



# RMI Solutions

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# Greening a Giant

BY CAMERON M. BURNS

## *RMI Takes on Wal-Mart...as a Client*

**W**al-Mart is big. No, huge. Wait: enormous.

The company earned \$312.4 billion last year, employs 1.6 million people worldwide, has more than 3,800 facilities in the United States, plus more than 2,600 facilities in Argentina, Brazil, Canada, China, Costa Rica, El Salvador, Germany, Guatemala, Honduras, Japan, Mexico, Nicaragua, Puerto Rico, South Korea and the United Kingdom, and more than 138 million people shop at Wal-Mart each week.

Rocky Mountain Institute seeks key leverage points in order to influence industry, governments, and the military, but one of RMI's latest efforts—working with (you guessed it) Wal-Mart—could have a whopper of an impact on the transportation and retail sectors. Last year, the world's largest retailer kicked off a sweeping environmental initiative to address energy and resource consumption in all its operations. The 44-year-old company retained several forward-think-

ing organizations, including RMI, to guide it, and we got busy. RMI's task is to help the Arkansas-based retailer reduce fossil fuel consumption in both transportation and retail stores.

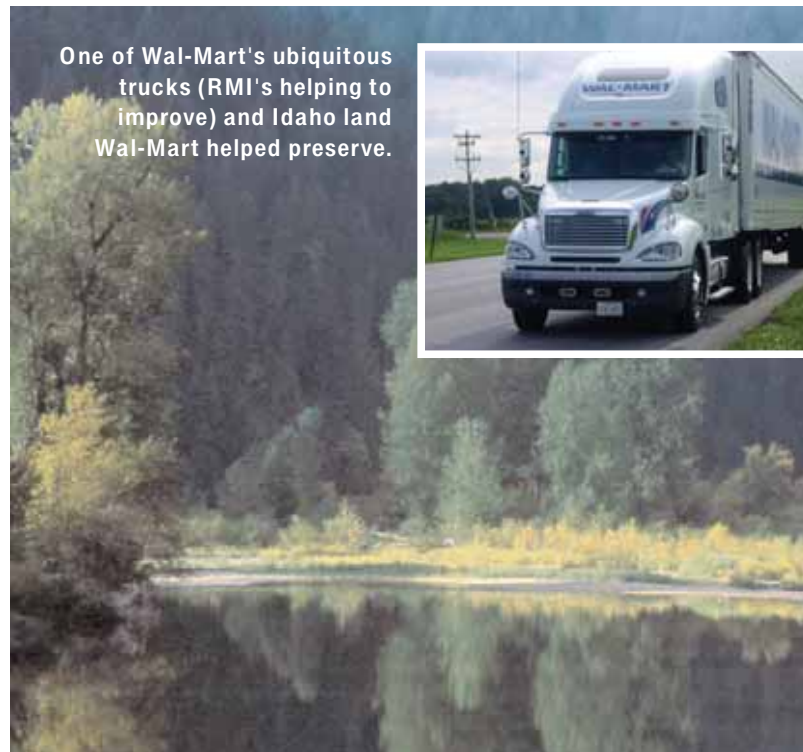
“Ironically, most energy-savings efforts in businesses rank among the lowest-risk investments anywhere and in some cases can return many times their cost of capital,” said RMI Principal Odd-Even Bustnes. “Yet most corporations consistently under-invest in

efficiency opportunities. This is an unfortunate misallocation of both financial and natural capital.”

In terms of transportation, the Institute has been working with Wal-Mart, and indirectly with its suppliers, on a redesign of trucks. Wal-Mart's goal is to double its truck fleets' fuel economy by 2015—thereby reducing carbon dioxide emissions by 26 billion pounds between now and 2020.

According to Odd-Even, the truck platform redesign centers

One of Wal-Mart's ubiquitous trucks (RMI's helping to improve) and Idaho land Wal-Mart helped preserve.



## Corporate Sustainability

on aerodynamics, tires, transmissions, and auxiliary power systems. Some of the specific changes include a redesign of the tractor to make it significantly more aerodynamic; the addition of trailer “side skirts,” which reduce wind resistance; “wide based” and/or high-efficiency tires, whose reduced rolling resistance improves fuel economy; the replacement of one regular rear axle with a tag (load-bearing only) axle, which reduces the truck’s weight; and a small auxiliary power unit so that cab heating and cooling don’t require running the truck’s main engine. Future versions may gradually become more advanced as manufacturers introduce new models.

Possibly more importantly, since nearly two-thirds of all new U.S. Class 8 trucks—the kind Wal-Mart primarily uses—are bought by about 100 large companies (Wal-Mart being one of them), the giant retailer hopes to influence truck design by demanding better-mileage vehicles, and, as

Lee Scott, Wal-Mart’s CEO, has outlined, sharing their findings with other big buyers.

Wal-Mart has estimated these transportation innovations will save nearly \$500 million a year in fuel costs by 2020, and even more in subsequent years.

The other half of RMI’s effort is in the green building department. With RMI’s help and available technologies, Wal-Mart has begun to retrofit hundreds of older stores with more efficient lighting, HVAC, and refrigeration systems, and is building extensive daylighting and more advanced mechanical systems into new stores and facilities.

Perhaps most exciting, however, are



Wal-Mart’s experimental stores in McKinney, Tex. and Aurora, Colo. The stores’ grounds are xeriscaped and boast bioswales, pervious pavements, experimental forests, wild-flower meadows, and wind turbines. The buildings themselves feature

vast photovoltaic arrays, low-VOC materials, efficient ventilation systems, reflective exterior coatings, waste-heat capturing systems, LED lighting, extensive water efficiency and conservation systems, waste oil recycling programs, concrete made with fly-ash, and many other systems and programs. While these two stores are experimental,

## Built Environment Team Project Becomes Second U.S. LEED School

The RMI ENSAR/Built Environment Team has helped Colorado become home to one of the greenest schools in the nation. In January, Fossil Ridge High School in Fort Collins was awarded the “Silver” standard under the U.S. Green Building Council’s LEED (Leadership in Energy and Environmental Design) certification system, becoming only the second high school in the United States (and the first in Colorado) to achieve LEED certification.

“This building sets a new standard,” said Victor Olgyay, AIA, of Rocky Mountain Institute’s Built Environment Team, which consulted on the project.

“In addition to achieving LEED certification, it uses only one ton of cooling for each 1,000 square feet of floor space, approximately one-third the amount of energy used to cool a typical high school.”



Open to students since fall 2004, Fossil Ridge High School is a 288,685-square-foot facility, housing three separate schools (including a building trades department and a culinary arts institute) and boasting a capacity of 1,500–1,800 students.

Designed by the architectural firm RB+B for the Poudre School District, the building received green design and efficiency consultation from Rocky Mountain Institute’s green building design staff. One of the most remarkable features of the building, and one that RMI helped design, is the fenestration, which allows 82 percent of the building’s interior space to be naturally

lit while helping the school achieve a 50 percent reduction in energy usage under ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) standards.

they've allowed Wal-Mart officials to learn about new designs and technologies that will no doubt make it into construction of their new stores.

Wal-Mart is not just walking the talk: it is also making suppliers of its retail goods get on board. This is expected to have a tremendous impact across the retail and several manufacturing sectors, since Wal-Mart buys more than \$150 billion in merchandise from more than 61,000 suppliers in the United States.

"Why has Wal-Mart cultivated contacts and relationships with organiza-

tions such as Conservation International, Blu Skye and Rocky Mountain Institute?" asked Wal-Mart CEO Lee Scott in a statement about the

**"Why has Wal-Mart cultivated contacts and relationships with organizations such as Conservation International, Blu Skye, and Rocky Mountain Institute?"**

*—Lee Scott, Wal-Mart CEO*

company's sustainability initiative. "Wal-Mart is taking a fresh look at these groups' work. And listening to them—as well as others like them—can help us envision our potential and grow in more sustainable ways. It positively serves every stakeholder in our company."

Yes, Wal-Mart is big. And helping the retail giant to green up its trucks and stores is not just a big opportunity for RMI—it's huge.

**RMI's Ray Anderson Goes Outdoors**

RMI Trustee and Interface, Inc. Chairman Ray Anderson got the outdoor industry revved up on sustainability in late January when he delivered a breakfast speech at *Outdoor Retailer* magazine's Winter Market trade show, the biggest trade show of its kind on earth.

"Sustainability is Winter Market Rallying Point" was the headline in *OR's* daily show magazine, which included a picture of Ray on the cover.



"I was a plunderer of the earth," Ray said in his speech, "stealing my grandchildren's future. But we committed ourselves to a philosophy of sustainability and today I consider it to be our company's ultimate purpose." He went on to describe his industry's need to move toward sustainable practices and systems, noting "I can see no other long-term choice for the entire industrial system if it is to survive."

"A standing ovation from the breakfast was proof enough that his message was well received," the magazine noted.



Above and above left: PVs and a bioswale at the McKinney store.



# Winning the Oil Endgame, Thus Far

The past two years have seen many exciting developments in implementation of RMI's ground-breaking 2004 report *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security* (WTOE; [www.oilendgame.com](http://www.oilendgame.com)). Here are a few of the "good news" highlights:

## ■ Heavy-truck Buyers Demanding More Efficient Trucks

RMI has already begun to persuade some major large truck buyers to demand radically greater fuel efficiency from their suppliers. In October 2005, Lee Scott, CEO of Wal-Mart (a key RMI client buying about one percent of the nation's Class 8 trucks, and reportedly the biggest Class 8 fleet operator except the Pentagon), announced his goal and intention of flipping the heavy-truck market toward doubled and then possibly tripled net heavy truck fuel efficiency (see p. 1).

RMI is also in the preliminary stages of forming an informal major-customers' buying consortium to reinforce Wal-Mart's influence on suppliers. Additionally, we have been putting substantial effort into forming a network of large U.S. heavy-truck operators involving nongovernmental and governmental organizations that can advise on and are directly or indirectly involved with regulatory issues, with a goal of improving regulatory rules to win large fuel economy gains. And we are considering possible ways to accelerate the development of "concept trucks," or systems for them, that could speed up the suppliers' response to major customers' demand pull.

Various RMI staff members presented our findings on improving truck efficiency at the February 2006 International Council on Clean

Transportation (ICCT)/Northeast Center for a Clean Air Future (NESC-CAF) industry workshop and the February 2006 CALSTART Clean Heavy Duty Vehicle Conference, as well as a September 2005 presentation to the annual research leaders' meeting of the Federal Highway Administration, among others.

## ■ We're Winning at the Pentagon

The high costs and risks of battlefield fuel logistics add weight to our key recommendation to optimize military platforms for *delivered* fuel price, which is often 10–100 times the undelivered price previously used. This seemingly small change would focus R&D on ultralight, ultrastrong materials. That in turn could transform the civilian car, truck, and plane industries, leading the country off oil so our military need not fight over it. Senior officials now find this approach attractive and we've done ~25 senior briefs at the Pentagon: just in recent months, for the JASONs (Secretary of Defense's top civilian science advisory group), J-4, J-8, OSD/AT&L Planning & Analysis (Office of Secretary of Defense/Acquisition, Technology, and Logistics), OSD/AT&L Dir P&A (Programming and Analysis), DDR&E (Director, Defense Research and Engineering), IDA (Institute for Defense Analysis), and the Johns Hopkins University military seminar series, among others. (For more on our mili-

tary work, please see *RMI Solutions* Fall 2005 and Fall/Winter 2001).

## ■ District of Columbia Implements Feebate-like Program

In December 2004, the Washington DC city council, based partly on RMI's testimony and advice, introduced the functional equivalent of a feebate. It approved the Motor Vehicle Reform Act, which raised the excise tax to 8 percent on vehicles weighing over 5,000 pounds and simultaneously eliminated the vehicle registration fee and 6 percent excise tax on clean fuel and electric/hybrid vehicles in the District of Columbia. It retained the 6 percent tax on all other vehicles sold. This Act demonstrates the policy creativity that sub-national governments can exercise without federal leadership or permission and without legislation. If the State Vehicle Tax Law were implemented on a broader basis, in larger and more influential states such as California and New York, it would work through the market to encourage automobile manufacturers to produce more fuel-efficient vehicles. In February 2006, RMI proposed and submitted testimony on a feebate bill in Hawai'i modeled after the DC policy (see below; p. 10). And, in mid-March 2006, RMI submitted testimony on a feebate-like bill in Connecticut. R.B. 660 offers a rebate of up to 3 percent on vehicles with low greenhouse gas (GHG) emissions and imposes an additional fee of 3 percent on vehicles with high greenhouse gas emissions, while making permanent the tax exemption for hybrid vehicles beating 40 mpg.

## ■ Federal Government Lightens Up

Another major policy recommendation of *Winning the Oil Endgame* was tentative-

ly adopted by the National Highway Traffic Safety Administration (NHTSA) for light trucks—SUVs, vans, minivans, and pickups. In August 2005, in the first basic structural change in three decades, NHTSA proposed to switch its Corporate Average Fuel Economy (CAFE) regulations from a flat-rate fleet-average miles-per-gallon requirement to a sliding scale based on vehicles' *size*—not *weight*, as originally proposed. RMI's recommendations were detailed in April 2004 technical comments

([www.rmi.org/images/other/Energy/E0410\\_FuelEconStand.pdf](http://www.rmi.org/images/other/Energy/E0410_FuelEconStand.pdf)) and two private senior briefs in Washington in early 2005. This incentive to decouple size from weight, now welcomed by many automakers, has accelerated a sea-change in industry attitudes. In September 2005, the *Financial Times* editorialized on “new evidence that there does not have to be a trade-off between safety and weight” and that “new materials open up the possibility of making safer and lighter cars.”

We filed follow-up comments with NHTSA in November 2005 suggesting additional refinements in the size-based approach.

### ■ Energy for Tomorrow in Hawai'i

In January 2006, Republican Governor Linda Lingle (please see interview, p. 10) introduced the “Energy for Tomorrow” bill, a comprehensive and integrated approach to reducing oil dependence based substantially on *Winning the Oil Endgame*. The legislation, which is being signed into law as this newsletter goes to press, has the potential to transform Hawai'i into a national leader in low-cost, sustainable, locally-produced, and secure energy systems. The five main components of the legislation are “Savings through Efficiency,” “Independence through Renewable Energy,” “Fuels through Farming,” “Security through Technology,”

and “Empowering Hawai'i's Consumers.”

“This really represents sweeping change for Hawai'i, and it's an affirmation of the hard work we put into *Winning the Oil Endgame*,” said RMI Senior Director Kyle Datta. “Our energy future is choice, not fate. Through this legislation Hawai'i will define its energy destiny. RMI is committed to working with the State of Hawai'i to develop and implement a forward-looking energy strategy.”

### ■ Automakers Are Awakening

We've always known that the slowest sector to change will be automaking, but there are encouraging signs that industry leaders now realize business-as-usual incrementalism won't suffice. As RMI's spin-off Fiberforge's developments get wide recognition in the advanced-composites trade press ([www.fiberforge.com/PAGES/DETAIL\\_PAGES/inthenews.html](http://www.fiberforge.com/PAGES/DETAIL_PAGES/inthenews.html)), reinforcing the credibility of lightweighting, auto executives are starting to pick up political and general-market signals that open their minds.

In September 2005, RMI CEO Amory Lovins keynoted the Global Powertrain Congress in Detroit, drawing considerable interest from attendees; in November 2005, he keynoted the Merrill Lynch Automotive Ideas Summit, attended by about 95 percent of the industry's institutional investors and sector analysts; and in January 2006, he addressed the Automotive Governors' meeting at Davos—attended by the CEOs of most of the major automakers and Tier Ones worldwide.

### ■ Financial-community Interest in WTOE

The off-oil thesis has also generated intense interest in the financial sector, and we have made important presentations to Crédit Lyonnais SA—arguably the most respected independent market

analyst in Asia. The Institute also helped Merrill Lynch produce a supportive analytic paper for its automotive-sector clients. And our biggest U.S. financial-community event so far—a packed house at NYU Law School in October 2005, which featured Amory Lovins, Jim Woolsey, Governor Haley Barbour, former Treasury Secretary Roger Altman, and New York State energy czar Charlie Fox.

### ■ Policy Education

RMI staff have presented *WTOE* to the annual conference of state legislative leaders (Senate Presidents and House Speakers), key legislators and legislative staffers in six states (California, Hawaii, Maine, North Carolina, Oregon, and Washington) and the District of Columbia, and (in a supportive panel of Jim Woolsey, a Ford VP, and a CSIS energy leader) to the U.S. Senate Energy Committee. RMI's Odd-Even Bustnes briefed the Senate Commerce Committee in September 2005, and at the request of Senator Snowe (R-ME), prepared a memo on short-term initiatives that could cut U.S. oil use by ~5–9 percent within a year. We have also rebriefed CIA, had the first of what will apparently be multiple conversations with the new Deputy Secretary of Energy, and developed ideas with the incoming Assistant Secretary of Energy for Efficiency and Renewables.

### ■ New RMI Staff

Gearing up for *WTOE* implementation has meant a significant number of new hires at the Institute:

- new RMI automotive analyst Jeff Ronning, PE, will coordinate completion of a project to help us and everyone else understand the increasingly popular notion of plug-in hybrids. Jeff led GM and Delphi's work in this area

*continued on page 27*

# High-Performance Buildings Through Integrated Design

BY GREG FRANTA, FAIA

## JUST HOW IMPORTANT ARE BUILDINGS IN THE BIG SCHEME OF THINGS?

The built environment, with its broad diversity of sites and buildings, offers a huge opportunity to sustain a desirable quality of life on this planet. Buildings use most of our energy and deplete vast quantities of natural resources. They rely on non-sustainable material harvesting, extracting, and mining. And once built, they pollute water, earth, and air, and can harbor wholly unhealthy indoor environments.

On the contrary, “green” developments typically demonstrate sustainable practices of elegant design, offer responsible stewardship of the natural environment, and make wise investments.

### The Issues

Traditional sources of energy production and use are major culprits of atmospheric pollution. Buildings gobble close to 40 percent of the energy used annually in the United States to heat, cool, ventilate, light, and support other operations.<sup>1</sup> This operational energy, plus the energy used to extract, harvest, and manufacture products, transport materials, and construct buildings means the building industry chews through more than half of all the energy used in the United States each year.

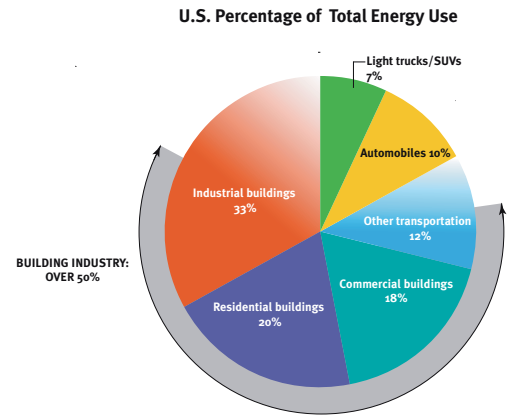
Compare that to, say, SUVs, pick-ups, and vans, which together use about 7 percent of the energy used in the United States annually. If the efficiency of all those light trucks were doubled, the savings would be about 3.5 percent of the U.S. total. On the other hand, because buildings consume so much energy, owners, operators, developers, and design professionals can have a tremendous influence

on America’s energy picture. The energy used in the U.S. building industry comes from the nation’s thousands of major electrical power plants that rely on the burning of fossil fuels—which in turn means carbon dioxide, sulfur dioxide, and nitrous oxide emissions that degrade human health, create acid rain, and contribute to climate change. A 50 percent reduction in building energy use would keep an estimated 1.3 billion tons of carbon dioxide emissions out of the atmosphere per year.

The construction process can destroy natural and agricultural areas, result in deforestation in the quest for building materials, cause the loss of habitat and biodiversity, and pollute watercourses.

As a result of sprawl and industrial activities, deforestation alone is an enormous issue. Author Jared Diamond notes that deforestation was *a* or *the* major factor in the demise of all the failed civilizations described in his book *Collapse: How Societies Choose to Fail or Succeed*.<sup>2</sup> Today, deforestation is a serious global issue, causing the reduction of plant and animal biodiversity, destruction of natural habitats, microclimate changes that upset the water cycle, accelerated soil erosion, and other problems. Non-sustainable wood harvesting is a huge issue in and of itself.

Many observers believe that water supply and quality will become the equivalent of the past three decades’ energy crises. The built environment interrupts natural water cycles in many ways. Treated water is often unnecessarily used for irrigation of landscaped areas. Storm water is discharged from sites via impervious surfaces—such as pavement and roofs—that inhibit aquifer recharging and add pollution to the watershed. Potable water is used in building plumbing fixtures for



**Fig. 1: Annual energy use breakdown for the United States. “Industrial” energy includes energy used in making building materials (steel, cement, glass, etc.) while “other” energy includes energy related to transportation and moving building materials.**

sewage conveyance.

Indoor environments can have poor ventilation, toxic materials, inadequate thermal characteristics, poor visual properties, and a limited connection to the outdoors—which has been proven to make humans more comfortable indoors. These issues, even in buildings that meet building codes, lead to adverse health effects (e.g., sick building syndrome, seasonal affective disorder, etc.), low productivity (which can cost businesses more than energy on a per-square-foot basis), poor learning performance, and high absenteeism.

### Strategies Toward

#### Sustainable Development

Some building owners and developers are “greening” their buildings while others are turning in a different direction altogether and working with design professionals to optimize whole-building performance through integrated design. More than just



a selection of green strategies, the integrated design process is a comprehensive approach that considers sustainability alongside other design criteria, such as aesthetics, functional elements, cost, and schedule. The result is a new generation of refined architecture with radically optimized energy and water efficiency, appropriate natural materials, and superior indoor environments.

Energy efficiency and the use of renewable energy in buildings create win-win solutions, as lower operating costs correspond to reduced atmospheric pollution. Integrated design for energy optimization on a new building starts with climate-responsive architecture in which nature provides as much lighting, ventilation, cooling, and heating as possible (see Fig. 3).

A small office building project in a rural community north of Denver, Colo. illustrates the benefits of the integrated design process. Early in the design process, a range of solutions was identified and studied using the *ENERGY-10* hourly simulation program.<sup>3</sup> When analyzed individually and compared to an energy-code-compliant building (Fig. 4), the incremental costs for energy-efficiency measures were offset by operational cost savings. Strategies such as efficient lighting, daylighting, and glazing had simple payback periods of 1.5 to 4 years. Other strategies had payback periods of up to 16 years. Many building owners will not accept payback periods longer than

3 to 5 years, and thus many of the strategies are not implemented.

However, in an integrated design process, all elements of the design equation and their impacts on each other are considered. In the case of our office building, many strategies reduced the peak heating, cooling, ventilating, and lighting loads. This allowed designers to adopt much smaller boilers, chillers, fans, and pumps. The smaller mechanical equipment also saved significant construction costs. Optimized window areas and orientation for efficiency, daylighting, views, and sun control further reduced construction costs. The bottom line is that the incremental cost for construction (i.e., the sum of added costs (\$26,200) for efficiency measures minus the reduction in costs (\$21,800) for smaller HVAC equipment and fewer east–west windows) was \$4,340 to achieve an energy savings of \$4,500 per year. This results in a roughly one-year simple payback period and a first-year return on investment of more than 100 percent.

Integrated design created an opportunity to do almost all of the desired energy-efficiency measures with the lowest operating cost and a 100 percent return on the investment within the first year. It is this kind of process that has enabled many project teams to not only achieve high energy performance, but also to incorporate renewable energy systems, water effi-

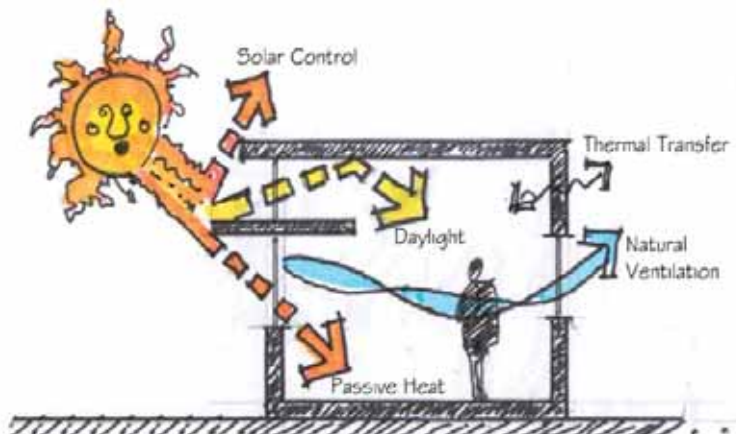


Fig. 3: Concepts of climate-responsive architecture.

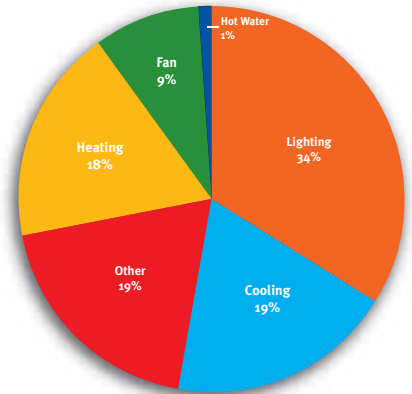


Fig. 4: Breakout of total annual energy costs for base building.

ciency devices and systems, biological waste treatment systems, sustainable site development, environmentally preferable materials, and achieve high indoor environment quality.

Platinum Projects LEED the Way The LEED™ (Leadership in Energy and Environmental Design) green building rating system is one way to measure overall performance. It is a third party validation system that addresses site, water, energy and atmosphere, materials and resources, indoor environmental quality, and innovation. Administered by the U.S. Green Building Council,<sup>4</sup> LEED’s levels of building “greenness” are LEED Certified, Silver, Gold, and Platinum. Although there are several thousand LEED-registered buildings around the globe, fewer than 20 have achieved Platinum certification.

Seasoned environmental architects often consider LEED more of a starting point—one that prompts designers to ask the right questions—rather than as the ultimate rethinking and recreating of our built environment. However, projects that achieve LEED Platinum are clearly headed in the right direction. The Missouri Department of Natural Resources and the Natural Energy Laboratory of Hawaii Authority have each recently achieved LEED Platinum certification and their projects represent different building types, of different



**Fig. 5.** The Missouri Department of Natural Resources. The design team included BNIM Architects (architect and interior design), Clanton Associates (lighting design), Smith and Boucher (mechanical engineer), Rumsey Engineering (mechanical system design), Conservation Design Forum (landscape), ENSAR Group<sup>5</sup> (daylighting and energy design), and Professional Contractors and Engineers, Inc. (constructor).

sizes, and in vastly different climates.

The Missouri Department of Natural Resources, in Jefferson City, Mo. recently developed a stellar example of what can be achieved with green strategies in its new 120,000-square-foot Lewis and Clark State Office Building, designed by BNIM Architects of Kansas City. The previously developed site was restored to emphasize native prairie plants and ecosystems, and to minimize storm water run-off. The elongated east-west orientation allows the preferred north and south glazing and the building is organized around a central four-story atrium (Fig. 5).

The building envelope has high-performance glazing, vertical fins, and horizontal light shelves that allow considerable daylight with appropriate sun control. The project also utilizes cutting-edge approaches to electric lighting and controls, building envelope design, and HVAC systems. This project clearly helps achieve its mission to protect and restore natural resources. Wood-certified by the Forest Stewardship Council directly addresses deforestation issues.

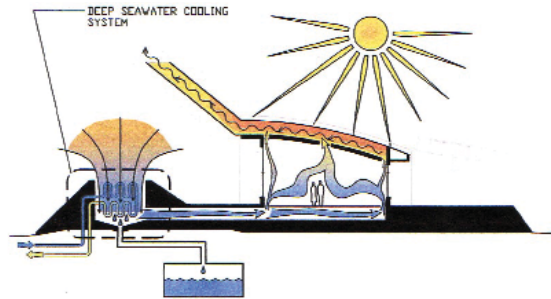
The Natural Energy Laboratory of Hawai'i Authority has a new visitor center in Kona, Hi., the Hawai'i Gateway Energy Center, designed by Ferraro Choi

Architects of Honolulu. This 3,600-square-foot building houses multi-purpose space for displays, outreach, conferencing, and education, as well as administrative offices. Annually, it actually produces more energy than it uses.

This unique facility (see Fig. 6) has access to 43-degree (F) seawater pumped from 3,000 feet below sea level, which is used to passively condition the building. Outside air is drawn over cooling coils and moved through the space using the solar-powered stack effect, generated entirely as a result of the design of the building. The system's cooling and ventilation capabilities exceed ASHRAE standards. The condensation water from around the coils is used for landscaping and toilets. Waterless urinals were also installed.

A 20-kilowatt photovoltaic array provides a renewable source of electricity. The calculated peak demand for the visitor center is approximately 10 kilowatts. Thus, the center is a net exporter of power. The project (see Fig. 7) is entirely naturally lit during daylight hours, which was achieved through north-south orientation.

In summary, much of the incredible



**Fig. 6:** The Deep Seawater cooling system at the Hawai'i Gateway Energy Center. Figure by Ferraro Choi Architects



**Fig. 7.** Southern view of the Hawai'i Gateway Energy Center. The design team included Ferraro Choi and Associates (architect), Lincolne Scott, Inc. (mechanical/electrical/energy), Libbey Heywood, Inc. (structural), R. M. Towill Corporation (civil), LP&D (landscape), Triodetic Space Frames (space frames), Bolton, Inc. (contractor), Engineering Economics, Inc. (commissioning authority), and RMI/ENSAR Built Environment Team (LEED management).

environmental havoc wreaked by the building industry can be addressed through thoughtful and innovative building design processes, construction, and operation. Integrated design leads to healthful and productive interiors, reduced operating costs, fewer environmental impacts, and restorative landscapes. It is a matter of choice and attitude to implement the best practices with any given project.

*Architect Greg Franta, FAIA, is Team Leader of the Institute's RMI/ENSAR Built Environment Team.*

1. Energy Information Administration ([www.eia.doe.gov](http://www.eia.doe.gov)) 2003 data.
2. Diamond, Jared. *Collapse: How Societies Choose to Fail or Succeed* (New York: Penguin Books, 2005).
3. *ENERGY-10 (V1.8, 2006)*. Software available through the Sustainable Buildings Industry Council, Washington DC ([www.SBICouncil.org](http://www.SBICouncil.org)).
4. *LEED Green Building Rating System*, U.S. Green Building Council, Washington DC ([www.usgbc.org](http://www.usgbc.org)).
5. Now part of the RMI/ENSAR Built Environment Team.



## RMI Explores Greenhouse Gas Offsets for Google

Rocky Mountain Institute is helping Google address its greenhouse gas (GHG) emissions. Last fall, the Institute evaluated emissions sources from the California-based search engine and helped recommend various methods for the world-famous technology firm to “offset” those emissions.

“Google wants to be a corporate leader in the challenge of global climate change,” said RMI Managing Director Dr. Joel Swisher. “How it goes about it in the short term will probably be along the lines of purchasing offsets, but in the long run the company is looking at more direct offsets.”

RMI investigated the best options for offset investments in terms of the availability, the cost per ton of carbon dioxide equivalent, the environmental integrity of the measures behind the offsets, and their likelihood of being registered under the Kyoto Protocol. The latter is the international accord that commits ratifying countries to emission reductions and provides for carbon emission trading internationally. Carbon dioxide equivalent is a term that refers to a greenhouse gas’s potential to cause global warming with respect to carbon dioxide’s potential to cause global warming.

Offsets are simply an investment a greenhouse gas emitter makes in a project—like a tropical forest rehabilitation effort or the development of a wind farm—that will reduce the amount of greenhouse gases in the atmosphere. Like most commodities, offsets are traded through brokerages of various types. For greenhouse gases, these include the World Bank Prototype Carbon Fund, the Chicago Climate Exchange, and the Oregon Climate Trust.

For the project, each brokerage’s offsets were evaluated in terms of economic performance and risk, compliance and applicability in terms of the Kyoto

Protocol, environmental benefits, and social impact.

The initial purchase of offsets was made in the name of Google founder Sergey Brin. For this purchase, the offsets selected are from the Greenhouse Gas Credit Aggregation Pool (GG-CAP) assembled by the private brokerage Natsource. According to Dr. Swisher, “these offsets are globally diverse, the off-

set projects’ quality is high, their risks are managed, and the cost is reasonable.

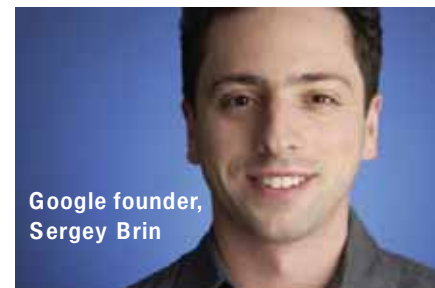
Additionally, the carbon dioxide credits from these sources are fungible

with credits in the Kyoto compliance markets in Europe, Japan, Canada, and other places.”

This initial offset purchase corresponds to eight years’ worth of emissions from specific sources related to

Google’s operations. In addition, RMI explored offset options for other aspects of Google’s operations, including investments in “direct” emissions reductions, such as solar, wind, biogas, geothermal, fuel cells, and better end-use energy efficiency, other greenhouse gas reduction measures, like carbon sequestration, as well as purchasing offsets.

A full portfolio of direct reductions and offsets allows a company like Google to reduce its net emissions to any level it chooses, potentially even to carbon neutrality, or zero net emissions. “These days, there are many creative ways to trim greenhouse gas emissions,” Joel noted. “It’s just a matter of picking and mixing the best ones for a given situation.”



Google founder,  
Sergey Brin

# Hawai'i Takes the Lead in Energy Independence

## *Interview with Hawai'i Governor Linda Lingle*

**RMI Solutions:** The Energy for Tomorrow legislation (which is actually a series of bills recently passed by the Hawai'i legislature) will result in Hawai'i becoming a national leader in the quest for energy independence. Why is it so important to your state?

**Governor Lingle:** Hawai'i is the most oil-dependent state with the highest prices for both gasoline and electricity in America. We're also located 2,500 miles from the mainland, and it makes us particularly vulnerable. Three-quarters of our electricity comes from oil and more than 90 percent of our energy overall comes from imported oil. This vulnerability threatens Hawai'i's long-term security—our economic security and the security of our way of life here. So we felt it was important to submit a comprehensive package to the legislature this year to address both the electricity and gasoline issues.

**RMI Solutions:** Rocky Mountain Institute's *Winning the Oil Endgame* report, about getting the United States completely off petro-oil, seems to have had an influence on you and your Administration's legislation. Were you surprised such an analysis existed?

**Governor Lingle:** I had not heard of the analysis previously, but I was not surprised the government, including the military, was looking into these issues. It is very prudent for the government to be looking at it.

**RMI Solutions:** What part of *Winning the Oil Endgame* did you think was most interesting?

**Governor Lingle:** I haven't read the whole thing, but I've read excerpts from *WTOE* and testimony that was given to U.S. Senate committees. I don't know that any one part sticks in my mind. So much of what RMI is doing is contained in what we proposed. When people write about the source of this oil, I think it brings it home as to why it's so important for us to move in a new direction. The one issue that's not in anything that I've read thus far is the ability of those who control the oil to be able to continue to control the price.

I also think it's really important that RMI exists as a non-partisan organization to help the country deal with these issues because so much legislation, whether at the state or national level, has become so heavily politicized. This is one issue that I feel needs to get out of that arena if we're going to be successful in breaking the country's and our state's addiction to oil. We were pretty successful getting bipartisan support for the Energy for Tomorrow legislation and I believe having RMI involved was a big part of our success. I'm a Republican and I have an overwhelmingly Democrat legislature, and yet having a third party that's not aligned one way or the other was a big part of our ability to move this legislation.



**RMI Solutions:** Your administration has calculated the state's economy will benefit by at least \$6.32 billion over the next 14 years (as that money would remain in Hawai'i and not leave the state to pay for imported oil) if lawmakers adopted the energy proposal. What has been the reaction to that estimate?

**Governor Lingle:** No one has questioned any of the estimates we've used, either in the money saved or in the amount of carbon dioxide kept out of the atmosphere—I don't recall even one person questioning those figures. The money saved, of course, is on both ends. It's money that's not leaving the state to purchase oil but it's also money that's being spent in the state because of new jobs being created in biofuels and

other alternative technologies. The money would also be used for the University of Hawai'i to become a leader in alternative energy technologies as well. As you know, there's money set aside by the Department of Energy for hydrogen research and so our ability to attract those kinds of funds is heightened with the passage of this series of energy bills.

**RMI Solutions:** Do you think other states will try to emulate Hawai'i in this effort for energy independence?

**Governor Lingle:** I think every state is going to have to look at this issue but there are certain policies that are going to have to be looked at at the national level. Each state's response to its own need for energy security is going to be different because, as I said, our dependence is so overwhelming. While we get 77 percent of our electricity from oil,

the next closest state to us is at 17 percent, and from there it drops off dramatically. Most states are at the three and four percent level because they have nuclear or coal or hydro. Also, I think all states are going to be looking at this issue as prices continue to rise. That's what's going to drive politicians: when the prices hit home with consumers. Ours is not being driven by price because people are used to paying the highest prices in the country. It really is being driven by the issue of our long-term security.

**RMI Solutions:** Any other thoughts?

**Governor Lingle:** I want to state the important role that Kyle [Datta, RMI Senior Director] has played in this, both

in the original drafting of the comprehensive strategy for the state and then in sticking with us throughout the legislative session and being available for the staffs on both the House and Senate sides. These bills were mostly joint referrals, so we were caught between energy, environment, consumer protection, finance, ways and means committees, and other committees, and he's still down there working with the staffs on language. I doubt we would've gotten this legislation passed without Kyle specifically and without the backing of RMI in general—and I'm not overstating the case by saying that. I believe everyone involved would probably agree with that.

*“Each state’s response to its own need for energy security is going to be different because, as I said, our dependence is so overwhelming.”*

## RMI in New York Times Following State of the Union Address

As readers know, RMI seems to get mentioned in all sorts of places, and in terms of all sorts of issues. So it's not surprising that two days after the President's State of the Union address in January, RMI made it onto the front page of the *New York Times*. In a piece titled “Much Talk, Mostly Low Key, About Energy Independence,” published 2 February, *Times* reporter Simon Romero wrote, “Perhaps the most significant step the nation could take in reducing oil dependence is to change the way cars are produced, according to Rocky

Mountain Institute.... Improving the efficiency of hybrid engines, like those used in the Toyota *Prius*, and using advanced metal alloys and carbon composites instead of heavier steel to make cars could double or triple the miles per gallon in these automobiles.”

“We could reduce our consumption by four to five million barrels a day by going down this pathway,” RMI Principal Odd-Even Bustnes was quoted as saying. “What the president said yesterday is a step in the right direction, but I'm not sure it's a step of the right magnitude.”



# RMI Refines Community Energy Opportunity Finder

## *Finder Shows Communities How to Save Money, Create Jobs, and Reduce Emissions*

BY ANNE JAKLE

**W**ith help from a grant from the U.S. Environmental Protection Agency (EPA), Rocky Mountain Institute has revamped its Community Energy Opportunity Finder ([www.energyfinder.org](http://www.energyfinder.org))—an interactive, web-based tool that enables community members and local leaders to explore their community's untapped opportunities for economic development, pollution prevention, and risk reduction through energy efficiency programs. The revitalized Finder includes a case study of a real community, reorganization of site information, and an update of Energy Information Administration (EIA) statistics used in Finder calculations. These improvements enhanced an already important and unique tool.

"The Finder mimics an expert consultant's preliminary analysis of what a community can do to save money and create jobs through energy efficiency, but costs the community nothing," said Michael Kinsley of RMI's Integrative Design Team and overseer of the Finder project. "We've now made the site more user-friendly, created a case study that walks site visitors through what information they need to gather, and it lets them see exactly what the Finder can do to benefit a community."

The case study, which is based on an actual Midwest city of approximately

100,000 residents, yielded significant monetary savings and job creation even though the city already had forward-thinking efficiency policies in place. Andy Smith, a former RMI intern who collect-



ed the data for the case study, says that the results yielded \$10–20 million in energy savings, an emissions reduction of more than one million tons of carbon dioxide, and hundreds of jobs were created. These results clearly demonstrate the benefits that communities can realize simply by investing in energy efficiency.

"The Finder will help any community estimate these benefits and provide information to help them get started on their own energy projects," Smith said.

In addition to creating a case study and user-friendly interface, RMI researchers updated the Energy Information Administration (EIA) data used in the calculations made by the

website. These updated numbers considerably sharpen the Finder's efficiency analysis. Smith and Kate Parrot, another RMI alum who worked on the first version of the Finder, have also created guidelines to be sure that the site is continuously updated over the years.

The concept of the Finder was developed in 2001, after RMI researchers found that there were no readily available tools to evaluate the prospects of energy efficiency within a community without hiring an expensive consultant. They then set out to develop a website that would achieve this and be accessible to both citizens and community officials, regardless of their technical knowledge.

It's long been known that energy efficiency reduces utility bills for residences and businesses, but energy efficiency is not often associated with freeing up money for community development and local re-spending. Money saved through efficiency will stay in the community—something that's not guaranteed by encouraging expansion through large developments that benefit few community members, or by recruiting new businesses.

"Energy efficiency makes financial sense and provides benefits distributed widely among a community's citizens—especially those in need," said Kinsley, who authored RMI's *Community Economic Renewal Guide*. "Economic development professionals and community members can see through the Finder

how there are business development and job creation opportunities in energy efficiency and renewable energy.”

Cities like Sacramento have shown huge savings in efficiency programs. When the City Municipal Utility District closed the Rancho Seco nuclear plant in June 1989, it recreated itself as a utility based on energy efficiency and renewable energy. The results thus far: 880 new jobs, a \$124 million increase in regional income, less pollution, stable electricity prices, and a more sustainable and prosperous community. Efficiency technology (such as LED bulbs) has only become more accessible and affordable since then.

To reap the benefits of the Finder’s quick and easy calculations, a team of two or three people working closely with a community’s utility providers and town hall can expect to spend up to a week collecting information to input into the web tool.

Smith says, “The data collection you do is also a good way to build relationships with people who can help you create your community’s energy plan. The

more people you can get interested and involved, starting with data collection, the more successful you’ll be. Many people do not participate in community affairs simply because they have never been asked. Personally asking people to participate, and connecting the effort to their concerns, will result in a solid base of collaborators who can help create a plan for your community’s energy and economic health.”

The Finder also lets users create and save multiple scenarios based on different economic assumptions. For instance, if users answer questions regarding the condition of residential buildings, the Finder responds with estimates of how much money will be saved, how many jobs will be created, and how much less carbon dioxide will be released into the atmosphere if a neighborhood were retrofitted with efficient lighting, or if a certain percentage of homes were super-insulated. Once a user chooses the scenario that seems most acceptable, the Finder provides the

next steps toward implementation, suggests ways to ensure that the ideas are supported by the community and key leaders, and tells success stories of other neighborhoods that have implemented similar programs.

“Given rising fuels costs, increased energy demand, and a growing awareness of what efficiency and renewables can do for a community, the release of this revamped Finder couldn’t be more timely,” Kinsley said. “Local leaders and community members can use the Finder as a practical tool to shift the economic development of their community towards sustainability and restoration, which in turn will enhance national security, build stronger, environmentally restorative local economics, spread benefits more equitably in the community, and increase local economic resilience.”

*Former RMI Fellow Anne Jakle, until August 2005, led RMI’s outreach efforts. Thanks to EPA and David Muckenhirn for their support.*

## Stonyfield Farm Touts RMI’s Briefs

Several issues ago, we reported on Stonyfield Farm’s support of our Home Energy Briefs—a series of nine practical guides describing what the average homeowner can do to save energy. This year, the New Hampshire organic yogurt-maker is touting the Briefs on its yogurt cup lids. The lids feature images of household devices that use electricity efficiently and encourage yogurt buyers to “Get the Scoop on Home Energy & Save Some ‘Moo-la!’” and direct readers to Stonyfield Farms website, which links to the Briefs’ website on [www.rmi.org](http://www.rmi.org).

“Written in a simple, easy-to-understand style, these practical guides cover topics such as home design, heating and cooling, appliances, electronics, and lighting,” adds Stonyfield’s website.

“By partnering with Rocky Mountain Institute, we’re able to offer some sound advice on efficiency and outline concrete steps each of us can take to live lighter on the Earth.” For more information, see [www.stonyfield.com/Lids/RMI\\_HomeEnergy.cfm](http://www.stonyfield.com/Lids/RMI_HomeEnergy.cfm).



In the print edition of this newsletter, this space contains a *New York Times* article about Rocky Mountain Institute's work with Texas Instruments, written by columnist Thomas Friedman. Mr. Friedman's original article ran in the *Times* on 18 January 2006 and was reprinted with permission. If you wish to read this piece, please contact RMI's Outreach Coordinator, Cory Lowe, at outreach@rmi.org or (970) 927-3851.

### RMI Helps Theologians Go Green

RMI's green building group is helping a Southern ministers' organization see the light—the light use of energy and resources, that is. Recently, RMI began helping the Atlanta-based Interdenominational Theological Center ([www.itc.edu](http://www.itc.edu)) in its ongoing efforts to upgrade the ten-building campus where the organization is housed. The Center is in the process of revamping its HVAC system, but eventually, Center officials are hoping to green the entire campus. “They have developed a term—*theo-ecology*—around which they want to improve and revitalize their campus,” explained Aalok Deshmukh, a member of

the RMI/ENSAR Built Environment Team. “It follows from the belief that stewardship is an underlying theme that is common to both theology and ecology.”

At present, the Institute's Built Environment Team is helping the organization—one of the world's premier organizations for African American leaders of faith—assess short-, medium-, and long-term priorities and it is reviewing energy audits and making recommendations on HVAC upgrades, “but in the long-run,” Aalok noted, “we're going to be looking at the big picture—an integrated approach to greening the campus.”



In the print edition of this newsletter, this space contains a *New York Times* article about Rocky Mountain Institute's work with Texas Instruments, written by columnist Thomas Friedman. Mr. Friedman's original article ran in the *Times* on 18 January 2006 and was reprinted with permission. If you wish to read this piece, please contact RMI's Outreach Coordinator, Cory Lowe, at outreach@rmi.org or (970) 927-3851.

## Feeling Bloggy?

Well, you knew it was coming sooner or later: an RMI blog. The personal online jottings of various RMI staff members, the RMI blog (at [www.rmi.org/blogs](http://www.rmi.org/blogs)) includes observations, commentary, and useful links to other websites regarding anything of interest to RMI friends and supporters, as well items related to RMI's mission (the efficient and restorative use of energy and resources). To date, only RMI Outreach Coordinator Cory Lowe and Fellow Linda Shi have begun posting their thoughts, but expect more in the weeks to come. "Blogs are a great way to communicate informally," said Webmaster Bill Simon, "and with RMI's high-brow research and consulting work, this will be a great way to tell people what we're up to, and to point them to interesting things happening in the world."



# TEAM=Together Everyone Achieves More



BY MARTY PICKETT

**R**MI's mission to foster the efficient and restorative use of resources to make the world secure, just, prosperous, and life-sustaining isn't just a pipe dream. We're also not so naïve as to think we can do it alone. Organizational guru Ken

Blanchard once said that "none of us is as smart as all of us." RMI's whole-system thinking and team structure embraces that concept. We also have a much bigger team vision and, over the years, we have established a rich and diverse network of colleagues who are experts in their fields. Teaming with others ensures that RMI, while learning from many smart people, addresses issues from a whole-system perspective and creates the best solutions.

In addition to networking relationships, in recent years RMI has named several Senior Fellows—extraordinary associates with whom we're working on specific projects or in a particular field on a regular basis. We're pleased and honored to announce three more: Nancy E. Clanton, Douglas I. Foy, and Peter Rumsey.

Nancy is founder and President of Clanton & Associates, a lighting design firm in Boulder, Colo. Nancy has 30 years' experience in lighting design and lectures nationwide on topics relating to energy efficient design and light pollution, and she has been an instructor at the University of Colorado at Boulder. Her firm's lighting design projects reflect her philosophy and 11 of their projects have been named to the AIA Committee on the Environment Top Ten Green Project List. Clanton & Associates has designed the lighting for six LEED-certified projects (two Platinum, one Gold, and three Silver) and has 14

LEED-registered projects awaiting certification. Nancy is a LEED 2.0 Accredited Professional.

Doug Foy is a former Massachusetts Secretary of Commonwealth Development and longtime president of the Conservation Law Foundation. Doug will be leading the "Social Enterprises Addressing Climate Change Project," which will focus on three areas: energy efficiency and affordable housing, transit communications, and city and smart-growth real estate investment. Doug's state-level policy expertise will be valuable to RMI's *Winning the Oil Endgame* team, which is working at all levels to get the doctrine implemented.

Peter Rumsey is the founder and President of Rumsey Engineers, Inc. in Oakland, Calif. Peter is a global player in energy-efficient design, with more than 25 years' experience in a broad range of scientific, government, and private-sector projects. His expertise includes design of efficient HVAC systems and energy monitoring systems in commercial buildings and mission-critical environments, management of project teams, and analysis of design options using computer simulation tools. His firm includes 15 engineers committed to the challenge of designing buildings and communities that are more energy- and resource-efficient, more comfortable, healthier, and safer than typical buildings and communities—indeed, Rumsey Engineers has long followed a path similar to RMI's. As part of our collaboration with Rumsey Engineers, Peter will provide some training for RMI staff in addition to working together on projects.

Creating alliances with such stellar colleagues brings new meaning to teamwork at RMI. Having this broad range of in-depth expertise means that we are much better positioned to fulfill RMI's mission. Certainly, Ken Blanchard's dictum ("none of us is as smart as all of us") rings true at RMI.

*Marty Pickett is Executive Director of RMI.*

## A Fond Farewell to Red

Longtime RMI maintenance guru Galen "Red" Cain recently retired after 10 years at the Institute. Known for his charming (and sarcastic) wit, his down-to-earth approach to challenges in managing the Institute's Headquarters and Southeast Annex properties, and his perennially warm and friendly manner, he will be sorely missed.

"The one thing in particular I'll always remember when Red comes to mind is his fondness and

father-like role with RMI interns," said RMI Facilities Director Ethel Lossing. "Taking them under his wing, his gentle joking, taking them fishing, inviting them up to his and his wife Sharon's house to play snooker—Red more than anyone at RMI has helped all of our interns adjust to their new surroundings." Happy trails in your retirement Red—and good fishing!



## Editor's Notes

## We're All Crazy Now



BY CAM BURNS, EDITOR

Sometimes the Institute has a hard time of keeping track of exactly what kind of positive change we're influencing—no surprise, really, as influence is rarely quantifiable. But in the 26 February edition of the *Aspen Times Weekly*, reporter Joel Stonington

wrote a wonderful cover story explaining the influence the Institute has had on this country and how “America [is beginning to] See the Light.” In the piece, Joel recounts how the energy and resource efficiency RMI and its founders have been pushing since the 1970s have gained wide traction.

“Compact fluorescent light bulbs and hybrid cars were seen as quirky five years ago, weird ten years ago, and nearly unheard of before that,” Joel wrote. “The only people advocating energy-saving technologies such as hybrid cars and green building design thirty years ago were thinking way ahead. Not these days. During Super Bowl XL this year, both Toyota and Ford paid big bucks to advertise their new fuel-efficient hybrid models. And energy-saving compact fluorescent light bulbs doubled their share of the market between 1999 and 2006. As energy-efficiency first gained a toehold in the U.S., Rocky Mountain Institute in Old Snowmass has been in the forefront, advocating market-based, conservation-minded changes. But only recently have so many of RMI's solutions reached the

mainstream.”

I know what Joel meant. In 1993 I wrote a cover story for the same paper—a description of RMI's research into a fairly new kind of vehicle that had regenerative braking and a hybrid-electric motor. RMI CEO Amory Lovins and former RMI employee Eric Toler called the vehicle the *Supercar*,\* and during a two-hour interview, they told me they were certain the *Supercar* would become reality. After the piece ran, I remember hearing a few comments about the piece and how several readers thought Amory and Eric were crazy.

Today, hybrid car sales are doubling every year and in 2005, nearly 206,000 of them were sold. And, [www.hybridcars.com](http://www.hybridcars.com) reports that by 2007, “at least 20 new hybrid models will appear in America.”

These days, the researchers and consultants here at RMI have long since passed the hybrid baton to others who are designing, building, and financing the cars. But the situation illustrates just how forward-thinking the work that goes on here is.

Fast-forward 13 years.

Today, we are sharing with the world a report that could get the United States *completely* off petro-oil—yes, completely! *Winning the Oil Endgame* shows how to rid the country of our dangerous oil habit by employing efficiency, developing new technologies, boosting new industries, and initiating new policies. It's RMI's hybrid-electric car of 2006.

And while there might be a few saying it can't be done, one thing I've noticed is our latest project seems to have a lot fewer critics than the *Supercar*.

\*Not to be confused with a street-licensed Formula One or similar car.

## Save the Date

Rocky Mountain Institute is currently finalizing plans for a summer “RMIQ” (RMI Quest for Solutions) lecture in Aspen, currently titled “Strange Bedfellows: RMI, the Pentagon, Wal-Mart and Texas Instruments.”

On July 13, RMI CEO Amory Lovins, Managing Director Dr. Joel Swisher, and Trustee Sue Woolsey will join a prestigious panel of industry leaders to discuss energy efficiency and why it is important to these

organizations. In recent years, RMI has consulted with all three entities, which are among hundreds of organizations quickly awakening to the remarkable opportunities and economic savings that result from using energy efficiently. The discussion will take place at Paepcke Auditorium in Aspen, 5:30–7:30 p.m. For more information, please check our Calendar of Events web page, at [www.rmi.org/sitepages/pid22.php](http://www.rmi.org/sitepages/pid22.php).



*Editor's Note: Since last year, RMI has been building the Institute's consulting capacity. In this issue we decided to spotlight the leaders of our Built Environment, Integrative Design, and Energy & Resources Teams.*



### Greg Franta, FAIA, RMI Built Environment Team

After growing up in Minnesota, Greg Franta, FAIA, Leader of RMI's Built Environment Team, moved west to study architecture at the University of Colorado at Boulder. While an undergraduate, Greg became heavily involved with local organizing for the first Earth Day celebration (in 1970) and he came to understand the impact that poor architectural design was having on the environment. The way that the world's natural resources were being depleted by the building sector prompted Greg to commit himself to a radically new kind of architecture—one that fully considered all aspects of the environment, the inhabitants, and the community.

After graduating CU, Greg spent several years interning with legendary architect Fritz Benedict (and skiing) in Aspen, and then completed his graduate studies in architecture at Arizona State University. Then, with Robert Clarke, he established ENSAR Group in 1981, a Boulder-based sustainable architecture firm with an emphasis on efficient, high-performance buildings. Greg grew the business and found the work compatible with RMI's efforts. Indeed, Greg and ENSAR Group performed the energy analysis for RMI's headquarters building when it was being designed and constructed in the early 1980s.

Throughout the '80s and '90s, Greg and ENSAR Group worked with RMI's in-house architects on dozens of projects around the globe, from the Greening of the White House to a radically efficient prototype Brazilian school—all the while forging a new path for the disciplines of architecture, engineering, and landscape design.

In mid-2005, as the staff of RMI's Green Development Services was dwindling, both RMI and Greg saw an opportunity to join forces in a more direct way. Greg and his staff joined RMI, and, with RMI Principal Alexis Karolides, AIA, became the founders of the Institute's new RMI/ENSAR Built Environment Team. Since then, the staff has grown and the quantity and quality of the work has increased. The Team consults on building projects of all sizes, including homes, hospitals, museums, schools, retail facilities, factories—you name it. They recently oversaw a retrofit of RMI's new Boulder office, which is currently seeking LEED Platinum certification from the U.S. Green Building Council (see *RMI Solutions*, Spring 2006, for more details.)

In addition to the work that Greg does at RMI, he maintains a rich personal life with his wife Jana Simpson. Greg has three daugh-

ters and Jana has two daughters. The girls live as far away as Paris, Boston, and Ashland, Ore., and as close as Boulder and Denver. He enjoys—perhaps most of all—traveling, and he has visited more than 60 countries. Greg also likes photography, jogging, and spending time at a yurt on land he owns in Park County, Colo., where he backcountry skis, hikes, and meditates.

Greg is excited about RMI's impact in a variety of sectors, not just the built environment. He sees his Team's primary duty as demonstrating that the built environment plays a vital, profitable role in the push towards sustainable resource use.

—Cory Lowe



### John Waters, RMI Integrative Design Team

John Waters has always had an affinity for cars. Growing up in Tulsa, Ok. he wanted to be an auto mechanic and seemed destined for mechanics school, but a high school aptitude test squashed those plans.

John scored so high on the test that a school counselor encouraged him (in front of his parents) to seek a four-year education. Family tradition dictated that he attend Oklahoma State University, but John headed to the smaller and more personal University of Arkansas instead, to pursue a mechanical engineering degree.

Four years later, amid a dismal job market, John figured graduate school would improve his employment opportunities. While finalizing his applications, he asked several people at Texas Instruments (TI) about the best graduate programs in robotic engineering, but instead of a getting a recommendation, he got a job offer. TI, at the time, was opening a new division to build five robotic cells that would improve manufacturing operations at their Sherman, Tex., plant. John went to work designing and implementing robotic infrastructure operations that were as large as two football fields and before long he had won a national award for robotic design and advanced automation.

While working at TI, John also founded a Young Life ministry in Sherman, Tex., sixty miles north of Dallas. The non-denominational youth program served 50 to 100 high-school-aged kids and offered weekly meetings and summer camps to Colorado among other locations. After leaving TI, John led the ministry for two years and grew its capacity to more than 300 students meeting weekly. Today, the chapter is still thriving with thousands of students having experienced Sherman Young Life and the Rocky Mountains of Colorado.

After his stint in Texas, John moved to Detroit, Mich. to work for Electronic Data Systems (EDS, which had recently been purchased by General Motors (GM)). With his mechanical engineer-

ing background, he held a variety of positions focused on the automation of automotive plant operations.

Eventually, John went to work on the battery pack for GM's *EVI* electric vehicle, the first of its kind. One of the challenges for the battery pack design focused on the battery tray needed to hold numerous heavy batteries, meet certain size requirements, and support or stabilize the car's chassis. Metal alloys were ruled out due to their conductivity. With considerable electricity flowing through the batteries, a metal tray wouldn't be safe for the passengers in the cabin. Eventually, John and his team developed a glass-filled plastic tray that met the challenging requirements perfectly. The technology was so successful that it won the Society of Plastics Engineers "Grand Award" in 1996, an enormous honor in the field.

Next in John's varied career was leading a successful start-up division within Delphi Corporation in lithium-battery production. John and his team developed a lithium-ion battery that carries more energy than a lead-acid battery but is vastly smaller, lighter, and more durable. While John was initially hopeful about the automotive applications and social impacts this battery would have, it was first used in a non-automotive application, specifically a personal mobility device.

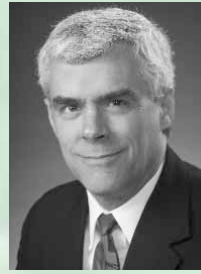
Even with all this engineering success, John longed for his work to have a bigger societal impact and to return to his boyhood roots and pastimes—gazing at big skies, immersing himself in nature, and tinkering with cars.

In 2005, as RMI began growing its Research & Consulting capacity, John found himself in discussions with the Institute's senior management about his expertise, and the needs of the Institute to fulfill its mission.

Not surprisingly, he was soon hired as the Integrative Design Team Leader and today leads his Team in the continued development of efficient automotive and non-automotive product and process applications. He has observed first-hand what whole-system thinking and implementation can do to decrease waste, improve the environment, and make people smile. John thinks the product and manufacturing worlds are ideal sectors to focus on in order to unlock huge improvements in efficiency and truly drive social change (pun intended).

Outside work, John loves his new hometown—Carbondale, Colo.—where he lives with his wife, Sonya, and their four children. He describes the sensation of gazing at the big sky with detailed elation—the result of his many years in Detroit, Indianapolis, and Fort Lauderdale. John also enjoys outdoor recreation with his family, namely skiing, hiking, and biking. John seems to have found home here in the Rockies and we're hopeful that he'll lead the Institute's Integrative Design Team for many years to come.

—Cory Lowe



## John Anderson, PE, RMI Energy & Resources Team

John Anderson, PE, RMI Energy & Resources Team Leader, was born and raised in Wisconsin, and says that's why he has a Midwestern way of looking at things—that is, extremely practical and down to earth. He attended the University of Wisconsin at Madison (UW) and did his undergraduate work in mechanical engineering before moving on to graduate studies at the Solar Energy Institute at UW, where several solar energy pioneers trained.

In 1979, John's academic experiences led him to the Solar Energy Research Institute (SERI), today known as the National Renewable Energy Lab (NREL). There, he did technical analysis for a variety of energy systems, mainly solar systems. After ten years, he moved into management and oversaw a wide range of projects, including one effort to destroy water and air pollution particles using a photo-catalytic process. John's management duties grew, and he eventually took on the supervision of an entire branch with thirty researchers, technicians, and engineers.

Despite the good work being done at NREL, John became frustrated by the lack of solar technologies being deployed and sought to understand why. He soon learned that most of the hurdles were economic, but he lacked the economic background to grasp the complexities and subtleties of the issue so he set about learning as much as he could about finance—a useful skill in any line of work.

John's career shifted dramatically in 1999. He left NREL to found and manage the Connecticut Clean Energy Fund (CCFE), an organization established to make investments in the renewable energy sector. Under John's leadership, CCEF achieved tremendous success quickly, but John missed the mountains—Connecticut simply didn't offer the natural beauty and recreation opportunities that he yearned for. So after two years, he moved back to Boulder and established a small, independent consultancy that worked with small companies to develop successful business plans to move renewable energy technologies into the marketplace.

Before long, John got a phone call from RMI's Managing Director of Research & Consulting, Joel Swisher. Joel and John had long been friends, dating back to their days as cubicle neighbors at NREL. When Joel was promoted to Managing Director in 2005, a void in the Energy & Resources Team opened and John seemed a natural fit, and he was hired as Leader.

In addition to his career, John is an avid outdoorsman. He is an accomplished mountaineer, but now focuses his recreational energy on mountain biking, telemark skiing, and backpacking. He

(continued on page 27)



# Steve MacAusland

RMI'S FRIENDS AND SUPPORTERS COME FROM diverse backgrounds and belief systems, but some have such truly fascinating on-the-ground experiences that they bear sharing with readers. Case in point: Steve MacAusland.

In 1971, after a stint in college, longtime RMI fan and supporter Steve MacAusland and six friends decided they needed a wild, wilderness experience. They agreed to an eight-week canoe trip through Québec, down the Eastmain River, from near Lake Mistassini to James Bay.

But 1971 wasn't only the year Steve was supposed to graduate from college; it also happened to be the year that the Province of Québec launched the largest hydroelectric project in North America and one of the largest in the world. As designed, it would drown huge areas of forest and river, cause mercury contamination of fish, as well as other major environmental problems.

The young men paddled the river, fishing, camping, enjoying life, and experiencing the almost unknown Cree culture (at that time an estimated 6,000 lived in the area). As they traversed the province, they came across several camps of 80 to 100 hydro-project workers apiece. The men were busy surveying and drilling, and trying to determine where the various diversions and channels of the James Bay

Project would go.

At the end of the trip, out of curiosity and respect, Steve and his friends decided to visit the chief of the local Cree tribe. He spoke no English, but through an interpreter the young men thanked him for the use of his river and then asked him what he thought about the hydro project happening upstream.

"The concept of a huge hydro project was way beyond him, but he didn't know anything about it anyway," Steve said. "What really bothered me was that the river these people grew up on and the culture that it supported were being threatened and they weren't even told."

Steve paddled the Eastmain the following year, and the year after that. Then he finagled a longer stay, and went back up for the winter of 1973–74. He lived with a Cree family, in a teepee, traveled by snowshoe, and hunted and trapped for sustenance. Steve and his hosts became comfortable with one another, and Steve stayed three years.

"The whole time the hydro project was bearing down on them, and they resisted it as best they could," Steve said. "But the Cree were having a difficult time finding lawyers and they lacked any kind of treaties with the government of Québec."

The project was enormous, too. Instead of simply building a dam along the

Eastmain River, Hydro-Québec was planning to divert the river, along with four other big rivers, through a system of dikes and into a huge reservoir that would power a massive underground generating station.

Steve had to do something. He put together a slideshow of the land, the Cree, and the hydro project and took it on the road to drum up opposition.

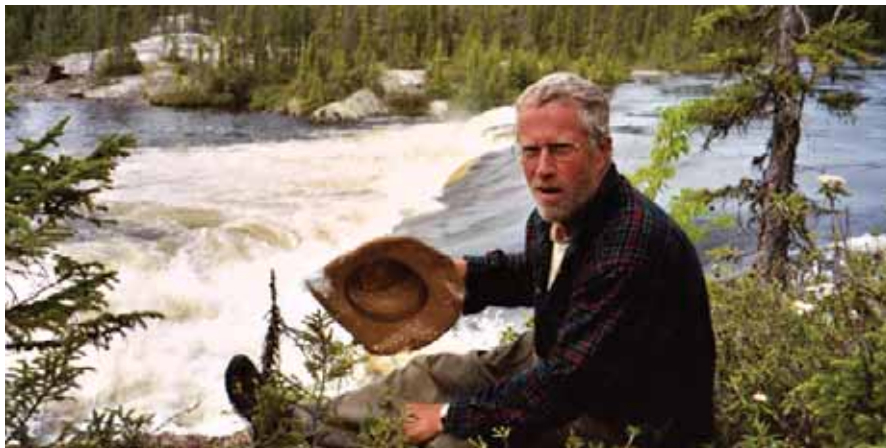
The response was predictable, he said: "Most people said something along the lines of 'Great slide-show, great cause, but sorry, it's not an American issue. They're Canadian dams built on Canadian rivers'—even though a lot of the electricity was going to be directed to the Northeastern United States, including New England."

Though unable to halt Phase I, Steve learned as much as he could about hydroelectricity, about energy in general, and about the Québec government's planned Phase II, which was scheduled to begin in 1990. And despite his day-job as a teacher, Steve also taught himself as much as he could about videography, and learned to shoot and edit tape.

When 1990 rolled around, Steve and one of his original canoe-mates, Denny Alsop, went to the next river that was targeted for development, the Great Whale River, where the Cree and Inuit territories meet.

There, Denny and Steve convinced the Cree and Inuit to build an outsized canoe and dogsled it down James Bay to the St. Lawrence, and then paddle up the Richelieu River to Lake Champlain, down Lake Champlain to the Hudson River, and down the Hudson so they would arrive in New York on Earth Day 1990. While the Cree and Inuit paddled, and Steve and Denny shot videotape and talked to the press along the way.

"We got to New York on Earth Day,



and we stole the stage at the Earth Rising celebration in Times Square,” Steve recalled. “And the next day it was front page news in the *New York Post*, then the *New York Times* Sunday magazine did a big story, as did the *Boston Globe*, and *National Geographic*, and many other papers and magazines. That was the spark that brought this to the attention of the American people.”

Steve wasn't sure what to do next, so he called David Brower. The legendary environmentalist put him in touch with RMI CEO Amory Lovins, whom he subsequently interviewed for the video. The program aired and—besides winning an Emmy—provided considerable support for the anti-hydro argument. The public outcry created an environment that enabled Ashok Gupta and S. David Freeman, head of the New York Power Authority, to persuade then-governor Mario Cuomo to cancel the state's contracts with Hydro-Québec for power, based on his belief that the state could do better through efficiency and conservation.

“And with no new contracts, the province of Québec was unable to go forward with a \$15 billion project,” Steve said. “So the premier of Québec had to put the project on the back burner, where it remains.”

The province is still looking at hydro projects on other untamed rivers, and Steve continues to monitor the situation, but since his success with the Great Whale River, he's reinvented himself.

Steve's “next phase” of life became his work with the community of faith. It began when he went to a 1993 hearing in Boston regarding a bill that would apply Massachusetts' generation standards to electricity imported from outside the state. The room was filled with black suits—lobbyists from the energy sector—so the two people dressed as clergy immediately got Steve's attention. The man was a representative of the Anglican Church of Canada who had come down to explain that not all

Canadians were in favor of Québec's hydro projects and to urge the Massachusetts legislature to adopt the bill. The woman was an Episcopal priest from Massachusetts, and her church was opposed to the hydro projects too.

A lifelong Episcopalian, Steve soon found himself involved with a diocesan committee of faith and the environment, an association that led to his own work with Episcopalian dioceses across the country, as well as with members of other faiths, on energy issues.

**“The community of faith is waking up to our responsibility to take care of creation, to be stewards of the land. If you love God, you've got to take care of what God gave you. It's pretty much a no-brainer.”**  
—Steve MacAusland

“The community of faith is waking up to our responsibility to take care of creation, to be stewards of the land,” Steve noted. “If you love God, you've got to take care of what God gave you. It's pretty much a no-brainer.”

This outlook coupled with his specific interests in energy led to Steve co-founding with the Reverend Sally Bingham, in 1998, an organization called Episcopal Power & Light ([www.theregenerationproject.org/epl.html](http://www.theregenerationproject.org/epl.html)), which aims to make church facilities more energy and resource efficient, and to buy green power by combining the energy purchases of Episcopal churches and their congregations. Although the effort first centered on the Episcopal Church, the goal was to involve the entire community of faith, which happened after Episcopal Power & Light had proven itself. After two years, the California Council of

Churches jumped onboard, and, as Steve notes, “we were off to the races.”

Steve traveled endlessly, promoting energy efficiency and renewable energy as an issue that churches should address, in this country and around the world. After considerable effort, he decided to stick closer to home, and founded Massachusetts Interfaith Power & Light, which he continues to run (as Chief Evangelical Officer). Today, there are Interfaith Power & Light branches in California, Oregon, Colorado, Iowa, Minnesota, New Mexico, Texas, Michigan, Tennessee, North Carolina, Georgia, Pennsylvania, Washington DC, New York, Maine, Massachusetts, and Vermont—and other states are seeing “IPLs” forming regularly.

Steve, 56, is a lifelong resident of Dedham, Mass. where he still lives and where he and his ex-wife Amy raised his two daughters, Charlotte and Dorothy. His longtime connection to RMI is important he says.

“RMI is like this nexus of good news,” he said. “Anything that matters in terms of energy and the environment crosses RMI's desk, so to speak, and the Institute focuses on solutions. RMI's people aren't just out there hammering on people. They're offering workable, positive, inspirational change. I consider my support of RMI as an investment in the future and encourage others to do likewise.”

And, clearly, Steve MacAusland is doing some inspirational things himself—literally and figuratively. Indeed, just two summers ago Denny and Steve paddled down the Rupert River in Québec. “Better keep an eye on that one!” Steve says with a smile.

—Cameron M. Burns

*For more information on Episcopal Power & Light, please visit [www.theregenerationproject.org](http://www.theregenerationproject.org).*

*For more information on Massachusetts Interfaith Power and Light, please visit [www.mipandl.org](http://www.mipandl.org)*



# Michael Potts

## A FEW YEARS BACK, RMI BOARD OF

Trustees member Michael Potts went through a transformation. After selling a software company he had run for several years, he took time off and did a few personal things. He got heavily involved with yoga, he traveled extensively (meeting with “interesting people I’d always wanted to meet”), and he got deeply involved in a number of organizations that are driving social change. Now, Michael’s main focus is about driving innovation for positive change, and that includes serving on RMI’s governing body.

“RMI is a hotbed of innovation. It really works the edge,” he said. “RMI approaches problems in fresh ways. The folks there are continually challenging themselves to find a way of doing something that’s not obvious. In business, new ideas are usually considered secondary to proven, established procedure. What I really like about RMI is the commitment to challenging the established ways of doing things.”

Clearly, he has enthusiasm, and he hopes his extensive experience in business management can help guide the organization forward. A close friend of RMI Trustee Adam Albright, Michael joined the Board last fall.

“We need to support Amory and his vision,” he said. “But at the same time we need to build an organization that provides huge value with or without Amory. Another challenge facing RMI is the imperative to constantly stay out ahead with new ideas. RMI needs to come up with ground-breaking ideas, and once they’re accepted RMI has to give them over to the market place and go and find new ideas. Most businesses hit on an idea then flog it as long as possible. At RMI, it’s kind of the opposite: the MO is to hit on a good idea,

substantiate that it’s a good idea, and then move on.”

Michael grew up on the north shore of Chicago, the oldest of six kids. His father was in high-tech sales in the telecom industry and his mother was a teacher. As a kid, he lived near the beach on Lake Michigan, where he spent a lot of his boyhood time. The family also owned a farm in Wisconsin, where weekends and summers were spent immersed in nature.

After attending high school, he headed off to Beloit College in Wisconsin where he studied creative writing. “I love to read, I love writing short stories—humor and poetry,” he said. “So when I got to college it just seemed natural.”

After college, Michael thought he’d get into the publishing world, but a chance to interview with IBM came up, and on a whim Michael went, “and they gave me an offer that was more than double any of the offers from the publishers.” Thus began a 25-year career in high-tech sales and marketing, and general management, with IBM, BancTec, Recognition International, American Fundware, and as an independent consultant. At BancTec he helped grow international sales from \$8 million to over \$80 million in about four years.

After that, he decided he wanted to run his own, private firm. Michael found a small software company in Denver doing just under \$5 million in sales, landed a job as CEO, and in five years helped triple the size of the business. The company made financial software for complex non-profit organizations, with clients such as Carnegie Hall, the United Negro College Fund, and the Aspen Institute, among others. Michael sold the company to a larger



corporation and stayed on to run it for the new owner until late 2004.

Then, he took that transformative time off and became involved in a number of organizations that are driving transformational change, including the Business School at the University of Colorado in Denver, a theater group called Curious Theater, Kripalu Center, the nation’s largest spiritual retreat center, and, of course, RMI.

“I’m trying to spend my time with organizations that are going to have traction and make a difference,” he said. “RMI has a lot of faith in the power of ideas, and there’s an underlying confidence that if we figure it out, it can be done. I like the constructive way RMI engages with business and government. It’s very tempting for organizations that are driving social change to polarize and second-guess the people who are actually doing the work and I love the way RMI goes out there and actually gets involved in the issues. I think that’s a powerful lever for transformational change.”

One big challenge he sees is the strategic issue of building a lasting hybrid organ-

## Board Spotlight

ization that consults for fees, but also does research and education.

“Having worked with a company that serves 2,500 non-profits, I’ve seen everything in the world,” he said. “And what I think I can contribute to RMI is helping the organization with transitions and long-term strategies. Most businesses look forward only one or two quarters at most. At RMI there’s a uniformity of long-range thinking across everyone on staff—that’s a great basis for building a long-standing hybrid organization.”

Besides his new role with the Institute, Michael is interested to see if there’s a way to get RMI involved with energy issues in the developing world.

“If you were to go to some of these slowly developing countries and put some planning into it, what would that look like?” he asks. “And is there a role for RMI there, or are other organizations better suited to tackle those challenges?”

Outside his nonprofit service, the Denver resident’s interests include music, literature, history, mountain hiking, and water sports. While he never went into writing as a career, his curriculum vitae proudly notes: “have written two bad screenplays and many short stories.” He is also one of two recent cofounders of the Rubicon Company, a holding company in search of small industrial acquisition candidates.

And the father of seven is finally putting his college degree to use, writing a book about business. Specifically, he’s writing about the relationship between the capacity of work in a person and in that person’s organization. The book will also examine the stages of development that top-level executives go through.

“Books like this can be fairly boring, so I thought I’d try something new,” Michael said. “I’m going to write it as a comic book.”

From an innovative guy seeking to push transformational change, that sounds about par for the course.

—Cameron M. Burns

## In Memoriam:

### *Melissa Rene Newsom*

Melissa Newsom, a former RMI employee, passed away 17 January 2006 after a two-car collision on Interstate 70 near Silt, Colo.

Melissa was born in 1972 and raised through childhood in Canoga Park, Calif.

She subsequently moved to Bainbridge, Wash. with her family, where Melissa attended Bainbridge High School; she graduated in 1990. After graduation, Melissa’s family moved to Grand Junction.

In 1991, Melissa moved to Carbondale. In the early 2000s, she worked for RMI for three years. In 2003, she moved to Silt, where she took a position as an executive housekeeper and was working with the City of Glenwood Springs when she died.

Melissa loved the outdoors, especially stream fishing, mountain biking, and skiing, and she made friends easily. Her family and her pets were her greatest passions, and she was known for bringing home stray animals. She had a big heart, and will be missed greatly by her family and friends.

“She was one of the warmest people I’ve ever met,” said RMI staff editor Cameron Burns.

## RMI Wins Design Awards

The Communications Department recently won two Graphic Design USA 2006 American Inhouse Design Awards. The winning pieces were a National Solutions Council Salon invitation, designed by RMI Webmaster Bill Simon, and RMI’s annual report for 2004–2005, designed by Art Director Robin L. Strelow. The Inhouse Design Awards competition was created to honor the communications efforts of in-house designers and design teams, and the creative community.



## RMI Supporters

# National Solutions Council

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## RMI National Solutions Council Weekend

Wednesday, July 12 – Sunday, July 16, 2006

From RMIQ lectures and informal visits with RMI's Research & Consulting Teams to opportunities to enjoy the arts, culture, and outdoor beauty of the Aspen/Snowmass area, this summer's National Solutions Council Weekend promises a little bit of everything.

Highlights of the weekend follow.

Informal meetings with RMI staff on the following Research & Consulting projects:

**Sustainable Communities:** Hear about our experiences in sustainable economic developments, including information on our project *Designing a Regeneration Zone in the Cuyahoga Valley* (Cleveland). Help us develop future plans to move cities and communities toward sustainability.

**Winning the Oil Endgame:** An update on our implementation efforts regarding heavy trucks, the military, and biofuels. This session will also feature a presentation on the NSC-sponsored *WTOE* project: cars and light trucks.

**Smart Utilities of the Future:** RMI's Energy & Resources Team will brief NSC members on the state of the U.S. electricity industry. They will also discuss RMI's work helping energy utilities to reduce greenhouse gas emissions efficiently and cost-effectively. Then, we'll unveil ICARUS, a remarkable computer modeling system that predicts utility greenhouse gas emissions under a variety of scenarios. NSC members will challenge ICARUS and see who can reduce the most greenhouse gas at the lowest cost.

**RMIQ lecture:** "Strange Bedfellows: RMI, the Pentagon, Wal-Mart, and Texas Instruments." RMI CEO Amory Lovins, Dr. Joel Swisher, PE, and RMI Trustee Sue Woolsey will join a prestigious panel of industry leaders

to discuss energy efficiency and why it is important to these organizations.

A highlight of the weekend will be Saturday, when NSC members participate in an all-day Green Building Charrette at Doug and Lynda Weiser's home in Old Snowmass. When building their home, NSC Co-Chair Doug and his wife Lynda invested in alternative energy systems and green building techniques, but the results were only moderately successful. Doug and Lynda want to be greener. Together, we'll participate in a green building charrette with a goal of providing practical recommendations for making the couple's home more sustainable and energy-efficient. The process will provide us all with valuable information about how to green our own homes and communities, and how we can each reduce our individual environmental footprint.

Following the green building charrette, Doug and Lynda Weiser will host an NSC Salon/Reception for NSC members and their guests.

Additionally, NSC members will be able to choose from a variety of activities, from a Tour of Fiberforge (formerly Hypercar) and green buildings in the Roaring Fork Valley to outdoor activities such as horseback riding and whitewater rafting, as well as various cultural activities.

Join us to learn more about RMI and celebrate the beauty of summer in Aspen/Snowmass!

The NSC extends an invitation to all RMI donors of \$1,500+ annually to join. For more information about the Council, please contact Development at (970) 927-3851 or [develop@rmi.org](mailto:develop@rmi.org).

## Contributions to RMI between 1 January 2006 and 30 April 2006

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\$ 100,000 and above

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Earth Share...

We also want to thank those individuals who have contributed to RMI through Earth Share, the combined federal campaign, and other workplace charitable programs. If you would like to have RMI as a charitable option in your workplace campaign, please contact our Development Department at (970) 927-7201.

**The following people have notified us that they have included RMI in their wills and/or trusts. We are grateful to each of them.**

Esther & Francis Bligh  
Joanne & Mike Caffrey  
Virginia Collier  
Anne Cooke  
Richard Ford  
Stanton Klose  
Erika Leaf  
Joel Shapiro  
Marge Wurgel &  
Keith Mesecher

## Wills

Below is suggested wording for including RMI in your will. But we also suggest you consult your attorney.

“I hereby leave \_\_\_\_\_ percent of my estate (or a fixed amount, specific property, or the remainder of my estate) to Rocky Mountain Institute, a Colorado nonprofit corporation, whose purpose is to foster the efficient and restorative use of resources to make the world secure, just, prosperous, and life-sustaining.”



# The Next Generation Is Getting It

BY CORY LOWE

In early December, Cliff Colia, principal and head Wolverine at Carbondale Middle School, brought 25 of his most gifted students to RMI's super-efficient Headquarters building. My initial uncertainty about how much the 12-to-14-year-old students would understand about energy efficiency was quickly laid to rest by thought-provoking questions such as "How much energy is RMI saving by using photovoltaic panels?" and "What is the payback period for all of these alternative technologies?"

The tour began like most, with a look at all of the building's alternative energy technologies and an overview of RMI's work. The students were intrigued by CEO Amory Lovins's hot tub. They thought (as many do) that such modern extravagances couldn't be enjoyed in such an energy-efficient building. However, once I explained the solar hot water heating system and RMI's belief that modern comforts don't need to be sacrificed, the students got pretty fired up about improving energy efficiency in their own homes.

We continued to the roof where I gave detailed explanations of the tracking photovoltaic panels, air-to-air heat exchangers, solar clothes dryer, and solar hot water heater. None of the descriptions was lost on these youngsters and they continually asked challenging questions about how the technologies work and where their families could purchase them.

Back down at the front of the building, the students took a close look at the exterior walls and windows. With no traditional heating system in the building, the walls and windows are crucial to maintaining warmth during the cold winter season. The walls, constructed of locally harvested Dakota sandstone, have an R-value (a



measure of insulative capacity) of 40 and the Heat Mirror superwindows that feature a layer of krypton gas sandwiched between two panes of glass boast an R-value of 12. Both of these features are considerably better performing than the building industry's standard windows and walls.

The group moved into the workroom to examine the solar-electric system's batteries. These nickel-iron batteries, recovered from China, boast enough storage capacity to keep the building up and running for a week in the event of a power outage. In fact, during a fierce storm and resulting power outage several years ago, Amory welcomed local emergency workers into the building to charge the batteries in their radios. The students then convened in the kitchen and examined the appliances, all designed to maximize energy savings.

The tour culminated in the greenhouse,



clearly the highlight of the trip for the students. After I explained how the greenhouse serves as the furnace for the building, the students wanted to know more about the materials used to store heat, including the cement, water, dirt, and plant matter. Next, the students turned to exploring the plants and animals that live in the greenhouse. Everyone searched high and low to find Hedgemon the Hedgehog, RMI's insect eliminator, but to no avail as the nocturnal animal had likely found a discreet place to sleep.

After the tour concluded, I answered some final questions before the students boarded the big yellow school bus with Principal Colia at the wheel and headed back to school. Clearly many of America's youngsters get it when it comes to energy challenges and solutions. In leaving, one student remarked to me that she would love to live in a building like RMI's. With that comment, I felt confident that RMI's messages hadn't fallen on deaf ears; hopefully, in a few years, kids like these will be running our country.

*Cory Lowe is the Outreach Coordinator in RMI's Communications Department. For more information, please visit [www.rmi.org/sitepages/pid379.php](http://www.rmi.org/sitepages/pid379.php).*

## Winning the Oil Endgame

(continued from page 5)

for a decade;

- new Integrative Design Team leader John Waters, who led the design of the *EVI* and *S10* battery packs for GM and Delphi, will use his expertise to explore battery technologies, market development, and manufacturing hurdles. He brings 17 years' experience in the advanced battery and auto industries; and

- Larry Zahn joined RMI's Integrative Design Team as a Principal to help implement *WTOE's* recommendations for doubling or tripling the efficiency of heavy trucks. Larry has 30 years' experience in the auto industry, in leadership and executive roles in engineering, manufacturing, financial, and operations at Chrysler, Volkswagen, American Motors/Jeep, and others.

These are just a few of the Institute's ongoing capacity-building activities in our Research & Consulting Teams.

### ■ Diverse Engagements in Oil and Biofuels

Both enlisting the interest of the oil industry and accelerating the emergence of the advanced biofuels industry show promise. In March 2005, CEO Amory Lovins's lectures at Rice University's Baker Institute and SMU's Maguire Energy Center were packed with oil-

industry officials and investors, including numerous independents. A March 2006 presentation to the Calgary Chamber of Commerce was similarly receptive, as was an April 2006 luncheon keynote at the Houston annual conference of the American Institute of Petroleum Geologists.

### ■ Public Outreach

*Winning the Oil Endgame* has remained in the public eye with continuing favorable media coverage. Although the abundance of coverage has dropped since the book was first published, it has been given attention in high-circulation venues, including the *Washington Post*, *Grist*, *Discover*, Knight Ridder newspapers, and *Salon* magazine (among others) within recent months, as well as many smaller publications including such local outlets as the *Aspen Times Weekly*. All told, *Winning the Oil Endgame* has appeared in the press in one way or another 15 times since the start of 2006. RMI also continues to field 3–5 phone calls per week about *WTOE*, varying from congratulations to requests for topical information.

### ■ And Finally...

- More than 150,000 visitors to [www.oilendgame.com](http://www.oilendgame.com) have downloaded our book since its publication in September 2004.

## Staff Spotlight

(continued from page 19)

completes several backcountry hut trips every year and has taught telemark skiing. Despite his serious mountain endeavors, John claims that his biggest adventure of late has been teaching his 15-year-old daughter to drive. John also has a 12-year-old son and his wife Karen Wyatt is an aca-

demic counselor to athletes at the University of Colorado.

Although his Midwestern approach to life has remained strong, John has set down roots in Boulder, and believes that he has found home. He is proud to work with such talented colleagues and he is buoyed about RMI's recent efforts in the energy sector. And RMI is lucky to have him.

—Cory Lowe

# RMI Solutions

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## Letters to the Editor

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RMI is an entrepreneurial nonprofit organization that fosters the efficient and restorative use of natural, human and other capital to make the world secure, just, prosperous, and life-sustaining. We do this by inspiring business, civil society, and government to design integrative solutions that create true wealth.

Our staff show corporations, communities, individuals, and governments how to create more wealth and employment, protect and enhance natural and human capital, increase profit and competitive advantage, and enjoy many other benefits—largely by doing what they do more efficiently.

Our work is independent, nonadversarial, and transideological, with a strong emphasis on market-based solutions.

Founded in 1982, Rocky Mountain Institute is a §501(c)(3)/509(a)(1) public charity. It has a staff of approximately 50. The Institute focuses its work in several main areas—business practices, climate, community economic development, energy, real-estate development, security, transportation, and water—and carries on international outreach and technical-exchange programs.



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