

WHOLE-SYSTEMS THINKING



ROCKY MOUNTAIN INSTITUTE

ANNUAL REPORT  
2000-2001

# From the Executive Director



**T**his Annual Report highlights the history of RMI, emphasizing RMI's "whole-systems thinking." It's an interesting story that will help you understand why RMI's unique approach is a key to our continued success.

You'll notice that details about the Institute's future aren't included. There's good reason. Throughout RMI's 19 years it has been guided by various "strategic plans." We've used scenario planning, formal and informal strategic planning, and just good ol' brainstorming. In 2000, RMI completed a formal process of strategic thinking. The consultants we hired to guide the Institute quickly realized that RMI isn't a candidate for a conventional strategic plan. RMI doesn't follow a set path because the world doesn't follow a set path. Life isn't scripted or predictable. Neither is RMI's work. It's opportunistic, strategic, spontaneous, responsive, proactive, and reactive, all at the same time. It catches us by surprise sometimes. But RMI works well both by thinking ahead and by taking advantage of teachable moments and windows of opportunity as they arise. The consultants led us through a process they call strategic thinking, but the output is a living process, not a

static document; it's a journey, not a destination.

It has been said that the only way to predict the future is to create it. While RMI certainly has influence, no one organization can be the master of the future. The strategic thinking exercise that RMI undertook taught us how to select the best of the diverse opportunities, and to guide us as we set out, for example, to make natural capitalism a central organizing principle of business. Strategic *planning* is for organizations that can predict their future, but strategic *thinking* gives RMI the ability to be fast-moving and improvisatory as it helps to shape a dynamic world.

RMI's forte has always been its ability to offer new solutions to some of the world's most serious problems: energy, climate change, transportation, water shortages, wasted materials, unsound real estate development, global insecurity—anything humans do or need that can be done more sensibly, more economically, and in a way that doesn't harm nature but rather restores it. These issues are constantly evolving. Some are now at crisis levels; others have passed their crises and waned. Some of today's crises *du jour* are really crises *déjà vu*.

For example, this past year RMI weighed in on oil extraction in the Arctic National Wildlife Refuge (ANWR) and the electricity crisis in California. If you'd asked us a year ago whether or not we'd even be talking about these matters, we'd have said no. RMI had delved into Refuge and oil-security issues previously, most recently in 1987–91; we'd also laid most of the foundations of modern least-cost electricity strategy and efficiency, and then as energy efficiency succeeded, the issues dropped from the public agenda. But as 2000 progressed, the botched restructuring in California (which RMI tried to warn against since 1994), and the Administration's overemphasis on supply in outmoded forms, returned both to crisis stage. So we felt obliged to step in and remind listeners that we've been here before, there are solutions that worked then, and it'd probably make sense to use them again. No one predicted that these two matters would become such big issues in 2000–2001.

As you look at RMI's track record, I hope you'll agree that we've done a good job of choosing important and pertinent issues, staying agile enough to apply and adapt our intellectual capital as unpredictable events demand, and crafting solutions that make a difference. We ask that you support us however you can, and join our journey of discovery as we tackle the world's complex, ever-shifting challenges. That's what RMI is all about!

**Marty Pickett, Executive Director**

*P.S. This report covers 18 months because RMI has changed its fiscal year. For a detailed explanation, please see page 22.*

# Where We Came From

## How RMI Learned to Think Like a System

In its nearly two decades, Rocky Mountain Institute has had a marked effect on humankind's worldwide activities in energy, transportation, building design and development, economic renewal, climate change, and water use. We have guided heads of state and local planning boards, consulted for the leaders of the world's biggest companies and for small Main Street businesses, advised presidents and given slide shows to entertain schoolchildren.

Such success as RMI has enjoyed, however, have resulted not only from technical expertise, our persuasive consultants and informative publications, or access to corporate and political ears, but it has also come from taking a whole-systems approach.

Whole-systems thinking is applicable to almost everything humans do. It can inform business, community, and academia—even basic human relationships. In 2001, as we celebrate RMI's 19th birthday, we invite you to look back with us at how RMI's version of whole-systems thinking came to be 25 years ago.



Amory and Hunter Lovins discussing "Soft Paths" with Asian visitors, circa 1978, the year they met. They founded RMI in 1982.

### The Oil Embargo

Our story begins in late 1973. The price of crude oil had been holding steady at around \$3 a barrel for over 20 years. In early October 1973, Syria and Egypt launched an attack on Israel. Many Western nations including the United States supported Israel in the conflict, resulting in an oil embargo by Arab oil producers. The Yom Kippur War also marked an important mile-

stone in American and world history. For the first time ever, the United States did not control the world's crude oil prices. A 1960 organization formed by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela and called simply "OPEC" (Organization of Petroleum Exporting Countries) was now in the driver's seat. None of these events was lost on Americans. Most U.S. residents spent hours waiting in line to fill thirsty gas tanks. The immediate response from citizens to heads of state was a call to find more energy, as much as we could, from any source. The trouble was that most known ways to increase supply would cost a lot, destroy communities and wildlands, and lead to political deadlock.

**"Those of us who owe our careers [in energy policy] to a single surprise in 1973 often cheerfully go on to assume a surprise-free future. The one thing we know is that it won't be like that."**

—Amory Lovins, CEO (Research)



The situation prompted a 29-year-old Oxford University dropout (who was also the youngest don in the university's history) to pose his own ideas about the world's energy situation. In "Energy Strategy: The Road Not Taken?," published in the Fall 1976 issue of *Foreign Affairs*, physicist Amory Bloch Lovins stood the policy world on its head by asking and answering a very different set of questions. Rather than focusing on how to get more energy, he asked, "What are the tasks for which we need energy? How much and what kinds of energy do we need for each task? And what is the cheapest way to supply that energy?"

This "end-use/least-cost" idea turned energy thinking around and still underpins much of RMI's work.

Meanwhile, the *Foreign Affairs* article had an explosive effect. The Senate held hearings on the concept. The conventional energy industry attacked Amory. For two years he wrote heavily documented responses to dozens of

attacks on him. Congress published the results in two fat volumes that came to be known as "The Green Paperweight." In 1979, the environmental organization Friends of the Earth published the criticisms and rebuttals, edited down to one volume called *The Energy Controversy*.

Amory's approach might seem like common sense, but in the mid-1970s, the general thinking about energy was backwards: first produce the energy,

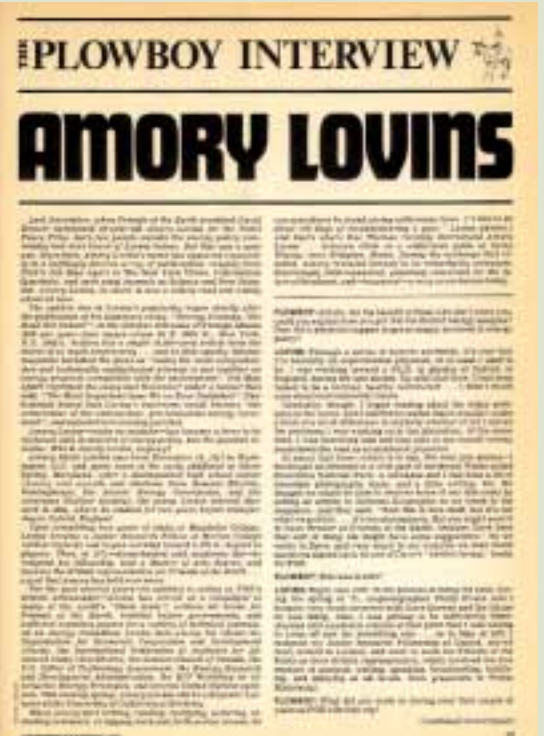
then sell it. But by focusing first on the job to be done, then matching supply in scale and quantity to that end-use, and suggesting that the cheapest way to meet our needs is to deliver the energy services more efficiently, Amory revolutionized energy policy.

### The 'Human' Side of Whole-Systems Thinking

In the early 1970s, Hunter Sheldon was a feisty young law student in Southern California. She was a barrel-racing cow-girl, a firefighter, a forester, and a person with a passion for effective solutions. She saw law school as a way to learn the policy tools to create change, not as a career path to a big salary. So rather than interning at some fancy firm, she teamed with an activist named Andy Lipkis to help him implement a project to plant trees in Los Angeles and the surrounding



A portrait of the artist as a young man: RMI's Amory Lovins as he appeared in *The Mother Earth News*, November/December 1977.



**"People have never actually wanted kilowatt-hours of electricity or barrels of oil. Rather, they want the 'end-use services' that energy provides—hot showers, cold beer, baked bread, smelted alumina, comfort, mobility, and so on. Thus, it's the cost and manner of obtaining those services—not of the energy that drives them—that should be the central focus of energy policy."**  
—Amory Lovins, CEO (Research)

mountains. Tree People, still one of the nation's premier urban forestry and environmental education organizations, was born.

While most environmental groups of the day turned up their noses at the corporate and institutional worlds, Tree People's members were on the streets of Los Angeles and out in the woods, rolling up their sleeves and getting dirty with whomever would help plant trees. They worked with four-wheeler clubs and environmentalists, schoolkids and executives from big oil companies, the Air National Guard and garden societies. As long as trees were going in the ground and people were being revitalized through contact with living things, all were welcome to join. Hunter had spent her spare time since about 1971 teaching herself energy policy, seeking an internally consistent



Hunter, then Assistant Director of Tree People, in 1975.

**“Organizations are just groups of people. Some are interested in new ideas, some aren't, some are more experienced and some less, some are better intentioned than others, but all are made up of people trying to do the right thing. If you can provide them with a rationale for doing it your way, typically they will.”**

—Hunter Lovins, CEO (Strategy)

approach. Reading Amory's article in *Foreign Affairs*, she realized she'd found it. She felt Amory's approach deserved to have a wide audience, but it was so technical that few citizens would tackle it—so she translated it into ordinary English and added it to what she was teaching.

Introduced by the Chief Economist for Atlantic Richfield, who knew that Hunter was giving Amory's work a broader base, Hunter and Amory integrated their careers in 1979. They

started writing together, speaking together, and traveling the world, working in about 30 countries. Technically, they were based in London; practically, they lived out of a beat-up old brown suitcase they affectionately called House. Amory and Hunter became travelling troubadours of a new way to solve the problems of the world.

### **Power on the Brink**

The Lovinses were on the front lines of the battle then raging over ways to solve the energy crisis. They worked for David Brower's Friends of the Earth, but consulted for financial ana-

lysts, oil companies, governments, and electric utilities. They argued that favoring the best buys—using existing energy supplies more efficiently, then buying the cheapest source of supply—is just good business. They suggested that a market approach would not only solve the energy problems most economically and quickly, but would also help protect the environment.

This flew in the face of conventional wisdom. Democratic and Republican Presidents and industries of all sorts called for government subsidies for their favorite technologies. If the problem was that we were running out of energy, obviously the answer had to include drilling more oil and gas wells, mining more coal, and building more power plants. But environmentalists and community groups were making it very hard to increase supply. Energy policy was in a deadlock.

Amory and Hunter huddled. Where was the real leverage? Who could make decisions that could move the debate? Using the human component of whole-systems thinking drawn from Hunter's Tree People roots, they headed for the corporate offices of the big utilities to convince executives that they could make more money delivering efficiency to their customers than

**“We’d show the VP of finance for some utility that was in a life-or-death struggle with anti-nuclear protesters that if the company completed the power plant it would lose money. Then we’d say, ‘Your choice. You don’t have to be anti-nuclear, but if you favor the financial health of your company, you’ll cancel that plant.’ Many did—and thanked us afterwards for having saved their company.”**

—Hunter Lovins, CEO (Strategy)

by building power plants. The Lovinses met with policymakers from Wall Street to Main Street, showing that every new plant that comes on line would waste money that could be more effectively spent on efficiency, and that cheaper, better alternatives were entering the market, offering better service at lower risk.

## A House Where?

Life on the road can make anyone think about settling down.

As the Lovinses started to talk about where in the world they might like to live someday, they realized that the

choice depended first on comparative jurisprudence. Much of their work then was on nuclear non-proliferation issues. They had written technical papers and a book on how the plutonium used in nuclear power plants can also be used to produce very effective nuclear weapons. It was a sensitive topic worldwide, and every nation on earth, except to some degree the United States, could declare such writing a violation of official secrets laws. Because of the American constitution and justice system, Hunter and Amory felt they ought to settle in the U.S.

Hunter and Amory dreamed of a rural retreat where they would have the time and mental space to think and write. To be effective without the infrastructure of a city, they needed good air service, computer repair, a modern phone system, and the sorts of amenities that few small towns then offered. After exploring offers from many parts of the country, they picked the Aspen area, not only because it offered the needed services, but also because it was a place many people want an excuse to come to—which, thought the Lovinses, would enable them to travel less. (It was a good theory—Amory still travels about half the time, Hunter about a quarter. And tens of thousands of visitors have come to them.)

The Lovinses also suspected that the lessons they had learned from energy policy would apply to water policy, which was making the same mistakes as energy: trying to supply more, at any cost, from any source, and ignoring more efficient use. Most water is used in agriculture, which was also in a crisis. The collapse of agricultural towns was leading to economic development policies that were all supply-oriented: attract new industry, rather than increase local self-reliance. The Lovinses were concerned that bad resource policy was making the world less safe, thus increasing the demand for nuclear weapons. All these issues and many more were interrelated. Traditional policies that seek answers one at a time were only creating new



Left: **Glory Days:** RMI's team, circa 1985.





RMI headquarters under construction, summer 1982.

problems. But there were only two of them, and only 36 hours in a day. If they were going to be able to think about the bigger whole-systems, they were going to need help. That meant some form of organization. Hunter suggested that they create their own institute. Amory's reaction was "Oh horrors, administrivia!" Hunter assured him that she would look after the day-to-day management; all he had to do was keep creating new ideas and ensure quality control. Thus, in April 1982, Rocky Mountain Institute was born. They figured that a dozen people ought to do the trick.

### **Energy-Efficient Bananas at 7,100 Feet**

In 1982, the Lovinses worked with architect Steve Conger to design a home for RMI. It reflected their ideal—efficient, smart, and comfortable. Built over the course of a year and a half with over 100 volunteers guided by professionals, the 4,000-

square-foot building is passive-solar, superinsulated, and earth-sheltered. It has no heating system in the usual sense, but is kept comfortable even at  $-20^{\circ}$  F by passive solar gain through the superwindows. Bananas and fish flourish in the greenhouse. Savings of 99 percent in space- and water-heating energy and 90 percent in household electricity repaid their cost in 10 months. More importantly, RMI's headquarters building has shown homeowners what's possible. Every year we receive thousands of inquiries from people looking to follow the example.

### **Info, Info Everywhere**

Almost immediately, RMI started attracting donations. One of the first grants was to apply the lessons of whole-systems thinking to water. In the early 1980s, America was building centralized, capital-intensive supply technologies to deal with perceived shortages rather than examining how shortages might be averted through efficient use and distributed supply technologies at a local level.

RMI researchers did one of the first solid analyses of using water efficiency to displace the need for more supply,

*"RMI now has six full-time and eight part-time staff—equivalent to about ten full-time—and we will stabilize at about a dozen full-time .... The computer is coming! RMI has so far gotten along with a borrowed typewriter, paper-ledger accounting and one (lately two) hard-wired dedicated word processors—fast but dumb Laniers of 1976 vintage ... Rick Heede just pledged \$50 from his meager salary toward a portable computer."*

—RMI's First Newsletter, Dec. 15, 1984

“The logo was designed by a talented neighbor, who happened to be a graphic artist. We wanted something that had the respectability of an academic seal, but also the glisten of a new idea. The designer pointed out that if you rotate some stars a little bit they start to twinkle. We were stuck on what color to make it. A line from Jimmy Ibbotson’s song about Colorado, ‘Rippling Waters,’ was running through my head: ‘Blue spruce flaming on the grate in the evening takes the chill away fine.’ I thought, ‘That’s it. Blue Spruce! That’s Colorado!’ I grabbed a hank of spruce needles and said ‘Here, this color.’ We took the spruce needles down to the printer and found that officially, the color is 16 parts process blue, 1 part black, but to us RMI’s color is the State Tree of Colorado: blue spruce.”



—Hunter Lovins, CEO (Strategy)

as well as a study of the economics of efficiency. As part of the study, RMI created the first catalogue of available technologies for using water more efficiently, then worked with other groups to take on such tasks. Today there are trade and professional associations focused entirely on water efficiency.

This approach—of putting information

on the available technologies out into the public realm, then fostering other groups to maintain the flow of information—became another hallmark of RMI’s approach: share information, then watch good people do great things. Today, plumbers’ supply companies publish all sorts of catalogues on water-efficient devices (like showerheads and toilets), but in the early

1980s, such simple information was unavailable.

Our work with water has also blossomed into a key element of our work. Longtime RMI researchers Richard Pinkham and Bob Wilkinson are currently working on efforts to show that as with electricity, wastewater treatment works better and cheaper in smaller, distributed systems, as well as whole-systems synthesis of managing entire basins.

### RMI Takes It to the Streets

In early 1983, local officials fighting the threat of massive oil-shale mining in Western Colorado asked for RMI’s help. The dismal economics of the proposal probably had more to do with its demise than RMI’s analyses, but out of this work grew a conversation. Michael Kinsley, a Pitkin County Commissioner (where RMI is located), and Hunter began asking what real economic development for small rural towns should look like. Together they created RMI’s Economic Renewal (ER) department, offering sustainable alternatives to conventional development that can be used by community leaders and activists virtually anywhere.

Assembling hundreds of stories of what communities have done, they developed a hands-on process to enable citizens to discover and create their own successes. The detailed and now successful *Economic Renewal Guide* (also available in Spanish and Latvian) has been used by coal towns, timber-dependent communities, and even inner-city neighborhoods.



RMI’s original Economic Renewal Team: Irene Friedman, Beth Richmond, Michael Kinsley, and Hunter Lovins, in 1985.



Michael and his ER team are now developing an interactive Web tool to provide community-specific evidence—in terms of jobs, income, and avoided pollution—that sustainable development can compete favorably with conventional development. ER takes whole-systems thinking and makes it applicable to local decisionmaking.

### A Private Spin-Off

Around 1984, a nonprofit entrepreneur named Richard Steckel questioned whether nonprofits should have to beg for a living. He felt that nonprofits should create for-profit businesses based on their research and work; then they could do their service in the public interest but make a living from it. The idea of combining RMI's work and free enterprise appealed to the Lovinses. They discussed many business models based on RMI's intellectual capital, but none seemed right.

In 1985, Hunter and Amory were in New York briefing financial analysts and the folks at *Business Week*.

Everywhere they went, people were talking about how the electric utilities were in trouble. Many were going bankrupt because they couldn't afford to pay for the big centralized plants RMI had advised them not to buy. The industry was in disarray. As RMI was trying to guide policymakers and utility executives out of the mess, Hunter realized she'd found the business they'd been looking for. RMI began putting together an information service for electric utilities, utilities' major customers, and regulators. Originally called COMPETITEK, it pro-

vided dispassionate data on all aspects of electric efficiency—"negawatts." COMPETITEK took off, soon growing to eight employees. But to achieve its mission, it needed to behave more like a real business than it could as a department of RMI. It needed larger offices, undistracted staff, and a bottom-line mentality, not RMI's long horizon and charitable mission. In 1992, after two years of figuring out how to do it, COMPETITEK became RMI's (and one of the country's) first formal for-profit spinoff as a wholly-owned, independently managed subsidiary. E SOURCE, as it was renamed, soon became one of the nation's fastest-growing businesses and the premier provider worldwide of technical and strategic information on advanced electric efficiency and related energy services.

The spinoff worked well in many ways, especially after RMI, in 1995, gave two-fifths of the equity to E SOURCE's employees as an incentive for further growth, which soon reached 69 percent a year. The firm's sale in 1999 to the *Financial Times* group provided RMI with its first real start at an endowment fund. Freed from the responsibility of guiding its subsidiary,



Amory, on the road with a show-and-tell kit of gizmos illustrating a U.S. energy efficiency potential of hundreds of gigawatts, in the mid-1980s.

RMI also used the intellectual and physical space to move into new areas—specifically, commercializing the Hypercar<sup>SM</sup> concept it had been incubating since 1990–91. (In 1999, the spinoff of Hypercar, Inc. would offer that same physical and mental space to create the Natural Capitalism Practice.)

### Powerful, Worldwide Influence

RMI's influence on the world during the past two decades has been nothing short of remarkable. Hundreds of indi-

viduals have passed through RMI's staff, en route to influential careers in fields ranging from science and technology to the arts and humanities. Some came to RMI already established as leaders in their fields; others worked at RMI and went on to great things after RMI. Either way, many RMItes have gone on to do significant work—just ask former General Secretary of the Communist Party of the Soviet Union, Mikhail Gorbachev.

In the late 1970s, a young Aspen kid named Hal Harvey went off to Stanford, where he became involved in Stanford's Arms Control and Disarmament Program and security issues. After Hal graduated, RMI brought him on to run the Institute's security group. Hal, along with Mike Shuman (now head of the Institute for

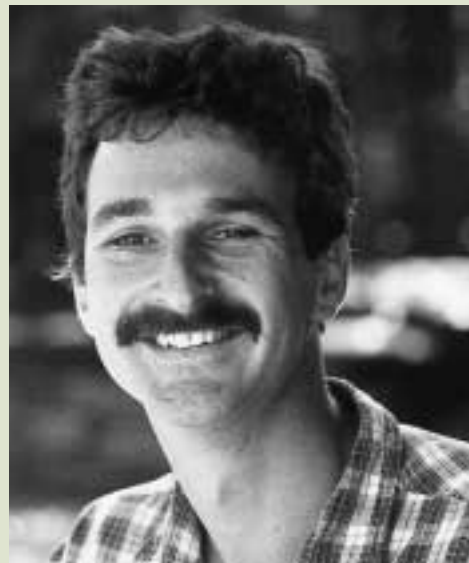
Policy Studies) wrote a book on conflict management (*Security Without War*), describing what could be done about global security. In 1985, during an RMI trip to the Soviet Union, Hal was able to meet with Yevgeny Velikhov, a leading Soviet nuclear physicist and one of the most influential scientists in Russia. Hal, like a good RMIte, shared the security ideas he and Shuman were developing at RMI. Not long thereafter, Gorbachev headed off to Reykjavik to announce unilateral disarmament, and intensified his path for political openness (*glasnost*) and transformation (*perestroika*). It's difficult to know the extent of RMI's impact on Soviet policymakers, but a few years after the event, RMI's Amory Lovins was told by a member of Gorbachev's cabinet that the Soviet leader had indeed been influenced by

RMI's fresh thinking on security. Hal Harvey now heads the Energy Foundation.

Other RMItes have led significant lives, with important results. Many have found their way into government and private industry. Others have gone on to write influential books or start organizations of their own. The Roaring Fork Valley, RMI's home, is filled with RMItes who have become community leaders in development, sustainability, and environmental and social issues.

## 'Whole-Systems' Buildings

By the early 1990s, RMI's Old



Hal Harvey in the mid-1980s.

Snowmass neighbor, the Windstar Foundation, was shrinking. With more than 30 staff and still growing, RMI worked out a deal in which it would maintain Windstar's Old Snowmass building and grounds in exchange for use of offices on the top floor.

A young man named Bill Browning—one of the volunteers who'd help build RMI's headquarters—had worked at Windstar, but as the foundation contracted, he was laid off. RMI struck up a deal: RMI would support him through MIT real estate school on the condition that he would return and establish the green-buildings program that Amory and Hunter had wanted to start for years.

In 1991, RMI established Green Development Services (GDS) to show that a whole-systems approach to design can make buildings more comfortable, more efficient, more appealing, and ultimately more profitable. This approach gained rapid suc-



Hunter and Agent Orange (a pet iguana) examining an early 1990s banana crop in RMI's headquarter's "jungle."



Bill Browning in GDS's early days.

cess as RMI worked with developers instead of against them. GDS staff guided the design for the “Greening of the White House,” the renovation of the Pentagon, the design for the athletes’ village at the Sydney Olympics, and hundreds of other projects. GDS works with developers, architects, facility managers, and other real-estate professionals to integrate resource-efficient, environmentally responsive, and culturally sensitive design into buildings and communities. The results are more profitable to build or retrofit, less costly to run, healthier and more comfortable to occupy, and more productive to work in. This allows practitioners to create and manage the built environment in ways that dramatically improve human and natural communities. By now, with outreach support from the Urban Land Institute, the American Institute of Architects, and a large global network of practitioners, GDS is the acknowledged

leader in this revolutionary and rewarding approach to design and development.

Today, as a result of GDS’s work, many people are enjoying more productive, happier, healthier working lives, and the companies that employ them are seeing better bottom lines.

### Driving for Solutions

Around 1990, many people were urging RMI to get involved in transportation issues. The request didn’t make much sense to Amory and Hunter. Other people were doing excellent work in transportation policy—why us too? But Amory accepted a July 1991 invitation to co-keynote the technology day of a National Academy of Sciences symposium on efficient vehicles. As a recovering physicist, he’d been curious for 20 years about why, after a century of engineering effort, cars were using only

one percent of their fuel energy to move the driver. And it occurred to him that many, though not all, of the transportation challenges could be resolved if someone created a better car, an uncompromised vehicle that was vastly more efficient and that emitted nothing.

In 1991, setting aside contemporary automotive design, Amory, Hunter and a collection of colleagues imagined what a car could be if designed from scratch. The result was the Hypercar<sup>SM</sup> vehicle—an ultralight, ultra-low-drag, hybrid-electric car with highly integrated, radically simplified, and software-rich design. The resulting work won the 1993 Nissan Prize and launched a new focus at RMI: an engineering and policy group, the Hypercar Center<sup>®</sup>, which refined the concept in depth through 1998, one-third supported by consulting and technical publications. The challenge became



RMI introduced the Hypercar<sup>SM</sup> concept in 1992. In the spring 2001, Hypercar inc., unveiled its prototype ‘Revolution.’ Photo: Norm Clasen





A young Rick Heede celebrating a birthday in RMI's early years.

getting the vehicle to market.

"In the early '90s, I was giving expert testimony in a lawsuit," Amory recalled. "A company called Luminoptics had invented a superefficient ballast for fluorescent lights. Another company bought the patent just to sit on it. For a decade, this supe-

etal loss.) The last thing we wanted to see was Hypercar<sup>SM</sup> principles similarly stymied. How could we best ensure that this design became transformative, that it invited or even forced the car companies to do something completely different? We decided the best way was the free-

software approach—put the concepts in the public domain so nobody could patent them, then get everyone fighting to exploit them first. So we did that in 1993, and by the end of the decade, about \$10 billion had been committed to this line of development."

In 1998, RMI joined with 17 industrial partners in an independent feasibility study by UK-based Lotus Engineering. Encouraged by the results, in 1999 RMI spun off its development effort into a for-profit firm called Hypercar, Inc., of which RMI is a minority shareholder. The firm raised \$5 million of private equity capital; developed an

uncompromised, manufacturable, and production-costed 99-mpg midsize sport-utility vehicle; and quickly gained the respect and attention of the industry to which it plans to license its

proprietary designs. Today, Basalt-based Hypercar, Inc. is designing the future of the car industry. (For news, visit [www.hypercar.com](http://www.hypercar.com).)

Meanwhile, RMI had been rethinking another puzzle. Hypercar<sup>SM</sup> vehicles were ideal for direct-hydrogen fuel cells, because the car needed so little power that it made the fuel cells small

**"Given enough time, natural capitalism would implement itself. It makes economic sense, it solves a lot of problems profitably, and it is an exciting approach to our future. However, the situation may be more urgent."**

—Tom Feiler, Managing Director

enough to afford and the hydrogen tanks small enough to fit. This could greatly accelerate the switch to a climate-safe hydrogen economy—if someone could figure out where to get the hydrogen. By 1999, "A Strategy for the Hydrogen Transition" had shown how integrated deployment of fuel cells in Hypercar<sup>SM</sup> vehicles and in buildings could make the transition profitable at each step, starting immediately. Now, nearly 10 years after Amory and his band of automotive mavericks first began work on the Hypercar<sup>SM</sup> concept and hydrogen strategy, their ideas are being widely adopted by major energy and car companies.

**"Taking natural capitalism to a world scale means making it accessible not just to industry, but all segments of society. Doing this will require far more people and work than RMI alone can deliver. Rather than grow RMI to an unwieldy size, RMI will intensify and focus its collaboration with other organizations to get the message out."**

—Karl Rábago, Managing Director

rior technology was locked away and Americans were deprived of more than \$100 billion in present-valued benefits. (The inventor won and recovered damages equaling 0.1 percent of that soci-

### **Natural Capitalism— Whole-Systems Thinking for Business**

In 1998, Amory and Hunter undertook the ultimate exercise in whole-systems

thinking, joining with entrepreneur and business author Paul Hawken to put over 20 years of their collective work into *Natural Capitalism: Creating the Next Industrial Revolution*. By 2001, an estimated 80,000 copies of *Natural Capitalism* were in print worldwide, and it had been or was being translated into Chinese, Danish, Estonian, German, Italian, Japanese, Korean, Russian, Portuguese, and Turkish.

*Natural Capitalism* the book, and natural capitalism the philosophy, build on all of RMI's previous work by telling the stories and showing off examples of how businesses, governments and individuals can make more money doing what they already do, but by doing it more efficiently.

The next step? Help early-adopter firms succeed so well as natural capitalists that their rivals would have to follow suit.

In 1999, the Natural Capitalism Practice was created, and RMI staff were soon jetting all over the world teaching, consulting on the principles of natural capitalism and studying sus-

**"I have been convinced for years that it is no longer necessary to choose between growing the economy and preserving, and even improving, the environment. But it is quite necessary to abandon the Industrial Age energy use patterns....So I urge you to all read a book—I'll hawk a book here—*Natural Capitalism*, by Paul Hawken and Amory and Hunter Lovins. It basically proves beyond any argument that there are presently available technologies, and those just on [the] horizon, which will permit us to get richer by cleaning, not by spoiling, the environment."**

—President Clinton

tainable business practices. The Natural Capitalism Practice is the latest and deepest embodiment of fundamental whole-systems beliefs that Amory and Hunter developed as they built the Institute. And not surprisingly, the whole-systems thinking that permeates this work appeals to some of the largest companies on earth, from Royal Dutch/Shell to Coca-Cola to Lucasfilm to DuPont.

And the work is just beginning. Next, RMI plans the creation of the Natural Capitalism Academy, working in conjunction with the Global Academy's experts in transformative education, to

achieve its goal of making natural capitalism a central organizing principle of business worldwide.

Amory's energy end-use approach has shown time and time again that a solution starts by asking the right questions. Hunter's approach of working with organizations rather than against them, and sharing information rather than hoarding it, has helped RMI illuminate a path for thousands of businesses, governments, and individuals around the globe. We hope you will join us in using whole-systems thinking to tackle the challenges that await.

## Awards of 2000–2001

As usual, RMI picked up some prestigious awards and accolades during the last 18 months.

**Amory and Hunter Lovins** were named Heroes for the Planet (2000) by *Time* magazine. A special issue of *Time* on climate change celebrated the Lovins's intellectual synthesis that led to Hypercars and advocacy for energy efficiency over increased supply. They also shared the 2001 Shingo Prize (for Excellence in Manufacturing Research) with Paul Hawken for *Natural Capitalism*. The prize, highly esteemed by industry, recognizes publications or software that broaden the body of knowledge in new theory and application of lean manufacturing practices.

In 2000, **Amory Lovins** won the Happold Medal from the British Construction Industry Council, and The World Technology Award for Environment (he was also runner-up in Energy) from *The Economist*.

In early 2001, **Hunter Lovins** won the annual LOHAS Award for her business leadership. She also received an honorary doctorate from Northland College (2001) and an Outstanding Community Service Award from Loyola University (2000). Additionally, Hunter was named one of four people from North America to serve as a delegate to a United Nations preparatory conference for the UN's 2002 World Summit on Sustainable Development in Johannesburg.

In early 2001, **Bill Browning** was awarded honorary membership in the American Institute of Architects. The honorary membership is bestowed on those non-architects who have made significant contributions in the field of architecture and to the AIA. Only a handful of the coveted appointments are made each year.

# Strategic Influence

## Changing the Hearts and Minds of Decisionmakers

**R**MI cofounders Amory and Hunter Lovins have long helped heads of state from many nations (about 15 at last count) understand the relationships between efficiency and security, environmental protection and prosperity. Last year was no different. In 2000, RMItes briefed European and Asian royalty, a European head of state (who set up a Cabinet Office task force to implement key recommendations of natural capitalism), six ministerial-level meetings of international agencies, and the chairs of five of the world's largest firms.

Throughout 2000–2001, RMI staff gave hundreds of presentations, lectures, panel discussions, conferences, and broadcasts on climate protection, natural capitalism, and resource productivity. Indeed, RMI took part in so many important meetings and presentations that we can present here only a tiny sampling of our activities for the past year and a half.

### California Schemin'

During California's energy "crisis" (which didn't really need to occur), Amory was kept busy in Sacramento with major technical addresses on natural capitalism, electric efficiency, California's opportunities, policy, distributed generation, hydrogen, and fuel cells. RMItes also met with Gov. Gray Davis, several of his Cabinet members (including the Secretary of Resources and the Vice Chair of the California Water Resources Control Board), and key agency leaders and legislators. RMI's Amory and Hunter Lovins, Tom Feiler, Karl Rábago, and Joel Swisher gave dozens of newspaper, magazine and television interviews, and wrote numerous op-eds.

Dr. Swisher also gave a presentation to the United States Conference of

Mayors' Energy Summit in Chicago. The Summit offered mayors tools with which to address energy crises. A drill and workshop on emergency preparedness were followed by an extensive dis-

**"Amory, Hunter, and other senior RMItes are in constant demand from leaders in positions of influence. They want RMI to weigh in on just about everything, from which technology to choose to the design of the future."**

—Marty Pickett, Executive Director

cussion of emergencies by municipal emergency managers, and industry experts.

### Over to China

With the decline of the Soviet bloc, China has reached a new level in terms of world prominence; how this nation of 1.3 billion develops during the next few decades is of great concern to RMI. In July 2000, Hunter and Amory Lovins keynoted the International Symposium on Ecological Improvement, Environmental Protection, and Sustainable Development in Shanghai, and met with various government, business and university officials. The event included the official—and very successful—launch of the Chinese version of *Natural Capitalism*. The book sold out in two days. The Mayor of Shanghai bought 700 copies to give to his senior officials. On a subsequent trip to the Orient in August, the Lovinses met with top officials from Taipower and the Taiwanese government, who were

considering whether to finish a \$5.4-billion, 2.7-gigawatt nuclear plant. Amory and Hunter were able to dissuade the Taiwanese, and suggested safer, cheaper, faster energy options, though that choice was later overturned politically.

### Banking the 'Green'

Asian Development Bank Environmental Manager Warren Evans partnered with RMI in September 2000 on a three-day charrette to review the Bank's Asia Environmental Outlook 2000 and introduce participants from around the globe to natural capitalism. RMI's Christopher Juniper, Karl Rábago, Hunter Lovins, and Bob Wilkinson made presentations and facilitated discussions about innovative ways to approach the environmental challenges of developing Asian countries. The Bank is taking a strong environmental approach to development patterns and has produced outstanding publications, including *Sustainable Development in Asia*. Subsequently, in May 2001, Amory Lovins was a Bank guest at its annual Mayors Asia-Pacific Environmental Summit in Hawaii.

### Tea for a Few

Ever since their Friends of the Earth days in the early '70s, RMI's Amory and Hunter Lovins have kept strong ties with influential British leaders. That hasn't changed. In March 2000, Amory visited Great Britain where he delivered the keynote Happold Medal Lecture to the British Construction Industry Council in London. He gave an address on radical resource efficiency through the principles of natural capitalism. During the same visit, he also gave the Millennium 2000 speech on natural capitalism, and two days later presented natural capitalism to about 20 British policy advisers and



senior officials from the Prime Minister's office and the Cabinet Office.

### Group Dynamics

Working with other groups doing important work, and exchanging ideas and information, are at the core of RMI's mission. Throughout 2000–2001, several RMItes attended meetings of the Society for Organizational Learning (SOL), a corporate consortium, as well as meetings with many other NGOs. As Hunter notes, "SOL is a very effective connection between large companies pursuing sustainability, NGOs, and academics. It's good for RMI to be there."

### Helping the West See Far East

In recent years, many Japanese firms have learned about zero emissions and have embraced the concept. Many have set and achieved goals of eliminating everything they send to landfill by either designing it out or recycling. "Japan has always been a source of technical innovation and thinking in different ways," says RMI's Amory Lovins. "When field staff of certain utilities come back at the end of a day to catch up on their paperwork, for example, they all sit at one end of the room. That way, they can run the lighting and cooling in one spot and avoid wastefully lighting and cooling the entire room." In early 2001, Amory keynoted a national conference on energy policy and another on energy efficiency. He also gave a briefing to the Parliamentary caucus on renewable energy, consulted for Osaka Gas and Tokyo Gas on the hydrogen transition and the Hypercar<sup>SM</sup> concept, and in between engagements managed to find time to speak to dozens of journalists.

### How Green Is My Building?

RMI's Green Development Services (GDS) has seen a substantial increase in the amount of consulting work it is contracted to perform, as well as in the scale of those projects. Perhaps just as

important as individual consulting jobs are GDS's efforts to set industry standards. Throughout 2000, RMI's Bill Browning continued to serve on the boards of Greening America, the U.S. Green Building Council (USGBC), and the Trust for Public Land's National Real Estate Advisory Council. Also in 2000, the U.S. Green Building Council LEED (Leadership in Energy and Environmental Design) rating system was released; RMI helped create this much-needed system.

### Airtime in England

The current system of human air travel is perhaps one of the most oddly designed systems of transportation known to humans. Planes deposit people miles from where they really want to go, covering thousands of unnecessary miles via hubs, and their engines burn huge amounts of fuel pushing wide-bodied craft through the air. RMI believes air travel will change dramatically (for the better, thank you) in the coming decades. In March 2001, RMI's Amory Lovins addressed a high-level industry-government seminar on how to make the aviation industry climate-compatible. Assembled by The Ashdown Trust, the seminar represented the first time policymakers and industry leaders concerned with the environmentally- and economically-linked futures of the air industry had collaboratively discussed air travel and its future.

### Nukes, Again?

Since the California energy crisis, many people are re-examining nuclear power. In 2000–2001, Managing Directors Karl Rábago and Tom Feiler were involved in many efforts to debunk the myth that nuclear energy is cheap (which it is not), necessary (which it is not), safe (which it is not), and easily sited and built (which it is



Amory with President Jimmy Carter, 1977.

not). Amory and Hunter published several articles—including an op-ed in the *LA Times*—explaining nuclear power's problems and alternatives. Amory also co-keynoted the Nuclear Control Institute's annual conference on whether there's a future for nuclear power, whether it's consistent with the non-proliferation of nuclear weapons, and how to solve energy and security problems at least cost.

### Cows, Monarchs, and GMOs

The 2001 foot-and-mouth disaster in Great Britain was caused by a biologically uninformed approach to agriculture. Foot-and-mouth, mad-cow disease, genetically modified crops, and other recent issues have profoundly changed Europe's and the world's mood about agriculture. Organic farming, once a sideshow of European agriculture, is becoming a major force. RMI is active in biological and agricultural issues, educating people about both fields. In early 2001, Amory keynoted the prestigious annual Balfour Lecture of the UK Soil Association where he spoke about foot-and-mouth disease. He also twice conferred with HRH Prince Charles on these topics.

### Insight for Trading

If you had a gathering of people who manage over a trillion dollars in one room, what would you say? Amory and Hunter knew what to say when they

teamed up with Mike Bertolucci, President of Interface Research, and Walter Link, Chair of Global Academy, to discuss the role of natural capitalism in investment decisions by the big pension funds. “The basic thing we learned,” Amory noted, “is that pension funds are focused on the long-term health of the economy, not just individual companies each quarter. They are peculiarly aligned with the investment objectives of those seeking sustainability, and ought therefore to be interested in promoting natural capitalism.”

### **What State Is Your Nation in?**

It doesn't get much more influential than the State of the World Forum—the organization founded “with the explicit purpose of gathering together the creative genius of the human family in a search for solutions to the critical challenges facing humanity in the 21st Century.”

In September 2000, Hunter and Amory Lovins presented a natural capitalism workshop at the State of the World Forum in New York and participated in a panel event sponsored by the John Templeton Foundation and the Walter Link Foundation. They spoke on globalization, sustainability, and genetics.

### **Home Sweet (Influential) Home**

Throughout 2000–2001, Christopher Juniper, Rick Heede, Thammy Evans, and other RMItes coordinated visits by an impressive stream of international visitors. A sampling includes: five members of the German Bundestag, on climate policy; two senior climate negotiators with the Chinese State Planning Commission and Ministry of Foreign Affairs; the Deputy Director of UN's Industrial Development Organization; major corporate clients; a B2B pollution-prevention website developer from Shanghai; the Director of the Zero Emissions Research Initiative; a green party member of Hong Kong's Legislative Assembly; a Vice-Admiral and senior members of

the U.S. Navy's and DARPA's “Ubiquitous Computing Initiative” and the Navy's Strategic Studies Group; an electric vehicle promoter from Kathmandu; and an official from Queensland's Department of Natural Resources interested in sustainable cities.

### **Showing Initiative in California**

In June 2001, RMI managing director and former public utility commissioner Karl R. Rábago joined a discussion about the California energy crisis with a group of five U.S. Senators and several nationally recognized energy and economic experts. Karl shared the results of RMI's ongoing analysis of what was happening and how energy efficiency would play a major role in addressing the state's problems—a conclusion now proven by the hard data showing dramatic reductions in energy demand. Of even more far reaching impact will be a project that flowed directly from the meeting: RMI has now been asked to lead a National Energy Policy Initiative that will draw on top experts from around the nation. The Initiative aims to establish a common and positive agenda for addressing the nation's long term energy needs.

### **An Energetic Vision**

The energy business is changing across many boundaries, and the world's biggest fuel producers are trying to understand exactly where it's going. In the Spring of 2001, RMI had the opportunity to work with Royal Dutch/Shell's Global Solutions office convening a two-day workshop on emerging energy technologies—part of a longer-running dialogue about future energy systems and fuels. Jan Verloop of Shell Global Solutions in The Hague challenged RMI's leading thinkers to scan the energy horizon and help assess what energy products and services will be in demand, and what technologies will be there to supply the demand. Typical areas of interest for Shell are hydrogen storage, converting

gasoline into hydrogen under the hood, opportunities for biofuels, and reducing carbon emissions through CO<sub>2</sub> sequestration or by other means. The core of Shell's ongoing program is generated by Shell staff; the main theme is sustainability. Shell wants technologies that better respond to the need of future customers, and the company expects sustainability will be required by many consumers.

### **Russian Towards Sustainability**

*Factor Four* was published in Russia in 2000, and, as this annual report goes to press, *Natural Capitalism* is being translated into Russian. RMI has long had an involvement with Russia and the former Soviet-bloc nations, for good reason. They still boast some of the world's greatest thinkers—an extraordinary body of human capital able to do great work. In early 2001, Amory addressed the Russian Academy of Sciences and held private meetings with Moscow's Deputy Mayor (who is very interested in energy-efficient buildings), as well as with other high government officials.

### **Global Academy–RMI Genome Institute**

Humankind's newfound ability to map and manipulate the genome has opened a new era of great potential, great challenge, and difficult decisions. In early 2001, RMI accepted an invitation from the Global Academy to create the Genome Institute (GAGI), a neutral forum for discussion and the exchange of information. GAGI is now convening an International Advisory Board and is hosting a well-established series of international dialogues on genome technology. Proceedings, findings, and the diverse array of opinions one would expect will be published on a new website linked to RMI's website. RMI's Hunter and Amory Lovins will co-chair the international advisory board with Global Academy's Walter Link; all three will jointly direct the work of the Genome Institute.

# Applied Research

## Rolling Up Sleeves, Getting Down to Work

**D**uring the past 18 months, RMI staffers conducted dozens of projects, some so significant they engulfed the entire Institute. Recent consulting clients included the U.S. Department of Defense, H.P. Bulmer, Ltd. (the English cidemaker), and Royal Dutch/Shell. Among our major projects were the following:

### Battling Waste in the Military

Most Americans know the Department of Defense's annual budget is massive—over \$291 billion and rising. But did you know that \$5+ billion of the military budget buys energy? And can you guess where it goes? Much of it powers inefficient weaponry, but a lot of it also goes into moving fuel around to support weaponry. Of the gross tonnage moved when the Army deploys, 70 percent is fuel.



RMItes and colleagues working on a recent charrette. Here, Janine Benyus and Peter Warshall confer with Steve Gliessman and RMI's Bill Browning and David Payne.

A sweeping revolution in military affairs is underway, and in recent years RMI has become increasingly involved. RMItes are now consulting with the military on

building design, energy strategy, and efficiency. Several years ago, RMI's CEO (Research) Amory Lovins was invited to serve on an unclassified Defense Science Board Task Force. It sought to improve DOD's energy efficiency. RMI's work with the board (resulting in the report "More Capable Warfighting Through Reduced Fuel Burden," released in May 2001), as well as other consulting work with DOD, has shown vast opportunities for saving fuel, money and resources while supporting the defense mission.

### Which Cider You On?

In late May 2001, RMI was retained by H.P. Bulmer, Ltd. ("Bulmers"), a £526-million cidemaker based in Hereford, England, to help the company examine its operations with regard to sustainability. Bulmers, a 112-year-old firm with a solid track record of social and community involvement, decided in early 2000 to pursue sustainability vigorously as a way to improve company profits, reduce environmental impact, and help Herefordshire with many challenging land, social, and community issues.

In late May, 2001, Bulmers and RMI co-hosted a "sustainability" charrette. Over 100 participants from Bulmers, RMI, and the Hereford and British agricultural

communities participated. Participants, divided into sub-groups, spent four days thoroughly examining eight areas of the company's operations: sustainable agriculture, community, management, mar-

**"Some very big corporate names are coming to RMI because of natural capitalism."**

—Randi Lowenthal, Managing Director/Operations

keting, packaging and transportation, stakeholders, and manufacturing processes.

RMI's charrette organization and presentation, along with ongoing reporting for the company, has helped Bulmers's managers see that their business can be more efficient and use fewer resources.

Until recently, RMI has generally focused its work on specific aspects of companies: new products or equipment, new processes, reducing resource use, or promoting energy efficiency. With Bulmers, we were able to use our whole-systems approach—looking across boundaries to assess sustainability measures and activities that would benefit not just one sector of the firm, but the whole company and the larger community.

### In Refined Company

RMI likes to learn alongside world industrial leaders. In the summer of 2001, RMI had the opportunity to offer a "Natural Capitalism Innovation Lab" for Shell International, Inc. in Copenhagen. A small team of RMIites, led by Catherine Greener, spent four days with a dozen Shell officials and a group of experts from around the globe discovering new ways to make a refinery (Shell's Fredericia Refinery in West Denmark, which produces three million tonnes of product annually) more efficient.

Working with Shell's technologists and



managers, RMI was able to guide and stimulate the search for new efficiency opportunities. Ultimately, the Innovation Lab identified approximately two dozen projects and initiatives that could potentially yield more than \$10 million in benefits (savings and increased revenue) per year.

### **Making Waves**

Many believe the demand for water will cause our next world wars. Around the globe, groundwater levels are dropping, water pollution is reaching previously unknown levels in unlikely places, and wastewater and stormwater management remain little understood. In mid-2001, RMI's Bob Wilkinson led a major workshop to examine an "Integrated Watershed Management Strategy" for the Chino Basin of Southern California, sponsored by the Inland Empire Utilities Agency and funded by a grant from the Bureau of Reclamation (through the CalFed program). The workshop examined ways to recharge depleted aquifers and to manage stormwater and wastewater better. It included a huge range of stakeholders, from dairy farmers to water agencies, from building industry representatives to local, state, and federal officials. Now this successful approach is spreading to other regions.

### **Higher Education in Ohio**

We've been working on climate issues for 19 years, and the "communities" we consult with are many and varied. In March 2000, led by climate researcher Rick Heede, RMI began a ground-breaking effort to guide Oberlin College to become climate-neutral by 2020. RMI is assembling the needed technical and financial expertise, conducting design and strategy charrettes, and bringing forth a practical plan to meet the goal. (We are also consulting for Berea College in Kentucky on green development and climate mitigation, and several high-visibility universities are expressing interest in pursuing,

with RMI's help, similarly aggressive climate objectives.)

### **Growing La Pine in Oregon**

The old way to solve community land-use problems was to hire a consultant who gathered information from the government and residents, examined local conditions, and presented a plan—take it or leave it. There was little real interaction between consultants and communities.

In April 2000, RMI led a Community Design Charrette for the town of La Pine, Ore. (pop. 12,000–15,000). The town is

**"The fact that the climate is changing and action to reduce emissions must follow is not lost on the public or the business sector. Sensible policies by the White House that support such actions—already highly profitable far past our Kyoto target—is thankfully not requisite or we'd be twiddling our thumbs. We are very busy."**

— Rick Heede, RMI climate researcher

growing at a rate of 5–7 percent per year. The purpose of the event was to identify the best locations for an array of community services and facilities that this growth may require.

RMI's La Pine charrette encouraged local residents to work with technical experts to figure out the best solutions. Charrette participants carefully considered how prospective projects could relate to one another as well as existing businesses and facilities in La Pine. They created ways to strengthen the community's quality of life, while locating new civic and community facilities in ways that will benefit both residents and businesses, and respect the values and needs of La Pine residents and the environment.

Ultimately, the charrette suggested a better future that serves the needs of those who live and work in La Pine.

### **Nuts Over Nat Cap in Brazil**

After visiting Curitiba, in the state of

Paraná, Brazil, in 1999 and 2000, RMI's Huston Eubank and David Payne returned to Brazil in 2001 to work with several Brazilian partners on initiatives inspired by natural capitalism. RMI's conducted design charrettes with various corporate and government clients and began developing a distance learning program. These are the first steps of a broad effort to capitalize on a uniquely "teachable moment" in the state of Paraná and in Brazil as a whole. In recent years Brazil has started to become an economic dynamo. Poised for tremendous economic and social growth, it is now wracked by its own energy crisis.

Among our many projects, we began a program to propagate and localize Hypercar<sup>SM</sup> technology; presented information to various organizations on energy efficient and green building practices; and presented natural capitalism to business and policy groups. Our work in Brazil will continue in 2002.

### **Nat Cap in Middle America**

The American Midwest has long been a bastion of sensible values and innovative business, so RMI's have been focusing a lot of work there in recent months. With funding from the Joyce Foundation, RMI staff worked throughout 2000 with the Western Michigan business community to bring the ideal of sustainability to the forefront of business thinking. In 2001 we received a follow-up grant to help companies adopt and integrate principles of natural capitalism in Chicago, including the reduction of greenhouse gas emissions by certain industries. RMI staffers toured industrial and commercial sites, did onsite assessments and consulting work, and gave numerous presentations. Our work will continue in Chicago this Fall.

### **Chip Off the Old Waste**

Making chips—for computers, that is—takes remarkable amounts of energy and water, and generates considerable amounts of waste. In 2000, RMI con-

tinued its ongoing consulting with STMicroelectronics (STM), helping the company pursue its goal of reducing carbon per chip by 99 percent. STM has set a goal of zero net carbon emissions by 2010. RMI has worked in eight of STM's microchip plants. When RMI began working with STM, the company was the number twelve chipmaker in the world. Now it's number six.

### Joining Forces to Reduce Impacts

During the winter of 2000–2001, RMI's Research and Consulting team delivered natural capitalism training to a group of Army environmental managers assigned to U.S. Army Forces Command (FORSCOM) facilities. FORSCOM installations, like Fort Stewart, Ga., and Fort Hood, Tex., typically house tens of thousands of soldiers. These facilities have a major environmental, economic, and social impact on their communities. The managers, who work at Army installations across the United States, were gathered at a workshop in New Orleans in December 2000. RMI's Karl Rábago and Huston Eubank (both veterans) spent two days with the group teaching the principles and concepts of natural capitalism. The Army's managers will be developing new environmental plans based on RMI's approach.

### Dam Good Work

America's great dam-building era has long since passed, but some are still going up. RMI tries instead to focus efforts on efficiency and water reuse, rather than on costly centralized dams and extensive distribution systems. In January and February 2000, RMI's Richard Pinkham reviewed a draft Environmental Impact Statement for a proposed reservoir in North Carolina. He evaluated the water-saving programs of the reservoir's municipal sponsor.

Richard found problems in the demand forecasts, and made suggestions to improve local water efficiency efforts. He also recommended that water reuse

**“For me the most appealing aspect was that RMI does not only think deeply and comprehensively about the future, they live the future. Walking in the headquarters building you can feel a different way of life that very much fits in a sustainable world, based on very efficient use of distributed energy.”**

— Jan Verloop, Shell

opportunities be evaluated as a way to avoid, defer, or downsize the proposed project.

### Skiing the Light

We tend not to think of lightbulbs and sunny, daytime skiing as things that go together, yet the Aspen Skiing Co. (which has no night skiing) produces an estimated 45,526 tons of CO<sub>2</sub> annually, much of it from powering lighting. Starting in 2000, Skico began a lighting retrofit program, whereby old metal

halide lamps in the Little Nell (hotel) parking garage were replaced with T-8 fluorescent fixtures. The Skico will save an estimated \$10,600 annually, and will

keep 300,000 pounds of CO<sub>2</sub> from going into the atmosphere.

It was at RMI's suggestion that the Skico got involved in “greening” its operations a few years back, and RMItes have helped steer the program ever since—indeed, the Skico's current environmental director is a former RMIte.

### Greening Up the Golden State

If government is to lead effectively, it has to be in the forefront of smart, cost-effective, technological change. Many officials in California already know this.

In mid-2001, RMI's Huston Eubank and Alexis Karolides organized and ran a two-day charrette for “Greening the California State Capitol.” Modeled on RMI's 1994 “Greening of the White House,” the event showed how the State Capitol could save money, be a model for efficiency, and be better place to work and visit.

It was attended by more than 90 people from state agencies as well as the private sector.



RMI's Amory Lovins showing typical inefficient pipe layout while consulting with HP Bulmer, Ltd., England. Photo: Cameron M. Burns

# New Intellectual Capital

## Important Things We're Learning

It's generally a bad idea to start any project without first doing your homework. While RMI's research activities are currently less extensive than our strategic influence and consulting activities, RMI's research is unique. As our philosophy dictates, we strive to look into areas where other people aren't already doing good work. Although our basic research areas will continue to include energy, water, communities, buildings and land, and related subjects, you'll notice some of our new intellectual capital (briefly sampled here) tackles very different and very difficult subjects—genome manipulation, for example. This illustrates how quickly RMI's areas of work and influence evolve and grow.

### A More Sensible Water World

Few realize that 85-90 percent of wastewater treatment system costs are not in the centralized treatment plants but in the collection network. As systems spread out over larger areas, they need more and more concrete for culverts and pipes, and more pumping stations to lift the material back uphill to treatment facilities.

As with energy, RMI has long recognized that appropriately-sized water systems are cheaper water systems.

In May 2001, RMI's Richard Pinkham led eight top wastewater experts through a workshop outlining the future of wastewater management. Funded by the U.S. Environmental Protection Agency, RMI is documenting the economic benefits of decentralized wastewater technologies. This wastewater study for the EPA will be available in mid-2002.

### The Right Tool for Any Job?

During the past year we took our natural

capitalism influence to a new level with the creation of a Natural Capitalism Tool Kit.

The purpose of the Tool Kit is to apply the principles described in the book *Natural Capitalism: Creating The Next Industrial Revolution* to practical settings. With the Tool Kit, RMI clients and partners will have "the next level of detail for what an organization actually does on Monday morning to use natural capitalism principles," as RMI's Christopher Juniper puts it.

The Tool Kit is comprised of a series of interconnected modules, similar to book chapters, that address best practices by organizations, illustrated by practical and inspiring examples and case-studies. Suggestions are provided for integrating this information with existing business tools for environmental management, supply-chain management, accounting systems, organizational development strategies, product lifecycle analysis, and product design tools. The Tool Kit will be available in both paper and electronic formats in late 2001.

### Distributed Generation for the Next Generation

The ongoing energy crisis in California has focused attention on a number of alternatives to big, centralized electricity generating plants—specifically, small, decentralized sources, collectively known as distributed generation (DG). One of the more promising DG options is the fuel cell, which converts fuel to electricity at high efficiency and reliability without combustion and with negligible emissions. In a groundbreaking research paper funded by the W. Alton Jones Foundation, RMI energy team member Joel Swisher looked at the benefits and drawbacks of fuel cells, as well as the

latest technologies available. "Fuel Cells Are Profitable" will be distributed to a select academic audience and available on our website.

### When Opportunity Knocks

New measures, called "sustainability indicators," are becoming popular ways for community development professionals to measure a wide range of phenomena important to the community. There has been much work to date, but more needs to be done.

In early May 2001, RMI's Michael Kinsley and Kate Parrott led a group of 40 practitioners and policy experts in a three-day discussion and exploration of the state of the practice of indicators. The group identified seventeen topics for further research, and developed several indicators working groups.

### UN Prepared for Jo'berg

In early 2001, RMI's Hunter Lovins was chosen as one of only four experts representing the United States to guide the preparation of the United Nations 2002 World Summit on Sustainable Development.

The proposals generated from experts will guide heads of state from over 100 UN member nations as they tackle development issues at a 2002 World Summit on Sustainable Development in Johannesburg.

In a 40-page paper that Hunter co-authored with Walter Link to brief heads of states (available on the RMI website), she describes some of the great environmental challenges that lie ahead, and suggests many preferable solutions.



# Education and Outreach

## RMI in Print and On-Air

The year 2000 brought RMI gratifying national and international exposure. In 2000, Amory and Hunter Lovins were named Heroes for the Planet by *Time* maga-

accurately describe how many individuals visited the website, our statistics indicate that number reached roughly 1,500 per day. Our newsletter has been very well received and many people



Managing Director Karl Rábago (right), former Deputy Secretary of Energy, appeared on PBS's *Newshour* in May 2001, to discuss the Bush Energy Plan.

**“The past year has seen an explosion in coverage of RMI’s activities. Between October and March, we were featured and/or quoted in over 130 print articles in publications as diverse as *The Wall Street Journal*, *The Economist* and *The New York Times*. Not bad for a small shop in the mountains near Aspen.”**

—Norm Clasen, Communications Director

zine, and Institute staff members were quoted hundreds of times in magazines and newspapers, and interviewed for many radio and television broadcasts. RMI was featured and/or quoted in upwards of 130 print articles in publications as diverse as *The Wall Street Journal*, *Foreign Affairs*, *The Economist*, *Forbes*, *Harper’s*, *The [London] Times*, *The Financial Times*, *The New York Times*, the *Chicago Tribune*, the *Chicago Sun-Times*, the *Los Angeles Times*, the *Christian Science Monitor*, the *St. Louis Post-Dispatch*, the *Denver Post*, and the *Albuquerque Journal*.

We gave over 100 radio interviews to broadcasters from around the globe and appeared in productions by such news organizations as CNN and National Public Radio.

The use of our website has exploded. By the end of last year, the average number of hits per day was over 20,000. Although that number doesn’t

are choosing to read it online while sending subscription donations anyway.

Although RMI researchers perform educational tasks in their daily consulting jobs, many of them are also heavily involved in purely educational activities and throughout the year can be

found teaching at schools, colleges and universities, and in symposia settings.

Of course, RMI’s most important audience is the next generation, which will have to deal with the challenges created by thousands of years of resource exploitation. RMI’s new program RMI For Kids is now up and running and, despite its modest start, is likely to become one of the Communications Department’s most important ongoing projects. “Kid capital,” regardless of age, represents our future and is a wise investment.



Left: *The Aspen Times*, 8 December 1983. Right: *The Wall Street Journal*, 9 January 2001.

# 2000–2001 FINANCIAL REVIEW

**F**inancial statements describe the health and direction of any organization. Rocky Mountain Institute's financial statements reflect the new and exciting direction in which our organization is headed.

From our humble beginnings in the early 1980s, we have spun off two for-profit businesses and used the proceeds from the sale of one for operating and endowment. With our 1999 sale of E SOURCE, we began laying the financial foundation for our current direction.

The past two years have been a period of substantial change for the staff and management of RMI. Applied research contracts grew by over 300 percent on an annualized basis during this time. In 1999, these contracts represented \$710,000, or 23 percent of RMI's revenues. For the first six months of 2001 this amount was \$1,438,000, and represented roughly half of our operating revenues.

To grow any new business requires experienced staff, working capital, and support services. RMI financed the Natural Capitalism Practice (aka applied research) from available resources, using internal funding and developing expertise from within. Start-up capital was seeded by the E SOURCE sale and by internal funding. In 1999, our board had the foresight to set a policy of annually using five percent of the E SOURCE proceeds for working capital. By using only five percent of these funds, we will ensure a permanent capital base while providing valuable working capital to the organization.

While applied research grew by 300 percent, grant revenues also grew by 55 percent in the past two years. To

RMI staff, applied research and grant funding are symbiotic. Research discovers optimal solutions, while consulting often tests the results of the research in real world settings. At the same time, our associates bring back real-world questions and results to a research setting, further grounding research efforts.

Total funding increased 95 percent, while expenses increased only 64 percent, a trend towards stability. To support RMI's activities, we have brought in senior associates and the support staff necessary to build the Natural Capitalism Practice. Salaries increased 36 percent from 1999, while contract labor increased proportionally to the increase in work.

To better manage the integration of research, applied research, and overhead, RMI contracted with a Boulder-based software firm to install a comprehensive project costing and monitoring system. This system will monitor all aspects of RMI's financial operations, and will result in real-time financial reporting, more accurate invoicing, and better information for decision-making.

Like most businesses, RMI experienced some

deterioration in its investment portfolio over the past two years. In 1999 the RMI board established an investment policy and portfolio allocation model that has served us well. In the past two and a half years, we experienced portfolio losses of only nine percent, not bad in this down market.

Over the next two years, we expect both research and applied research efforts to develop. We will be improving the contribution margins of our applied research, strengthening our balance sheet, and improving our financial position.

— Steve Swanson, Finance Director

## CHANGE OF FISCAL YEAR: IT'S ALL A MATTER OF TIMING

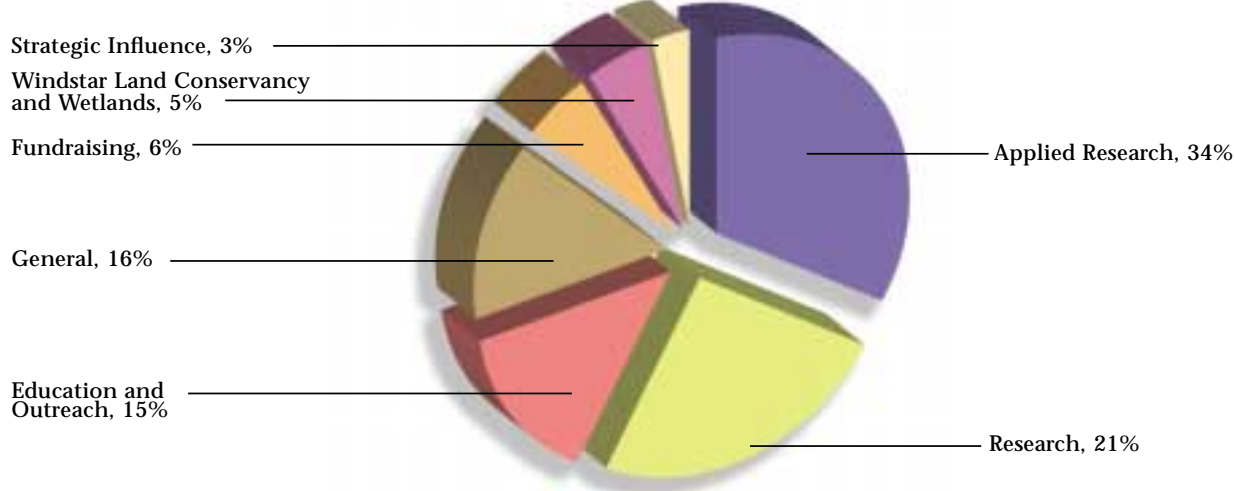
You may have noticed a change in this year's financial presentation. In addition to report format changes, RMI has also changed its fiscal year. From 1 July 2001 forward, we will be on a fiscal year ending 30 June. The most recent financial statements are reported on a six-month basis, a "stub year" to those in the accounting profession. Why? While selection of an accounting year is to some extent an arbitrary decision, the change was made to help reduce costs and improve decision-making. December is a very busy time for most nonprofits. Several large donations can change the financial position of the organization in the final days of the year. It is also a major fund-raising period, with administrative support staff busy working with donors while at the same time closing the books. Temporary staff are often brought in to help in accounting.

By changing RMI's fiscal year-end to 30 June, we will have more time to work with donors during the busier time, eliminate the use of temporary accounting staff, and provide better year-end information to our Board during the year. We also save significantly on our audit by having it during the accountants' slow season.

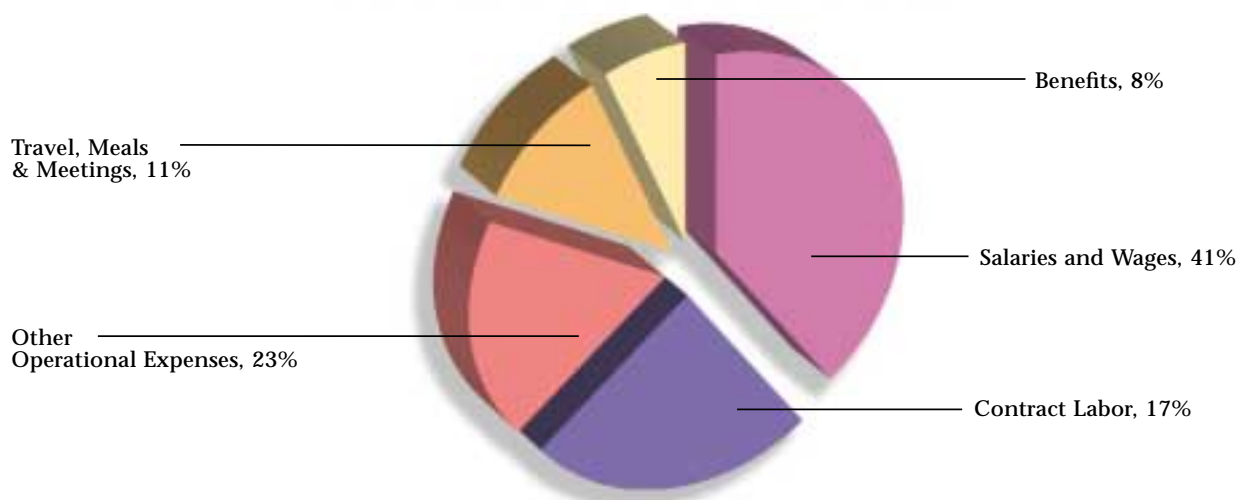
# ANALYSIS OF REVENUES AND EXPENDITURES\*

\* | JAN 2000–30 JUNE 2001

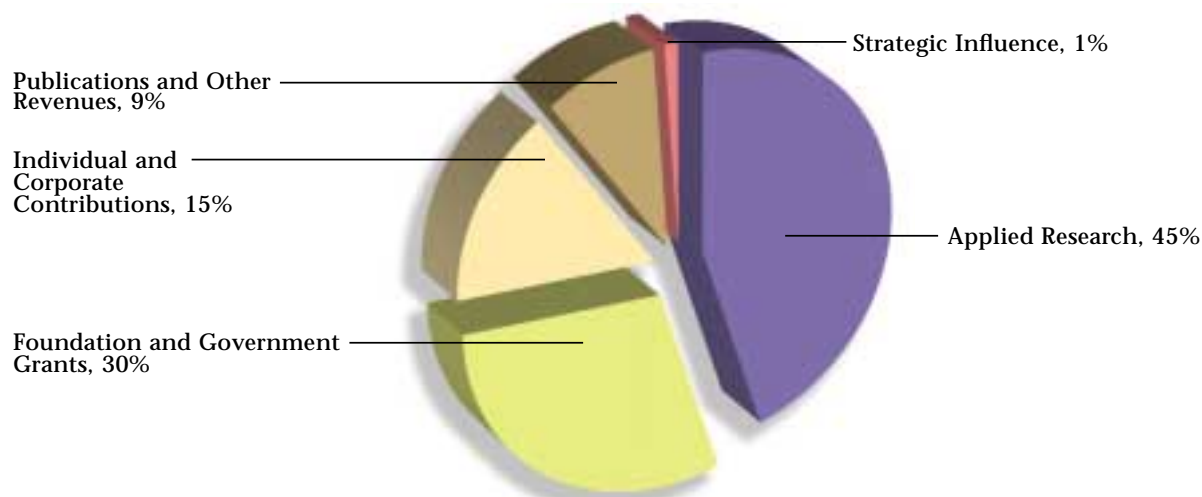
## EXPENDITURES BY ACTIVITY



## EXPENDITURES BY CATEGORY

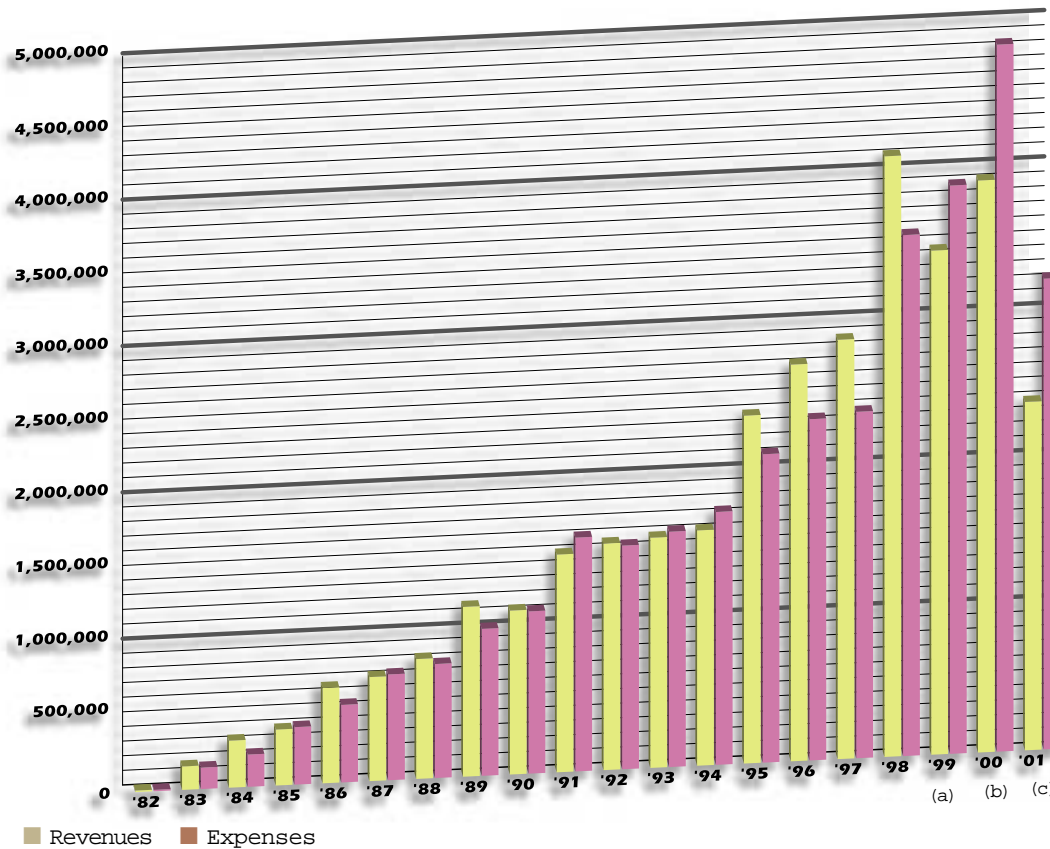


## REVENUES BY CATEGORY





# FINANCIAL HISTORY



## Financial History

### Graph Notes:

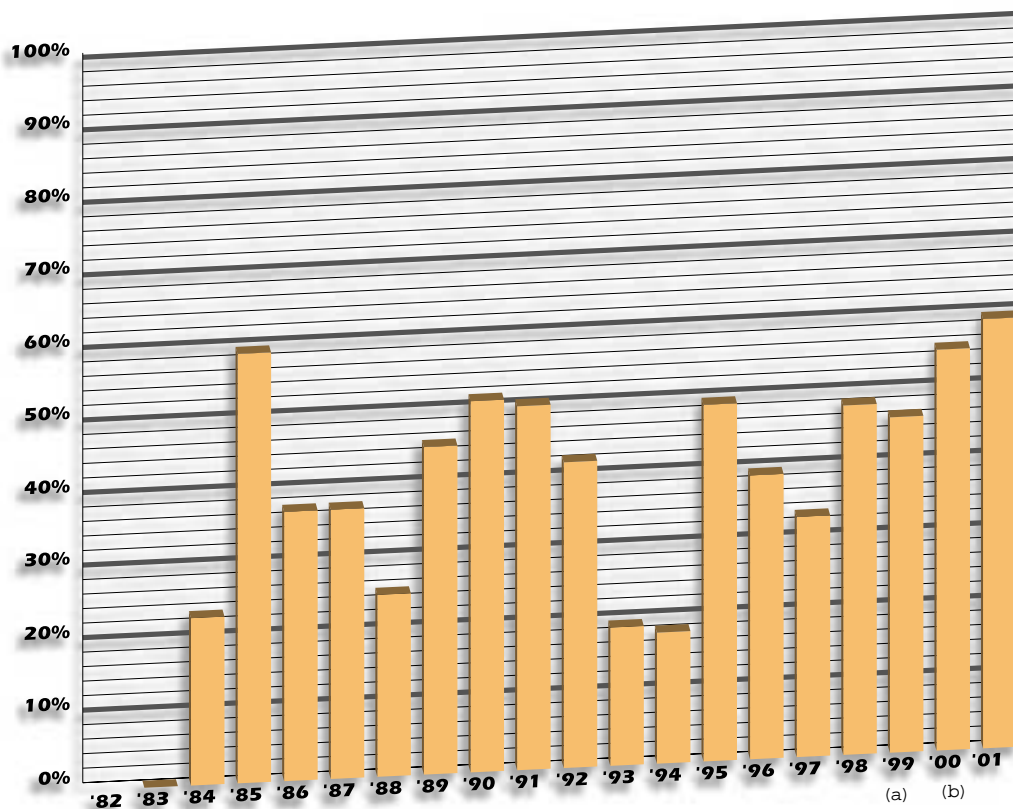
Cash basis 1989–1990, otherwise modified accrual with noncash items excluded; fiscal year = calendar year; current U. S. dollars of each year

(a) Excludes \$8,043,000 cash gain from sale of E SOURCE and a subsidiary loss on investment of \$157,000.

(b) Excludes \$682,000 gain from the sale of E SOURCE and a subsidiary loss on investments of \$79,000.

(c) Year 2001 is a stub, 6-month fiscal year.

# EARNED FRACTION OF TOTAL REVENUE



## Earned Fraction of Total Revenue Graph Notes:

Percentage earned is calculated as accrual basis revenue from all non-donation sources divided by total accrual basis revenue.

(a) Excludes \$8,043,000 cash gain from sale of E SOURCE and a subsidiary loss on investment of \$157,000.

(b) Excludes \$682,000 gain from the sale of E SOURCE and a subsidiary loss on investments of \$79,000.

	Six Months		Twelve Months		Twelve Months	
	Ending 6/30/01		Ending 12/31/00		Ending 12/31/99	
	ACTUAL	% OPERATING REVENUE	ACTUAL	% OPERATING REVENUE	ACTUAL	% OPERATING REVENUE
<b>OPERATING REVENUES &amp; SUPPORT</b>						
Applied Research	1,406	44.4%	1,992	40.5%	710	23.5%
Foundations and Government Grants	1005	31.7%	1,293	26.3%	1,190	39.4%
Individual and Corporate Contributions	218	6.9%	781	15.9%	557	18.4%
Publishing and Royalty Revenue	45	1.4%	110	2.2%	183	6.1%
Other Revenue	14	0.5%	52	1.1%	126	4.2%
Distribution from Capital Preservation Fund	181	5.7%	388	7.9%	0	0.0%
Investment Income	110	3.5%	232	4.7%	184	6.1%
Contributed Facilities and Expenses	187	5.9%	72	1.4%	72	2.3%
<b>TOTAL OPERATING REVENUES</b>	<u>3,166</u>	<u>100.0%</u>	<u>4,920</u>	<u>100.0%</u>	<u>3,022</u>	<u>100.0%</u>
<b>OPERATING EXPENSES</b>						
Salaries and Wages	1,248	39.4%	2,167	44.0%	1,841	60.9%
Benefits	209	6.6%	425	8.6%	356	11.8%
Contract Labor	769	24.3%	591	12.0%	379	12.5%
Contributed Facilities and Expenses	187	5.9%	72	1.5%	72	2.4%
Other Operating Expenses	918	29.0%	1,593	32.4%	1,181	39.1%
<b>TOTAL OPERATING EXPENSES</b>	<u>3,331</u>	<u>105.2%</u>	<u>4,848</u>	<u>98.5%</u>	<u>3,829</u>	<u>126.7%</u>
<b>OPERATING MARGIN</b>	<b>\$(165)</b>	<b>-5.2%</b>	<b>\$72</b>	<b>1.5%</b>	<b>\$(807)</b>	<b>-26.7%</b>
<b>NON-OPERATING REVENUES</b>						
Unrealized Gains/(Losses)	(382)	-12.1%	(555)	-11.3%	22	0.7%
Gain on Sale of Assets	0	0.0%	682	13.9%	8,234	272.5%
E SOURCE Revenues	0	0.0%	0	0.0%	205	6.8%
Prior Period Adjustment	(152)	-4.8%	0	0	0	0.0%
Subsidiary Loss	0	0.0%	(79)	-1.6%	(157)	-5.2%
Total Non-operating Revenues	<u>(534)</u>	<u>-16.8%</u>	<u>48</u>	<u>1.0%</u>	<u>8,304</u>	<u>278.8%</u>
<b>NON-OPERATING EXPENSES</b>	35	1.1%	55	1.1%	66	2.2%
Less Distribution from Capital Pres. Fund	(181)		(388)		0	
<b>CHANGE IN NET ASSETS</b>	<u><b>(915)</b></u>	<b>-28.9%</b>	<u><b>(323)</b></u>	<b>1.3%</b>	<u><b>7,431</b></u>	<b>245.9%</b>

\* In Thousands of Dollars, unaudited.

# BALANCE SHEET

<b>ASSETS</b>	<b><u>6/30/01</u></b>	<b><u>12/31/00</u></b>	<b><u>12/31/99</u></b>
Cash and Investments	\$ 7,207	\$ 7,803	\$ 8,329
Accounts Receivable (Net)	796	669	246
Grants & Pledges Receivable	589	605	605
Inventory	70	69	89
Property and Equipment (Net)	1,212	1,085	1,098
Windstar Land Conservancy Endowment Fund	577	563	481
Other Assets	159	317	426
<b>TOTAL ASSETS</b>	<b><u>\$ 10,610</u></b>	<b><u>\$ 11,111</u></b>	<b><u>\$ 11,274</u></b>
 <b>LIABILITIES AND NET ASSETS</b>  			
<b>Current Liabilities</b>			
Accounts Payable	\$ 624	\$ 305	\$ 141
Compensated Absences	120	103	65
Other Accrued Expenses	97	101	69
Current Portion of Long-term Debt	601	302	281
<b>Total Current Liabilities</b>	<b><u>1,442</u></b>	<b><u>811</u></b>	<b><u>556</u></b>
<b>Long-term Liabilities</b>	<b>544</b>	<b>763</b>	<b>858</b>
<b>TOTAL LIABILITIES</b>	<b><u>1,986</u></b>	<b><u>1,574</u></b>	<b><u>1,414</u></b>
<b>NET ASSETS</b>	<b>8,624</b>	<b>9,537</b>	<b>9,860</b>
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b><u>\$ 10,610</u></b>	<b><u>\$ 11,111</u></b>	<b><u>\$ 11,274</u></b>



# WHAT RMI'S SUPPORTERS HAVE RECEIVED FOR THEIR ~\$20 MILLION INVESTMENT

## Energy

- Laid most of the conceptual and technical foundations for the \$5-billion-a-year "negawatt" (electric-efficiency) industry
- Invented most of the ways now in use for making markets in saved electricity and other resources
- Found how to make big savings cheaper than small ones ("tunneling through the cost barrier")
- Showed how "distributed benefits" make decentralized electric resources as much as ten times more valuable
- Devised a profitable strategy, now being adopted, for the transition to a hydrogen economy
- Predicted grave problems with California's electricity restructuring, then contributed to diagnosis and correction
- Showed that oil drilling in the Arctic National Wildlife Refuge would harm the economy and national energy security
- Synthesized a highly advantageous approach to advanced electric efficiency in microchip fabrication plants and other industries
- Codified 60–80 market failures in buying efficiency, and ways to turn them into business opportunities
- Exposed more than \$50 billion in annual U.S. federal energy subsidies
- Helped debunk the myth of huge electric demands by the Internet
- Created, spun off, and sold E SOURCE, now the world's leading technical information service on advanced electric efficiency

## Transportation

- Invented the Hypercar<sup>SM</sup> concept, which has the potential to save as much oil as OPEC now sells and makes light vehicles ready for direct-hydrogen fuel cells
- Helped spur the global auto industry to invest ~\$10 billion in ultralight hybrid-electric vehicle development
- Founded and spun off Hypercar, Inc. to support the industry's transition (it then designed the world's first uncompromised and cost-com-

petitive 99-mpg midsize SUV)

- Codified integrated transportation policy elements

## Climate

- Reframed the debate by showing academics and CEOs, starting in 1981, that climate protection is profitable, not costly
- Helped refocus U.S. policy on "barrier-busting" opportunities both during and after Kyoto
- Significantly contributed to post-Kyoto shift of U.S. climate leadership to the private sector, accelerating carbon reductions
- Showed how nuclear power worsens global warming compared to better buys

## Buildings & Land

- Synthesized a strategy that makes real-estate development a tool for profitable healing of natural and human communities
- Founded Green Development Services, a leader in moving the real-estate industry toward more sustainable design
- Published the definitive text on green development, now widely influencing development practice, and a CD-ROM of 100 case-studies showing superior human and market performance through integrative design
- Proved that green buildings boost labor productivity
- Helped design several hundred showcase projects, including skyscrapers, retail spaces, affordable housing, convention centers, the Sydney Olympic Village, and the Greening of the White House
- Co-created a pioneering demonstration project of energy-efficient residential buildings (PG&E's, ACT<sup>2</sup> Project), proving that most of the energy in new and old buildings can be cost-effectively saved
- Helped design a prototype spec office building that is expected to transform the market
- Designed, constructed, and showed to over 50,000 visitors one of the world's most efficient and well-integrated buildings

## Community Economic Development

- Created Economic Renewal, an innovative process and toolkit for promoting sustainable local economies
- Wrote the acclaimed *Economic Renewal Guide* and trained others in the process, making it self-replicating
- Directly helped dozens of communities find alternatives to growth, sprawl, and resource extraction
- Developed diverse practical tools for activists, the latest a Web-based tool for identifying opportunities

## Business Practices

- Coauthored *Natural Capitalism* with Paul Hawken, a compelling case for corporations to profit through resource efficiency and environmental restoration (now in or entering a dozen languages)
- Coauthored *Factor Four* with Ernst von Weizsäcker; it has been adopted by the European Union as a new basis of sustainable development
- Launched the Natural Capitalism Practice, a new organizing framework for RMI's corporate, small-business, and community "applied research"
- Produced compelling case-studies through detailed technical work in a wide range of industries around the world
- Created a major website, [www.natcap.org](http://www.natcap.org), to elicit new cases and focus the conversation on natural capitalism

## Water

- As with energy, laid most of the groundwork on water-efficient technologies (chiefly for buildings) and best implementation practices
- Co-led institutionalization of water efficiency
- Helped get various unwise dams canceled
- Devised creative approaches to Combined Sewer Overflow—a trillion-dollar issue facing 1,300 U.S. cities/towns

- Helped raise crucial questions of scale and analyze economic benefits of the right size for the job in water and wastewater systems

## Farming & Forestry

- Researched conventional beef-raising practices and the favorable economics of organic agriculture
- Coordinated Systems Group on Forests, generating innovative findings on profitable ways to reduce pressure on natural forests
- Experimented with optimal restoration practices for degraded western rangeland and for restoration of alpine wetlands
- Developed a systemic critique of transgenics and supported international multi-stakeholder dialogues on genomics

## Security

- First formulated an internally consistent approach to nuclear nonproliferation (1979–80), lately vindicated
- Definitive DOD analysis of domestic energy vulnerability (*Brittle Power*, 1982)
- Showed how to eliminate oil insecurity at a profit
- In *Security Without War* (1990–93), synthesized least-cost security ("freedom from fear of privation or attack"), via conflict prevention and resolution plus nonprovocative defense, and linked military, economic, and environmental security
- Converted the Navy's facilities engineering to green design, and helped other Services do likewise
- Served on Defense Science Board panel finding many billions of dollars' annual potential energy savings in military platforms while improving warfighting capability
- Found for the Secretary of the Navy ~\$1 billion annual potential energy savings aboard an Aegis cruiser

# MAJOR DONORS, 2000-2001

Rocky Mountain Institute wishes to thank the following individuals, businesses, and foundations for their contributions of \$1,000 or more in 2000-2001.

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Rocky Mountain Institute is a proud member of Earth Share, the environmental workplace-giving program. [www.earthshare.org](http://www.earthshare.org). Contact RMI's Development Department to get your workplace involved (or visit [www.earthshare.org](http://www.earthshare.org)).

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\* As of September 2001

† Interns

\*\* Former staff who contributed to RMI during  
the period of this report

## Annual Report Credits

**Writing/editing:** Cameron M. Burns, Jeremy  
Heiman.

**Design/layout:** Cameron M. Burns

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