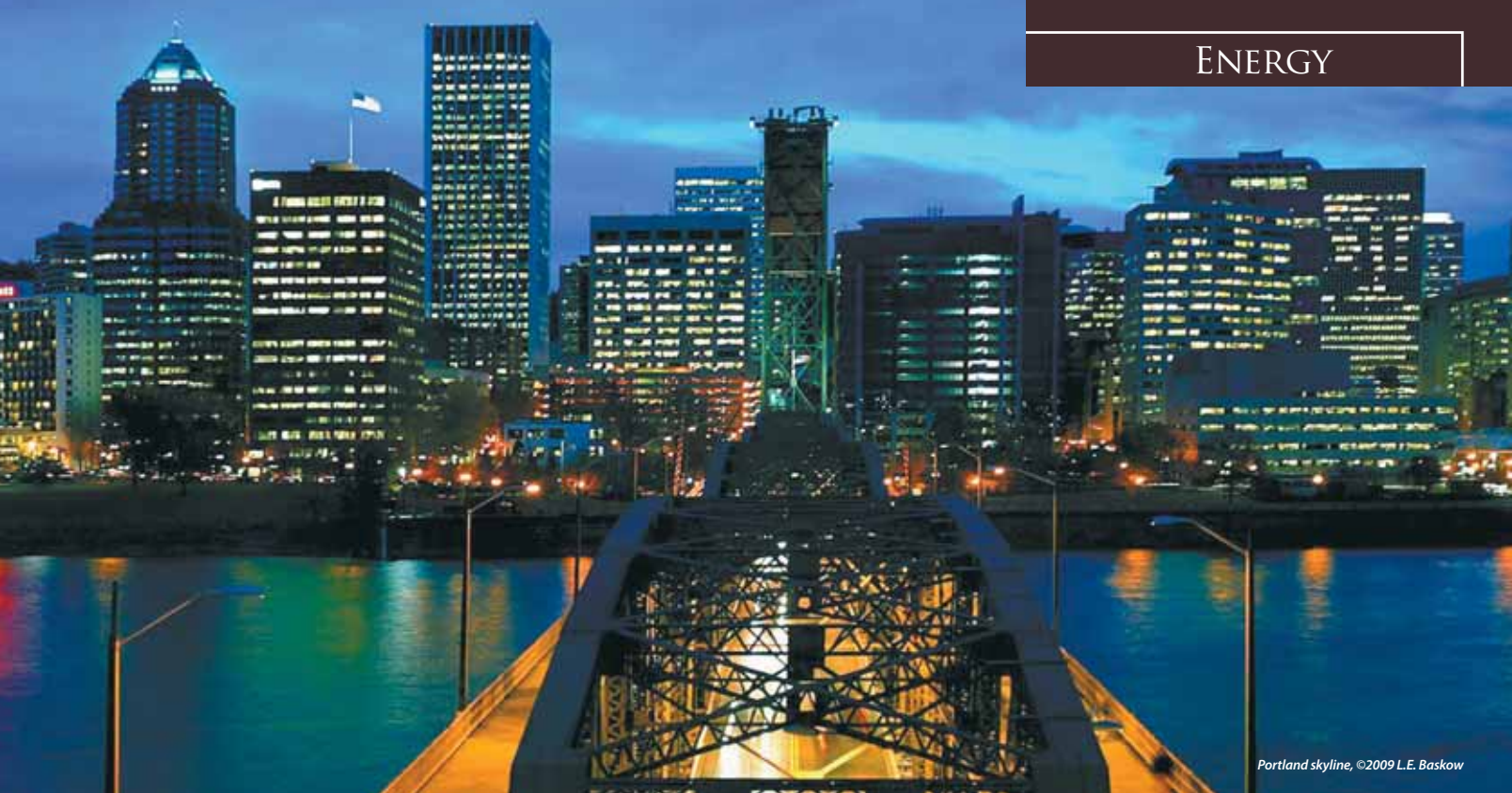
leave the old oil, gas, and coal industries of the past century behind. What, then, can we do to keep our economic ship afloat until the renewables are fully up to scale?

The answer must be to radically reform our management of the existing, fossil fuel-based system so that we sharply increase—not by ten or twenty percent, but by a factor of two or three—the amount of energy service we get from each barrel of oil (or “oil-equivalent” of coal or natural gas) during the years it takes to bring carbon-free renewables to the point where they can truly begin to take over. That strategy can provide a realistic energy-transition “bridge” to the clean-energy economy of the future.

A few years ago, in Indiana, the world’s largest steel company, Mittal Steel (now Arcelor-Mittal), began operating a facility that captured waste heat from one of its coking facilities and converted that waste heat to electricity, while simultaneously reducing carbon emissions from the local utility. A few miles down the road, a rival company, U.S. Steel, was using a similar strategy to generate emissions-free power from waste blast-furnace gas. In 2005, between them, the two companies generated 190 megawatts of clean electric power

by this method—more than the entire U.S. production of solar photovoltaic electricity that year. That was just by using the previously wasted energy from two fossil fuel-burning plants in one corner of one state. This kind of “energy recycling,” which sharply increased the amount of useful work produced by the company without any increase in energy supply, constitutes one of eight “girders” we have identified that, if more widely exploited, could provide the needed energy bridge.

Our proposed energy strategy is therefore, necessarily, an economic strategy as well. It avoids huge capital costs (such as the construction costs of new nuclear or coal-burning central power plants, or oil-drilling platforms) that the United States cannot afford to pay or wait for; and it quickly cuts energy costs by increasing output per barrel of oil or oil-equivalent. As our new research emphatically shows, that in turn can drive faster economic growth. In fact, many of the opportunities we propose for cutting fuel use and emissions can be achieved at little cost or even negative cost, including some surprisingly fast returns on investment. Those returns have already been quietly achieved by hundreds of companies.



Portland skyline, ©2009 L.E. Baskow

If our goal is to reduce carbon emissions on a large scale as quickly as possible, without bringing the economy to a halt, one of the most effective actions we can make ... is to invest in co-generation.

They could be achieved by tens of thousands more.

Historically, economists have tended to define “technological progress” in terms of products or services that create new markets and growth, rather than in terms of the energy that drives those technologies. But what technological progress really is has remained a vexing theoretical problem. Most economists think of it as an exogenous factor, like manna from heaven—a missing “third factor” of economic growth that cannot be reliably accounted for in their standard economic models. It has been a vexing problem for decades, not only because economic forecasters have been repeatedly blindsided, but also because knowing how to respond to the enormous future impacts of peak-oil and climate change depends on knowing far more clearly what the likely economic consequences of those impacts will be.

The new research demonstrates that what drives economic growth, beyond invested capital and labor supply, is not technological progress per se, but the very specific and quantifiable factor of declining prices of energy services, decade after decade. For the past half-century, standard two-factor models have never been able to forecast more than about one-seventh of the economic growth that has actually occurred in the United States or any other country. By incorporating energy services—“useful physical work” in the thermodynamic sense—as the long-missing third factor of growth, we can now explain long-term economic growth in the United States, Japan, and other countries with close to 100-percent accuracy. In short, what the research confirms is that energy is what makes capital and labor productive.

That knowledge is critical to establishing policies that will enable us to bridge the ener-

gy-transition of the next several decades. The chasm we must cross is not just that of the current national and global financial crisis. There is more to come, a sort of perfect storm of post-peak-oil strains converging with the obsolescence of fossil fuel-based technologies and increasing risk of catastrophic climate change.

If our goal is to reduce carbon emissions on a large scale as quickly as possible, without bringing the economy to a halt, one of the most effective actions we can make—something that won’t take decades to pay off, as reliance on increased oil drilling or nuclear or “clean coal” plants would—is to invest in co-generation, of which the Mittal and U.S. Steel waste-energy-stream recycling are two examples. If the two Indiana steel plants’ output in 2005 had been combined with the 900-plus megawatts of recycled waste-energy streams produced by other American industrial facilities, it would have been roughly equal to the

Cities are not fixed objects bracing themselves for a hit. Like individual organisms, they are continuously growing, regenerating, coping with threats, and adapting.

entire world production of photovoltaic electricity in that year.

In addition to harnessing otherwise wasted high-temperature heat and flare gas, there are abundant opportunities to harness—from electric power generation, as obsolescent plants are retired—low-temperature heat, via combined heat and power (CHP). In 2008, the International Energy Agency projected that if future demands for new capacity are met by shifting from central plants to CHP, global savings in capital costs alone would be \$795 billion. And, ongoing energy service costs would fall.

The Invisible-Energy Revolution

In the rancorous debate over U.S. energy independence and the presumed need for new domestic supply, what seems to have escaped both the politicians and the financial analysts is the possibility that if the country could find some way to get much more energy service per barrel of the oil it is already consuming, it might not need increased supply, whether from deep off-shore drilling, tar-sands, or new coal-burning or nuclear power plants.

In 2008, the American Council for an Energy Efficient Economy (ACEEE) issued a report showing that while U.S. energy consumption had increased greatly during the past 38 years, three-fourths of the increase had been provided by energy efficiency improvements, and only one-fourth by new supply. The media paid little attention, in part because of the myth that most opportunities to increase efficiency have already been exploited.

One reason the full potential of efficiency has been neglected (by policy-makers and managers, as well as by media) is a misunderstanding about what efficiency really is. Influenced by the kind of measurement cited

by hot water heater salesmen, many people in business and government evidently believe the U.S. economy is already quite efficient and has only limited room to improve. But deeper analysis tells a different story. The potential for improvement is huge. And there is ample evidence that businesses in virtually any field can make substantial returns on energy investment (and commensurate reductions of carbon emissions) by investing in efficiency improvements.

A related myth is that opportunities for profitable efficiency gains have rapidly diminishing returns. On the contrary, we find that returns can be sustained for many years—a significant factor in designing a transition bridge that must span decades. We found a dramatic illustration of this opportunity in a program instituted decades ago by the Dow Chemical Corporation. In 1980, Ken Nelson, an engineer who worked at Dow's Louisiana Division, proposed an in-house contest to find ways to reduce the plant's chemical wastes by improving the efficiency of its manufacturing processes. The divisional management approved, agreeing to fund any projects costing \$200,000 or less that could pay back that cost in savings within a year. In the first year, 39 projects were proposed by the company's mid-level engineers and 27 of them were funded at a total cost of \$1.7 million. At the end of the year, the projects had produced a cumulative return on investment (ROI) of 173 percent—a payback of about seven months.

The contest was continued, and contrary to what most economists would have predicted, the returns on efficiency investments did not decline in the second year of the contest. In fact, the returns on investment substantially increased—and continued at high levels for the following decade. In the eleventh year, there

were 109 projects with an ROI of 305 percent. The twelfth year brought more profit to Dow than any of the previous eleven. Altogether the contest saved Dow more than a billion dollars, which went straight to the bottom line.

Unfortunately, in American industry at large, pervasive misunderstandings and flawed management practices—including inordinate emphasis on market share and growth at the expense of efficiency and profitability—have inhibited wider acceptance of such robust efficiency investments.

The Future of Electric Power

Another highly productive strategy for sharply improving the energy-service output of the existing fossil-fuel supply will be to restructure the current electric power industry, which is based mainly on large, obsolescent fossil fuel-burning plants that are located far from the people and businesses that actually use the power, and that have been stuck at an anemic 33-percent level of efficiency for the past 40 years. For every three barrels of oil equivalent going into the plant, two barrels go up in smoke (more waste heat), or are lost in transmission over long-distance powerlines. There are other, far more efficient, ways to generate and use electricity—some of them now in wide use in other countries. The U.S. power industry has lagged, and the lag has been a factor in declining U.S. economic competitiveness.

In 1978, in the wake of the 1973-74 oil shocks, the U. S. Congress passed a sweeping new law, the Public Utilities Regulatory Policy Act (PURPA), which was intended to increase national electricity output without requiring the construction of numerous new "central" power-plants. The expectation was that where there had been monopoly there now would be competition, and where the United States had been at the mercy of Middle-Eastern oil dictators, it would now build robust new industries of solar and wind power.

PURPA has failed in its principal mission, however, for two reasons. First, it limits the prices new competitors can get to the so-called "avoided costs" of the established utilities—meaning that the new competitors can only be paid a price that is less than what

the utility would have to pay to produce that power. In the United States, that price is fixed by utility accountants and by utility-friendly state commissioners so that many independent producers of electric power—especially from high temperature wastes, or wind or solar power—have found it impossible to compete. And second, even to the extent that the federal law “encourages” alternative energy, it has no teeth. PURPA leaves it to the individual states to implement the mandate, and not all states have taken an interest.

One of the largest girders of the energy transition bridge, then, must be a genuine restructuring of the electric utility industry—a reform that achieves the original purpose of PURPA without being hijacked by the utilities. Restructuring to achieve decentralization will achieve multiple benefits: (1) reduced cost by avoiding much of the cost of long-distance transmission and distribution, (2) reduced fuel consumption due to the shift of new capacity from large central plants with 33-percent efficiency to smaller local combined heat and power (CHP) producers with local outlets for the heat, which achieve efficiencies of 60 percent or higher, and (3) reduced carbon emissions commensurate with the fuel savings. A further benefit would be improved energy security achieved by reduced reliance on high-voltage transmission lines that are vulnerable to ice storms, wildfire, or sabotage.

Preparing Cities for the Perfect Storm

There are two main reasons for taking present action to cope with distant, still hard-to-see threats. First is the need for mitigation—the near-term reductions of fossil fuel combustion and carbon emissions in order to reduce the severity of future climate-change damages, as well as to get to a more sustainable growth path and get free of foreign oil dependence. The second reason, which we focus on here, is the need for adaptation—preparation for climate impacts it is now too late to stop.

Cities are not fixed objects bracing themselves for a hit. Like individual organisms, they are continuously growing, regenerating, coping with threats, and adapting. And, like the eco-



Jupiter Images

Near term reductions in fossil fuel combustion and carbon emissions may also help in reducing foreign oil dependence, as well as the severity of future climate change damages.

systems all organisms depend on to exist, they process energy, materials, and generate wastes. How well they do these things will determine how well they cope with climate catastrophe.

The main tool for making cities less vulnerable to rising sea levels, storm surges, and floods will be updated building standards—comparable to those that have been enacted in recent years to make buildings in Japan and California more able to withstand earthquakes. The greatest potential for cutting energy use in buildings is to reduce the need for space-heating by cutting out heat leaks and losses. The well proven techniques of high insulation, low-e windows, and passive solar design make it work. The best proof is in the European Passive House project, which began a few years ago and has achieved energy-use reductions of 90 to 95 percent compared with existing (often very old) houses, and reductions of 50 to 65 percent compared with typical new houses.

In redesigning for future climate change, the precipitating motivation may be a hurricane, a major flood, or a near miss. But that ‘wake-up’ project can also serve as a stimulus to the resource-efficiency upgrading of entire

urban regions. Retrofitting existing structures for rooftop solar PV and better insulation, for example, will be given political impetus by the heightened attention to urban design possibilities brought about by relocation projects. For those efforts, at least four key goals are paramount: compact development; emphasis on public transportation; low-energy, low-emissions buildings; and land-use policies giving priority to living space rather than to driving and parking space for private cars.

Policy Priorities

In our book, we describe a set of changes in public policy that would effect far greater energy-service productivity, with faster returns on investment and reduced bureaucratic complexity. Those changes include rewriting the now toothless Public Regulatory Policy Act (PURPA) to empower new competition (especially from renewable-energy enterprises) in the electric power sector; stimulating more local generation of power to exploit the inherent advantages of co-generation of power and heat; dramatically ramping up the energy efficiency of buildings, transportation systems, and industrial processes and facilities; and revisiting our building codes and urban planning to provide far greater protection from climate-driven disasters. The proposed policy changes rely strongly on the principle that for businesses and consumers alike, the economic incentives should not be to use or sell more energy (as is the case in the present economy), but to use or sell energy services that use less.

In short, America now has an immediate opportunity (not theoretical, not “someday”, not “if only”), using existing, well tested, and relatively inexpensive methods, to rebuild the energy economy in ways that greatly reduce both fuel use and carbon emissions while providing abundant opportunities for profitable investment. And finally, there is now an opportunity—an imperative, we believe—to take a course of action that, far from harming or further depressing the economy as mainstream economists have feared, but will give it robust new life.

OREGON BUSINESS POLICY FORUM

The invitation-only, inaugural Oregon Business Policy Forum took place in November over a two-day period. AOI Board members, AOI Policy Council Chairs and AOI members, who are active in public policy, gathered to discuss strategy and tactics for creating a vibrant economic environment through pro-business public policy.

The attendees identified the five top business issues facing Oregon and Oregon business. As input, they reviewed and discussed research from ECONorthwest on the Oregon state budget and opinions about Oregon Business and the Oregon Business Climate presented by Davis, Hibbits & Midghall on behalf of the research sponsored through the AOI Foundation.

“The Forum is really where policy and competitive business issues intersected,” says AOI President and CEO Jay Clemens. “It gave us the opportunity to organize our support for policies that stimulate economic growth for the state and as well as a competitive Oregon. A vibrant economy will produce well-paying and stable jobs; quality private sector jobs will create revenue the state will receive to fund education and services that will sustain a high quality of life for Oregonians.”

AOI Public Policy Councils

AOI Public Policy Councils give member companies a voice in establishing the direction of AOI as your association pursues a broad-based, long-term public policy agenda for businesses in Oregon. A member Chair, steering committee and an AOI Policy Manager



Tim Hibbits of Davis Hibbits & Midghall takes the Forum attendees through the research detailing opinions about the Oregon business climate.

comprise each Policy Council.

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EMPLOYMENT PRACTICES POLICY COUNCIL

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AOI Policy Manager: J.L. Wilson

The Oregon Employment Department announced that Oregon

employers will see their Unemployment Insurance (UI) taxes rise in 2010 to an average rate of 2.76 percent of the first \$32,100 in wages paid to each employee. This is a significant increase from the 1.97 percent of payroll that is being charged for 2009. The tax rate for new employers will also increase—from 2.4 percent to 3.1 percent.

Despite a state economy that has yet to show improve-

ment, Oregon businesses have received some welcome news from state agencies this fall that two key business costs—workers’ compensation and minimum wage—will hold steady for 2010. The Department of Consumer and Business Services has announced that workers’ compensation “pure” premium rates for Oregon employers will fall by 1.3 percent in 2010. Cumulatively, this will save Oregon employers

Oregon businesses have received some welcome news from state agencies this fall: two key business costs—workers' compensation and minimum wage—will hold steady for 2010.

just over \$18 million in workers' compensation premiums next year. Workers' compensation premium rates have decreased each year since 2006, and have not increased since 1990. Since the landmark 1990 workers' comp reform, spearheaded by AOI and other groups, rates for Oregon employers have dropped over 60 percent, saving employers \$17.4 billion in premium costs. In another development, Labor Commissioner Brad Avakian announced that Oregon's minimum wage rate will remain at \$8.40 per hour in 2010. Oregon's minimum wage rate will hold steady for the first time since voters passed Measure 25 in 2002. Due to passage of that ballot measure, Oregon law mandates that the state's minimum wage rate increase every year in conjunction with the Portland/Metro Consumer Price Index (CPI). However, the 2009 CPI actually dropped by 1.48 percent, but the law only allows for increases based on the CPI, leaving no option for a reduced wage when the CPI declines.

RETAIL POLICY COUNCIL

*Chair: Leanne Musket, J.C. Penney Company, Inc.
AOI Policy Manager: Betsy Earls*

Paint Product Stewardship

As the only state in the country to implement the Paint Product

Stewardship pilot program, Oregon continues the move towards shifting the responsibility of solid waste management from the tax payer to the producer/manufacturer. Retailers continue to be the nexus of this transition.

In accordance with the provisions of Oregon House Bill 3037, the paint manufacturing industry has created the requisite stewardship organization, named Paint Care. Paint Care must submit a stewardship plan to DEQ for approval no later than March 1, 2010. The plan must provide for convenient and available collection of used paint in both urban and rural areas, and must also include a paint stewardship assessment, which will be used to fund the program.

Timeline - Once the plan has been approved, Paint Care must implement strategies to reduce the generation of post-consumer paint and promote reuse, and must carry out all collection, transportation and processing of used paint necessary for end-of-life management. In October 2011, DEQ must provide to the Legislature a report on the results of the program, as well as any recommended changes.

Assessment - DEQ testified that it expects the paint assessment to be approximately 50 cents per can. The amount must be sufficient to recover, but may not exceed the costs of the program. The



Jupiter Images

As the only state in the country to implement the Paint Product Stewardship pilot program, Oregon continues the move towards shifting the responsibility of solid waste management from the tax payer to the producer/manufacturer. Retailers continue to be the nexus of this transition.

assessment must be added to the cost of paint sold to Oregon retailers and distributors, and each retailer or distributor must add that assessment to the purchase price of each can. Assessments must be paid upon purchase; they may not be paid when paint is returned.

Phosphate Limits for Automatic Dishwashing Detergents go into effect in 2010.

Effective July 1, 2010, retailers and distributors may not sell or distribute in Oregon, any dish-

washing detergent with more than 0.5 percent phosphorus by weight, with the following exception: Detergents used in automatic commercial dishwashers may contain up to 8.7 percent phosphorus.

All cleaning agents sold in Oregon must be labeled with the percent of phosphorus by weight, including the equivalency of phosphorus per recommended use level.

TRENDS OF THE TIMES

Energy Trust of Oregon has seen pace pick up on smaller, more long-term projects

By Jon Bell

In recent years, Energy Trust of Oregon, a non-profit focused on cost-effective energy conservation and efficiency, has seen anywhere from 300 to 400 industrial projects a year.

The number this year: 800.

"We're seeing a much higher volume of smaller projects that still have a big energy savings," says Kim Crossman, ETO's sector lead for industry and agriculture.

Chalk it up to a sign of the times, with industrial energy users looking for ways to rein in costs without having to make hefty investments. In the case of energy efficiency, that's meant more lighting upgrades, energy audits and minor repairs and tweaks than it has new solar panels or wind turbines.

Crossman says ETO's approach to any efficiency project is one that's custom-tailored to a particular user and also taken on with the long-term in mind.

"This isn't just a one-time motor replacement," she says. "We're trying to get people to a place where they can better manage and control their use of energy."

Sometimes, she adds, that means going beyond an HVAC system upgrade and actually changing an organization's standard operating practices and demonstrating to them that processes can be done in a different, more efficient way. One example: getting companies to change the set points on chilled water so they're not cooling it more than necessary.

"It's hard to get people to change the way they do things," Crossman says. "Sometimes they need good testing done to make sure. You have to show them that maybe they don't need 42-degree water."

"Because utility rates in Oregon are com-



PGE worked with the Energy Trust of Oregon and ProLogis, the world's largest owner, manager and developer of distribution facilities, to lease roof space for more than 328,000 square feet "thin-film" solar panels to serve approximately 813,000 residential, commercial and industrial customers in Oregon—nearly 1.1 megawatts (MW). Photo courtesy of Prologis.

paratively low, cogeneration projects have been few and far between here," Crossman says. But ETO does have distributed generation programs for solar, wind, biomass and hydropower, and starting next year the non-profit will begin offering incentives for solar thermal systems, which heat water with solar energy.

Still, Crossman says the bigger-picture approach to managing energy usage for efficiency

is probably what will take center stage in the coming years. She can even foresee a Six Sigma type system springing up around efficiency, much the way it did with workplace safety and quality.

"It's really possible that energy management could follow the same path," she says.

New infrastructure, interested companies pave way for Plug-in Hybrid Electric Vehicles

By Jon Bell

Electric vehicles are on their way to Oregon next year.

But unlike the three-wheeled novelties that have barely made a blip so far, this next generation of battery-powered cars is likely to merge into the mainstream while paving the way for new charging infrastructure, fleet possibilities and, perhaps someday, innovative ways to help manage excess power on the grid.

"It's really amazing, everything that's going on here," says John MacArthur, sustainable transportation program manager for the Oregon Transportation Research and Education Consortium.

The biggest news comes from Nissan, which plans to roll out 1,000 of its LEAF electric vehicles—four-door sedans with a top speed of 90 mph and a 100-mile range—in Oregon at the end of 2010. The cars are set to cost around \$32,000, but individual purchasers will be eligible for a \$7,500 federal tax credit.

In advance of the introduction, state and local governments, along with coalition of companies like Portland General Electric and eTec, will establish 2,500 new charging stations in homes and businesses primarily in the Portland metro region by the end of next summer.

"Portland is being viewed as a must-play market in terms of electric vehicles," says Joe Barra, director of customer energy resources for



Nissan North America and Portland General Electric have been working together on an electric vehicle charging network throughout the Portland area. If successful, the program could roll out to Eugene, Salem and Corvallis. Photo courtesy of Nissan North America.

The biggest news comes from Nissan, which plans to roll out 1,000 of its LEAF electric vehicles—four-door sedans with a top speed of 90 mph and a 100-mile range—in Oregon at the end of 2010.

PGE, adding that several other manufacturers, including Mitsubishi, are looking at Portland as a major takeoff point for electric vehicles.

A completely empty LEAF battery will take about six to eight hours to charge. Most of the charging will occur overnight on home chargers during off-peak hours, so utilities aren't expecting any significant usage impacts.

Barra says that eventually, storage capacity in electric vehicles may be such that they can actually discharge to the grid.

"But that's much farther out," he says.

According to MacArthur, both the state of Oregon and the city of Portland have various goals to incorporate alternative fuels, including electricity, into their fleets. Those goals may be easier to reach with the introduction

of light-duty electric trucks from the likes of both Ford and Navistar in the near future.

"For fleet managers," says Barra, "the economics of EVs could be very favorable."

Elsewhere in the electric transportation world, Oregon and other states across the country are poised to see an increase in plug-in truck stop parking spaces thanks to a \$22.2 million Department of Energy grant that went to Portland's Shorepower Technologies and Coburg's Sierra Solutions in August. The funding will provide for more than 50 news spaces that let truckers plug in rather than idle during extended rest breaks.

PROFILES IN EFFICIENCY

Kettle Foods and Covanta Marion Inc

In the world of business and industry, energy efficiency can mean anything from shutting down computers at night to using recovered heat to chill water.

Steam from Iberdrola Renewables' natural gas-fired power plant in southern Oregon is used as a heat source for nearby Collins Wood Products. Switching out fluorescent light tubes saves the Lookingglass Fish Hatchery in Elgin 23,000 kilowatt-hours of energy every year. And Idaho Power customer ON Semiconductor installed variable frequency drives on 11 air handlers and is now saving more than 1 million kilowatt-hours each year.

For a closer look at other energy efficiency initiatives, we touched base with two AOI members, Kettle Foods and Covanta Marion Inc.

Kettle Foods Inc.

This Salem potato chip maker has long been known for its sustainability practices, including using its cooking oil twice: the first time for cooking chips, and then as biodiesel to power its fleet of company cars. (In essence, a cogeneration process: using one kind of fuel source to produce multiple kinds of energy.)

But Kettle has also invested in distributed generation projects at both its Salem facility and its newest one in Beloit, Wisc.

In 2003, Kettle installed one of the largest solar arrays in the Pacific Northwest, a collection of more than 600 solar panels atop its Salem factory.

"It's been a great success as far as we're concerned," says Jim Green, ambassador for Kettle Foods.

The array, which reduces Kettle's annual CO2 emissions by 65 tons, produces around 129,000 kilowatt-hours per year. Though that's



Incentives from the Energy Trust of Oregon as well as Portland General Electric helped put more than 600 solar panels atop Kettle Foods Salem. They provide enough power to make more than 250,000 bags of chips while reducing CO2 emissions by 65 tons. Photo courtesy of Kettle Foods.

enough power to make more than 250,000 bags of potato chips every year, it's also only three to five percent of the facility's annual demand.

"It's a small percentage of our overall usage," Green says, "but we really wanted to do it to show that solar is actually viable in the great cloudy old Willamette Valley."

He adds that any excess energy produced by the system is sent out onto the grid, though that rarely happens. The company is on a net-metering plan with PGE for the solar power it produces.

Long-term, the solar panels make economic sense for Kettle, too.

Although the entire photovoltaic installation would have cost close to \$650,000, Kettle took advantage of incentives from the Energy Trust of Oregon, Portland General Electric, and other state and federal sources, all of which reduced Kettle's investment to around \$65,000. The company should start seeing payback on its investment in 2010.

In a similar move, Kettle added 18 wind turbines to the roof of its facility in Beloit, Wisc., in 2007. That system produces 28,000 kilowatt-

Covanta is not only producing its own power and then some, it's producing power that, thanks to sophisticated pollution control systems, is considered cleaner than coal, oil and other traditional sources. It also recycles some 450 tons of ferrous metal each month and reduces the volume of waste that comes to the facility by 90 percent.

hours, enough to make 56,000 bags of potato chips every year.

Covanta Marion Inc

Covanta Marion Inc seems to kill at least two efficiency birds with every stone at its solid waste-to-energy plant in Brooks.

The plant essentially burns municipal solid waste—its capacity is 550 tons of primarily non-hazardous household trash every day—as fuel for two boilers that produce steam. The steam powers turbines that generate about 13 megawatts of electricity per hour, 11.5 of which are sold to Portland General Electric.

"Very seldom do we use any power from the grid," says Darby Randklev, facility manager for Covanta Marion. "We are typically pushing power out onto the grid."

So Covanta is not only producing its own power and then some, it's producing power that, thanks to sophisticated pollution control systems, is considered cleaner than coal, oil and other traditional sources. It also recycles some 450 tons of ferrous metal each month and reduces the volume of waste that comes to the facility by 90 percent.

And, in a form of cogeneration, it uses the hot gases emitted during combustion not only as a heat source for the boilers, but then again to preheat the water that goes into them.

Randklev says the system is much more consistent and reliable than solar or wind generation.

"We're not relying on the sun or the wind," he says. "We're 24-7, and about 98 percent of the time we're running we're producing power for the grid."

In addition to its power-generation system,

Covanta also has recently taken stock of energy efficiency within its walls and made some improvements. Those have included a plant-wide lighting upgrade, the installation of motion detectors and new variable speed drives for its large fans. The latter step will save Cov-

anta up to three megawatts per day.

"We're always looking for ways to produce more juice," Randklev says, "and saving energy so other people can use it."



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MANAGING ENERGY EFFICIENCY

AOI Business Viewpoint put questions to two members regarding their company's approach to managing energy.

The Point of View from Blount International: Continuous Improvement

Jason Smith, Environmental Engineer for Blount International, a Portland manufacturer of equipment, accessories and replacement parts for the global forestry, garden and construction industries, gave the AOI Business Viewpoint a quick overview of the company's programs in — and perspective on — energy efficiency and management.

BV: Has Blount been focusing on energy efficiency for a long time or is it something new?

JS: In the 1990s, Blount's Portland-based manufacturing facility had a heavy focus on energy efficiency projects. During the period, two aging, 500-ton chillers were replaced; lighting was upgraded; compressed air systems were regularly inspected for leaks; and air compressors were changed-out for more energy efficient models. Energy management and conservation continued in the early 2000s, albeit at a reduced pace. With recent increases in energy costs, the downturn in the economy and increased activity around greenhouse gas legislation, Blount's interest in energy management has been rekindled.

BV: So what's going on these days?

JS: In the past year, the Portland facility has formed an energy team, which is taking advantage of PGE energy management workshops and Energy Trust resources to identify energy efficiency and conservation opportunities. The chillers, air compressors, and lighting installed in the 90s are still relatively efficient by today's standards. Thus, our energy efficiency gains are not going to come from replacing that equipment, since the return-on-investment would be negligible. Instead, we are focusing on opportunities to change employee behavior and reduce demand-side

waste and inefficiencies.

BV: Can you give an example of a project in terms of Blount's up-front investment and its return on that investment?

JS: Blount was fortunate to be asked to participate in an Energy Trust compressed air pilot project. The project is an in-depth look at improving the efficiency of our compressed air use, both from a supply-side and demand-side. The measures identified will likely not require capital investment and will reduce the

energy used in our compressed air system by 50 percent. The return-on-investment is estimated to be about one month.

BV: What drives Blount's interest in energy efficiency?

JS: We continually strive to improve and integrate lean principles into every aspect of our operations. It was a natural step for us to begin to apply these principles to an energy management program. In doing so, we seek to improve our bottom line; but, we also benefit

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from reducing the need for future power generation facilities and reducing our contribution of greenhouse gases.

BV: What are the challenges of achieving greater efficiency at Blount or within the industry in general?

JS: There are a number of barriers that we need to overcome to be effective at long-term energy management. It is imperative that we raise employee awareness of energy issues and educate them on the benefits of successful energy conservation efforts. Long-term, energy management needs to be integrated into our operations, similar to what we have done in the past for quality, lean manufacturing principles, and the environment. Through integration, we will continually-improve our energy performance, which will lead to an improved bottom-line and will position Blount for the next energy crisis or economic downturn.

BV: Anything else you'd like to share?

JS: At Blount, we feel that integration of a continuous improvement philosophy toward energy management is integral to our success. If we fail to maintain focus on our energy performance, energy improvement will stagnate.

The Point of View from Boeing: Business Opportunity in Smarter, More Efficient Grids

Since 2008, Boeing, one of the highest-flying aircraft manufacturers in the world, has been training its sights on the smart grid as a market opportunity. Spokesman Chris Haddox shed some light on what's behind the company's interest in a smarter, more efficient grid.

BV: What is it about smart grid technology that appeals or makes business sense to Boeing?

CH: Smart grid is a large, complex problem and Boeing has a history of addressing and solving large, complex problems. Our smart grid solution of integrating complex systems that need to be more efficient, more effective and more secure was a natural market for Boeing to address. Boeing believes its experience in designing, implementing and maintaining large-scale enterprise software and database systems that streamline communications and



"Smart grids" are the tools for producers, cogenerators and facility managers to help optimize their energy management and utilization.
Photo courtesy Portland General Electric.

control will translate very effectively into the smart grid market. Boeing's "Smart Grid Solution" employs proven methods and infrastructure systems from its security and defense businesses.

BV: What kind of projects is Boeing involved in relating to the smart grid and associated technologies?

CH: Boeing has partnered with Southern California Edison and Consolidated Edison, Inc. on two separate proposals submitted to the Department of Energy and is the prime contractor on an integrated team leading Regional Transmission Organizations and utilities for a third grant submission. Boeing will create a comprehensive middleware communications and cyber security network that will serve as the common operating environment and command and control network of an enhanced smart grid, the same technology in use by the United States Department of Defense.

The company has been actively partnering with smart grid leaders such as leading U.S. utilities, government agencies, and international, academia, and domain experts to make the smart grid a reality. Boeing also formed IDS Energy Solutions to focus on three areas: smart grid solutions, energy assurance, and renewable energy solutions.

BV: Are Boeing's existing technologies easily transferable or will the company be focusing on new developments?

CH: Boeing has world-class systems engi-

neering and integration capabilities that allow us to excel in the areas of standards, processes, methods and tools. By having consistent processes across diverse areas of technology development, subsequent integration can proceed with a much higher level of confidence and success. Boeing brings a derivation of their System of Systems Common Operating Environment that was developed for and is currently in use by the Departments of Defense and Homeland Security. The system's availability for the electric grid promises an advanced level of cyber-security, interoperability, scalability, and system openness than previously available to utilities. The foundational work and unique approach we have proposed will produce a cost-effective solution to the tremendous security and financial risks that loom in the future smart grid.

BV: What are Boeing's long-term goals for work in the smart grid sector?

CH: To grow with the industry. A smart electricity grid holds the promise to revolutionize the way we use energy, but standards need to be in place to ensure that new technology is compatible and operating at the highest cyber security standards to protect the smart grid from hackers and natural disasters. Those standards are being addressed that will accelerate creation of the smart grid and Boeing's solution is prepared for that future.



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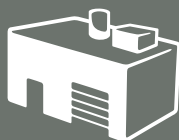
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