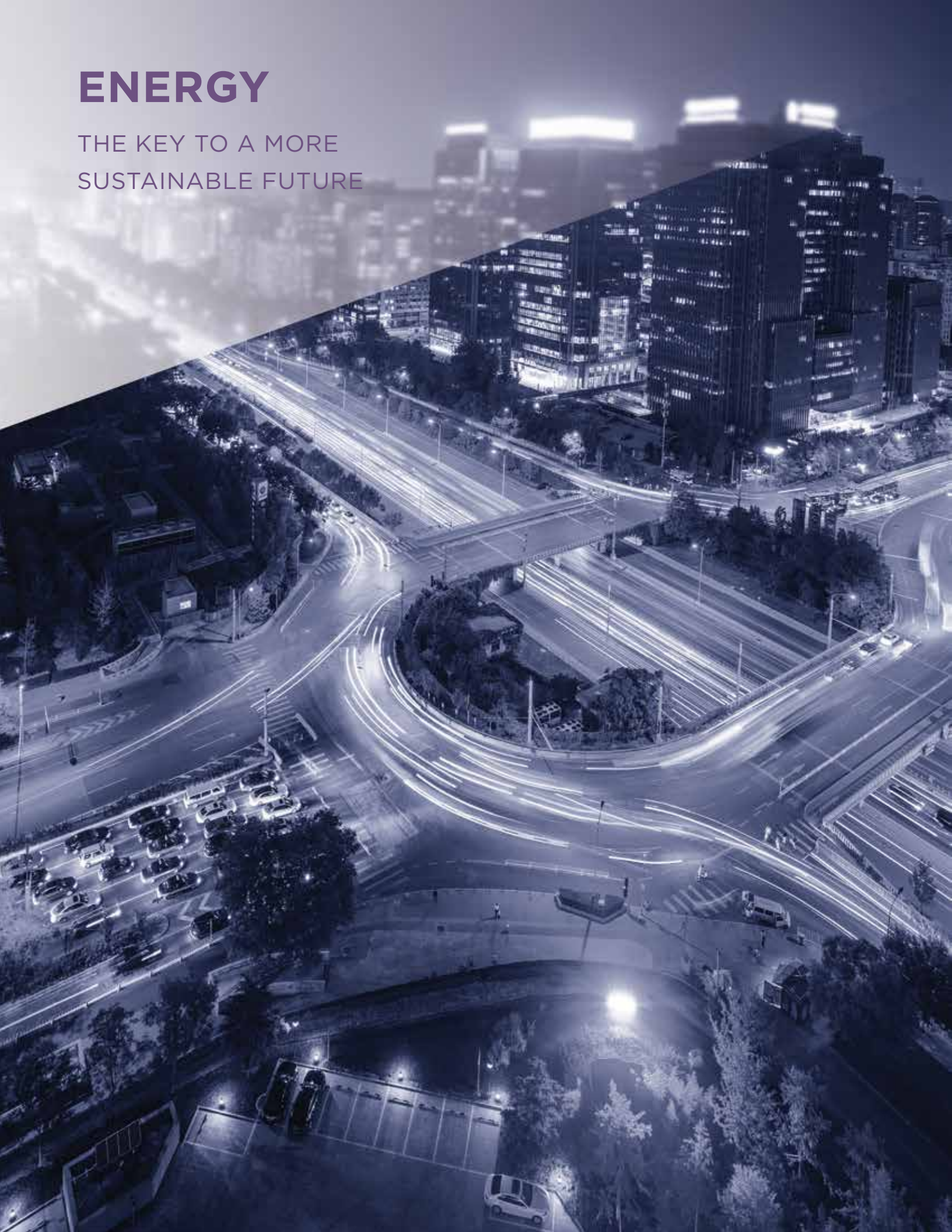
ENERGY

THE KEY TO A MORE SUSTAINABLE FUTURE



The development of a new energy base for society is enormously complex and will take time to mature, but it is absolutely fundamental to any broad societal shift. It will be dependent upon new infrastructures and technologies that will have to be commercially viable and, ultimately, politically acceptable. In order to establish a significant space for renewables in the energy marketplace, technologies that use the new energy sources will have to be developed, distribution networks will have to evolve, regulations will have to be developed or changed, and major investors will have to have the confidence in the future of this complex set of equations in order to invest the kinds of money that are needed. Pat was already working on this with his biodiesel plant on Lake Erie when we started, but it also became an early area of interest for us at the institute.

When we started our philanthropic work, renewable energies were still highly speculative for most, and accounted for a very small percentage of national and global energy use. By 2015, more of society was taking them seriously, and in at least one case—that of solar energy—costs were coming down quickly and making it more competitive with fossil fuels.

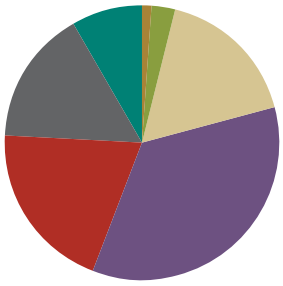
EARLY MODELS

FOSSIL FREE BY '33 AND DREAMING NEW MEXICO

Soon after we began our work, we saw some innovative approaches that looked like they would be worth supporting, ones that were suggesting new ways of operating that over time had the potential to have wide impact and inspire a societal shift.

One of our first advisors, Paul Relis, was the founder of the Community Environmental Council (CEC) in Santa Barbara, California. The CEC emerged in the wake of the historic Santa Barbara oil spill in late January 1969. Reflecting the spirit of the times, it went on to establish one of the country's first municipal recycling programs and, over the years, experimented with various community gardens intended to cultivate awareness of organic gardening.

But more than a quarter of a century later, by the end of the 1990s, the environmental narrative was shifting. Serious concerns about the effects of climate change were starting to orient the agendas of leading activists and, ultimately, of a broad range of society's leaders. In a daring move, motivated by a desire to recalibrate its mission and stay contemporary with current challenges, the CEC liquidated its physical assets to establish a board-directed asset fund and decided to focus its programs on responding to the challenges of climate change in the Santa Barbara area.



SANTA BARBARA COUNTY ENERGY ALLOCATION 2007

- Waste-to-Energy **1.2%**
- Utility Renewables **2.9%**
- Building & Industrial Efficiency **16.8%**
- Transportation Improvements **35.2%**
- Wind Power **19.8%**
- Solar **15.8%**
- Ocean Power **8.3%**

Source: Fossil Free by '33 Blueprint 2007

The CEC spent a few years drawing up a blueprint for how to shift Santa Barbara's economy away from fossil fuels toward renewable energies and developed a campaign around it called Fossil Free by '33. The campaign drew our interest because, to our knowledge at the time, it was one of the first — perhaps *the* first — effort to actually map out what such a transition would look like for a municipality. The implications of such an effort were that in the future, different regions would develop their own unique energy portfolios depending on the mix most relevant to their climate, needs, and available energy sources. It would be a future marked by the equivalent of designer energy portfolios that would move us to an age of greater diversity and, ultimately, greater degrees of local control over what those mixes would be.

We provided funding for an early regional gathering of municipal and renewable-energy leaders in the Santa Barbara and Los Angeles area in 2007 to consider their plan, on the hunch that this might be a model for others around California and, eventually, in other parts of the country. While that vision was not realized at the time — Paul later described the fossil-free effort as "huge and abstract," more of an early, provocative idea rather than a plan that Santa Barbara was likely to adopt and implement — it was an early move in a new direction, a signal that more of this kind of thinking was emerging in various locales. The campaign was not without influence, however. Its successful effort to get Santa Barbara County to adopt Architecture 2030's energy efficiency and carbon reduction standards for buildings prompted the State of California to adopt them statewide.

Soon after, we were part of a small group of funders that supported a new effort called Dreaming New Mexico, an ambitious and visionary attempt by the Bioneers to develop a comprehensive sustainable-development plan for New Mexico, one of the poorest states in the country. Given Bioneers' diverse national network, which had staged major conferences of leading environmentalists every year since the early 1990s, it looked as though it might be a model that would be adopted by groups in other states. Water, energy, and food were at the core of the effort, another attempt to sketch out a blueprint for sustainability that was localized in its orientation. The initiative finished as the first runner-up for the 2009 Buckminster Fuller Challenge award. The first gathering of a planned series took place in 2007 and was devoted to energy. While there were some provocative ideas, and a short-lived green cabinet was formed at the state level, the campaign was more educational in its impact than a successful prod toward major action. But it was another early move in a broader process that would be characterized by increasing degrees of resolve and action as the years progressed.

CHANGING CORPORATE FUEL PROCUREMENT PRACTICES

FOREST ETHICS
MARKETS CAMPAIGN

Forest Ethics approached us in 2009 with a request to support their corporate dialogues with some of the oil companies that were squeezing oil from Canada's tar sands in Alberta province. The organization is a highly effective forest-protection nonprofit that emerged out of the struggles to protect the temperate rainforests of coastal British Columbia in Canada from logging interests in the 1990s.

The tar sands had existed for several decades as a source of oil, but there was revitalized effort by oil companies to exploit them in the early years of the new century as other sources of oil in the world were being depleted or became more difficult to extract. The environmental impact of tar sands extraction has been catastrophic. It has damaged the health of communities in the area and the fate of the boreal forests in which it is located. The Athabasca oil sands is located near one of the richest natural ecosystems in Canada, at the confluence of a number of major North American river systems.

We knew about the work Forest Ethics had done in getting a number of companies that marketed by mail-order catalogs to switch to renewable paper sources and away from harvesting lumber from boreal forests, and we had supported an earlier attempt of theirs to work with companies to reduce the enormous volume of junk mail that just about everyone in society finds objectionable. While that campaign ultimately failed because postal workers are paid in proportion to the volume of mail they process — a substantial portion of which is junk mail — we had seen how effective the organization had been at connecting disparate dots in a larger system to find the leverage points that would allow them to achieve ends that meshed with their mission to protect forests.

Along with the Rockefeller Brothers Fund, we were the only donor willing to support their corporate dialogues. Much of the action on tar sands from the environmental community had come in the form of opposition and protest. By the middle of the first decade of the 2000s, it had become a symbol of oil company excess and our societal dependence on fossil fuels, as well as a hot spot of conflict over climate change when the Keystone Pipeline became a major political issue. Forest Ethics, which like other activist conservation groups had become very skillful at protest and guerrilla media campaigns, was also experienced at using such pressure to establish negotiating space with company leadership that would lead to a change in corporate practices. Their successful campaign aimed at catalog companies, which was covered respectfully by a variety of media outlets, was evidence.

Tar sands area in Alberta, Canada
BEFORE

Tar sands area in Alberta, Canada
AFTER

Courtesy of popularresistance.org

Over the next few years, we watched them evolve the initial campaign — to force companies to clean up some of the environmental damage from tar sands extraction — to a larger campaign to coax major companies whose national transportation networks were using tar sands oil to switch to cleaner energy sources. It was precisely this kind of maneuvering that would be required if the larger economy was going to transition away from heavily polluting energies like tar sands oil to cleaner energy sources and, ultimately, to renewable sources. This was what one part of the transition actually looked like.

In an August 2011 article in *Forbes* online, Amy Westervelt summarized the impact of that work. "So far," she wrote, "Forest Ethics has gotten 20 companies to commit, 12 of which (including Whole Foods, Walgreens, and Gap) have gone public with their commitment. … Some of those companies came to Forest Ethics themselves, looking for help tackling the tar sands issue, and others were targeted by the organization. In either case, Forest Ethics works with these companies to find out which refineries their shipping vendors get fuel from, which of those are tar sands refineries, and where they can buy fuel instead if they want to avoid tar sands fuel."

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– Amy Westervelt, *Forbes* online, August 2011

A couple of years later, at a 2013 summit for the newly created Women's Environmental and Climate Action Network (WECAN), near New York City, the Forest Ethics campaign was recognized as one of the most innovative attempts to move significant parts of the economy toward adoption of renewable energy. The Sierra Club, which had been leading a consortium of organizations in opposition to tar sands development and was initially not convinced of the prospects of corporate dialogues, agreed to put their much larger resources and muscle behind the campaign. But for a number of reasons — including shifting priorities within the Sierra Club — that support never lived up to its promise, and the campaign stalled.

Forest Ethics, like most highly active nonprofits, was by then devoted to new campaigns and obligated by the changing focus of various funders. But they continued to work to influence other companies to join the campaign, and in the summer of 2015 both Coke and Pepsi joined the effort to eliminate from their large vehicle fleets high-carbon fuels like those from the tar sands. By inspiring some of the largest brands in the world to shift their procurement away from tar sands gas and diesel, the campaign had seriously threatened the reliability of the largest market for tar sands oil in the United States. The Forest Ethics campaign was one of several factors that prompted the government of Alberta to become the first major oil-producing jurisdiction to adopt a price on carbon and establish an emissions limit.

LOCAL CONTROL OVER PROCUREMENT AND DISTRIBUTION

LOCAL ENERGY AGGREGATION NETWORK (LEAN)

While media attention to the evolving technology of producing renewable energy has increased in recent years, far less attention has been paid to the importance of developing distribution systems for that energy. Without ways to distribute renewable energies to customers, the market will have no way of growing. The Forest Ethics campaign, aimed at encouraging major companies to shift their purchase preferences toward cleaner energy, was one way to prod things in a different direction. There were also a small and slowly growing number of communities around the country that wanted to take control of their own energy markets.

A law called Community Choice Aggregation (CCA), originally implemented in Ohio in 2000, was one way for municipal utilities to establish their own purchasing agreements with energy producers and use the transmission systems of larger, investor-owned utility companies to supply their customers. CCA "allows for local government aggregation by cities, townships or countries, with 'opt-in' or 'opt-out' provisions for their consumers," explains a 2009 article by the Institute for Local Self-Reliance. "A large buying group may be able to get a better price for group members than you can get on your own."

It has become a key maneuver in an emerging movement to deregulate and decentralize the distribution of energy in the country. It challenges what many see as near monopoly control of energy by major utility companies, has the potential to accelerate the demand for renewable energies, and responds to concerns about the vulnerability of highly centralized energy distribution networks.

CCA's viability was showcased at the CEC's Fossil Free by '33 regional gathering in 2007 but was ultimately implemented by what became the Marin Energy Authority in Marin County, California. Charles McGlashan, a Marin County supervisor and husband of Carol Misseldine, the first executive director of Green Cities California, spearheaded a contentious and often difficult seven-year campaign to get voters in the county of Marin to support his effort to create a municipally owned utility. There was opposition from utility company supporters and skepticism from those who doubted that a local company could actually generate profits and be viable. But when the company was finally established and started operating in 2010, Marin Energy Authority became a pioneer and a national example in this small but emerging movement.

LEAN'S CALIFORNIA REACH 2015

Current Municipal Clients
Alameda County
City of Davis/Yolo County
City of Sunnyvale/Silicon Valley Partnership
Contra Costa County
County of Mendocino
Humboldt County
San Mateo County
Santa Barbara County

Operational CCAs/ LEAN Members
Lancaster Choice Energy
MCE Clean Energy
Sonoma Clean Power

Advisory Support
Monterey Bay Community Power
San Luis Obispo County
South Bay Los Angeles Construction

Source: LEAN Energy U.S.

When we asked Charles whether he thought there were enough similar efforts around the country to justify setting up a catalytic network that would spread the practice to other interested communities, he was already getting requests for advice from a couple of other states. One of the women who worked with him to establish the Marin Energy Authority, and was deeply committed to the CCA model, was Shawn Marshall. After we said we would be open to funding a national gathering to launch such an effort, she developed a relationship with the Galvin Electricity Initiative in Ohio. The initiative was founded by Bob Galvin, a former head of Motorola, who was convinced that the energy distribution system in the country needed some major changes—both to modernize it and to reduce the dangers of the kind of widespread systemic failure that occurred with the Northeastern blackout of 2003. Galvin Electricity Initiative liked the idea of a new network enough to provide a couple of years worth of operating costs, and Blackstone Ranch Institute provided funds for an initial gathering to form a network of renewable energy companies, investors, and some municipal authorities. Shawn and her team organized the first gathering of the Local Energy Aggregation Network — now called LEAN Energy U.S. — in January 2011. This was new terrain in the renewable energy world, so there was much that was uncertain and fluid at the time.

It turned out to be one of the most challenging of the new networks we had supported, largely because in most places there was no existing political support base or legal infrastructure to use as a starting point, and because battles with heavily financed and well-established utility companies and their political allies were a foregone conclusion. LEAN would have to build the network one municipality at a time. The organization decided to focus its early efforts on getting communities in California to adopt CCA as a way to establish the law's legitimacy, and they would use the example of Marin Energy Authority — now a viable business — as proof that the model could work. They faced the traditional challenges associated with developing a funding base and evolving various operating strategies, but over time other communities around the state started initiating exploratory efforts of their own. By 2015, close to 25 cities and counties in California were doing so.

THE SPREAD OF DISTRICT UTILITY ENERGY PROJECTS

ECODISTRICTS

While Marin Energy Authority — now Marin Clean Energy — was a pioneer in the successful development of localized energy utilities that opened a new pathway for procurement and distribution of renewable energies, by 2015 many other municipalities around the country were thinking along similar lines. EcoDistricts, which was working on many leading-edge practices in

urban sustainability, was getting requests from participating cities to provide help with the development of district utility projects—an incarnation of what we had seen earlier in the form of localized energy efforts like those in the LEAN network. There were already about 700 district energy projects around the country, though not many were designed with renewables or low-carbon fuel sources in mind. The model was gaining new ground as a number of cities implemented localized energy as an important component of their climate action strategies. EcoDistricts had the kind of national network and influence that would help spread their adoption on a national scale. We provided them with a first grant to start a district energy training program.

THE INCREASING VIABILITY OF RENEWABLES: THE ENERGY STORAGE CHALLENGE

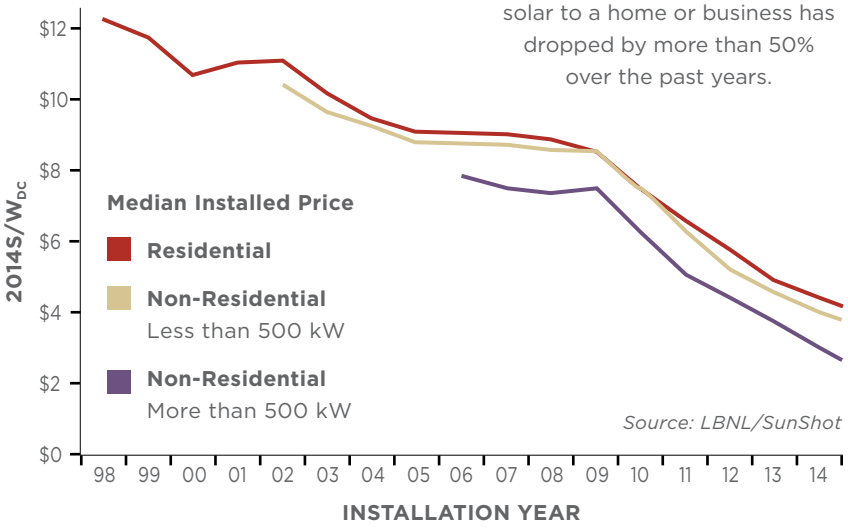
ROCKY MOUNTAIN INSTITUTE

By 2014, almost a decade after we started our philanthropic work, renewable energies that had seemed peripheral to the major energy markets—and entailed considerable financial risk for investors when we started—began to achieve greater viability. "Things are moving so fast," said Michael Picker, president of the California Public Utilities Commission, in an August 3, 2015, article by Rebecca Smith in *The Wall Street Journal*. "Every executive I talked with says there's been more change in the past five to seven years than in the last 100 years. And it will accelerate now."

The Rocky Mountain Institute (RMI), with whom we had not had a partnership since the 2006 meeting in Boulder that led to the creation of USDN, approached us in 2014 with one idea that struck us as potentially transformative. The organization had been researching the technology and markets of renewable energy for years, and had recently seen that the cost of storage batteries for home and business use—the seminal piece of technology that would allow solar energy to be stored and used when the sun was not shining—was declining but that the costs of the battery system related to installation and housing were still prohibitively high. RMI had started to figure out ways to bring down those costs. This looked to us like one of those leverage points in the larger system of solar technology that could lead to a major breakthrough, and RMI had long ago proved that they were on the leading edge of energy innovation.

COST OF SOLAR
MEDIAN INSTALLED PRICE

The average price of adding solar to a home or business has dropped by more than 50% over the past years.



Source: LBNL/SunShot

"We discovered at the charrette and in conversations with folks in the industry that many utilities and customers don't understand the value of energy storage."

– Betsy After, RMI

We provided a first grant to bring together a group of new solar technology companies, utility companies, and larger interests, including Google, at an innovation hub in San Francisco in late 2014. RMI used our grant to attract further funding from an anonymous donor who had supported RMI on other initiatives and found this one particularly appealing, and the organization came out of the gathering with new initiatives.

"The Battery Balance of System charrette, funded by the Blackstone Ranch Institute, led to two new projects at RMI," wrote Betsy After of RMI's development office. "The first project is to develop an energy storage cost roadmap. At the charrette, industry participants agreed that we need to set low cost targets. Therefore, we are going to create a roadmap that will teach the industry how to achieve the low cost target. This has worked in other industries and we think it will be successful at helping drive down the cost of energy storage as well. A team from RMI is conducting research now and we will eventually turn it over to the National Renewable Energy Laboratory. The lab has already committed to taking charge of the effort eventually. They will be able to push energy storage companies to focus on reducing costs, which will help the industry as a whole grow.

"The second project is called Energy Storage 101. We discovered at the charrette and in conversations with folks in the industry that many utilities and customers don't understand the value of energy storage. They don't understand where and when storage should be installed, how it compares to conventional power plants like those for natural gas, and the benefits that energy storage confers on a home or business. Energy Storage 101 is a project to teach utilities and customers about the value of energy storage.

"In addition to these two projects, one unexpected outcome of the charrette was that the Electric Power Research Institute asked RMI to conduct similar events that include diverse stakeholders. The RMI team also recently engaged with the White House Department of Environmental Quality to investigate actions that can be taken at the federal level to help grow the energy storage industry."

By the middle of 2015, credible sources were predicting a huge increase in solar markets in coming years, and most had identified storage as a key. "Solar is at parity in more than half of all countries, and within two years will be at parity in around 80 percent of countries," notes Giles Parkinson in a March 3, 2015, article on Australia's Renew Economy website, which summarizes the findings from a report on global energy by Deutsche Bank.

"The case for solar will be boosted by the emergence of cost-competitive storage, which Deutsche describes as the "next killer app" because it will overcome difficulties in either accessing the grid or net metering policies."

Others supported such conclusions as well. The first two in a summary of five principle findings in Bloomberg New Energy Finance's *New Energy Outlook 2015* are that "the further decline in the cost of photovoltaic technology will drive a $3.7 trillion surge in solar, both large-scale and small-scale" and that "some 2.2 trillion of this will go on rooftop and other local PV systems, handing consumers and businesses the ability to generate their own electricity, to store it using batteries and — in parts of the developing world — to access power for the first time."

THE SEARCH FOR SYSTEMIC LEVERAGE POINTS

RESOLVE

One of the most alluring prospects for social change devotees is to get just the right people in the room to make some major systemic changes that will move an industry or sector ahead in some decisive and desired way. While the energy system seems almost too large, too diverse, and too tangled in regulatory minutiae for that sort of effort to be practical, it is certainly worth considering if the mix of people seems right.

Amy Larkin, who worked with major global companies as former head of *Greenpeace Solutions* and who had recently published *Environmental Debt*, a well-received and provocative book, requested a grant from BRI in 2013 to bring together a variety of energy company leaders, government regulators, and nonprofits working on energy issues to identify leverage points where policy changes — in certain regulations, tax structures, or investment protocols — might be able to break some of the logjams that have held back what could be a more vigorous development of technologies and their markets.

Amy was a strategic partner of Resolve, a Washington, D.C.-based organization in existence for almost 40 years now. The nonprofit specializes in bringing together various parties to resolve major social challenges that are often at odds with one another. Their early roster of participants was impressive, including a former CEO of Shell, representatives from other oil companies, renewable energy investors, and a variety of government and business leaders. The latter group included those from some of the iconic Silicon Valley companies that were putting some of their vast resources into renewable energy development.

"One of renewable energy's biggest advantages, as an industry of the future, is its large reliance on decentralized operations, installation and distribution. But this model also makes renewables and efficiency more complicated to ramp up than building a new Hoover Dam or a big nuclear power plant. Decentralized energy means that many players, many financiers and many regulations must align before taking action."

– Amy Larkin, from her 2013 book *Environmental Debt*

Amy Larkin and Steve D'Esposito, the head of Resolve, had come to the conclusion that any way forward on a transition to an energy future beyond fossil fuels would need to involve oil companies, a recognition that seemed realistic but which a number of more traditional environmental activist groups would have found difficult to accept. Given our sense that all sectors of society must participate if we are going to start building a foundation for a new energy economy, this was actually a welcome approach.

We offered an initial grant as a challenge, which they were able to match a few months later in partnership with the Pembina Institute in Canada. Pembina, which had established itself several years earlier as a tar sands watchdog group, had grown into a think tank that often performed energy market analyses for some of those same companies. They would bring in Canadian participants, thus broadening the geographical scope of the initial idea.

We wanted to make sure that it would be a meeting not just to exchange ideas but one that generated useful initiatives that would matter. Amy Larkin and Steve D'Esposito, the head of Resolve, had come to the conclusion that any way forward on a transition to an energy future beyond fossil fuels would need to involve oil companies, a recognition that seemed realistic but which a number of more traditional environmental activist groups would have found difficult to accept. Given our sense that all sectors of society must participate if we are going to start building a foundation for a new energy economy, this was actually a welcome approach. The initiative was given the name Energy Shift.

When the initial group assembled in Banff, Canada, in January 2015, a number of the participants from the United States who would have brought real power and regulatory influence to the conversation — including those from Silicon Valley and the federal government — could not be there. What came out of it was not the systemic game changer we had initially hoped for but a cluster of worthwhile initiatives that Resolve committed to overseeing in the months ahead. These included an initiative with Shell on the conversion of agricultural waste to energy, an effort to develop an energy calculator

application that would function the way health monitoring software in a smartphone does, a move to push for accelerated depreciation for green infrastructure, and an ambitious conversation about creating a prototype for a North American pathway beyond reliance on fossil fuels within coming decades.

Steve formed a project team and added an energy sector transformation initiative to Resolve's existing portfolio of initiatives. This was perhaps the most important outcome, because it would provide continuity and managerial expertise to an ongoing effort to come up with projects and continue the search for the leverage points to which the initial proposal pointed. We had learned that getting too attached to particular outcomes of initiatives that were launching themselves was usually a road to disappointment; it was far more productive to be flexible and work creatively with whatever emerged. The results in such cases were often better than could have been foreseen at the start.

Almost a year after the original meeting, Energy Shift was having difficulty raising funds for the initiative. It didn't fit easily into the silos of most funders. But as new money pours into energy innovation, Resolve will continue to do fundraising for Energy Shift.