

Innovation, Management Systems and Trading Committee Newsletter

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MESSAGE FROM THE CHAIR: INFORMATION AS INNOVATION

Irma S. Russell

A story in the New York Times Feb. 26 edition reminded me of a simple fact: one of the most powerful forces for innovation is information. In *Mr. Whipple Left It Out: Soft Is Rough on Forests* (<http://www.nytimes.com/2009/02/26/science/earth/26charmin.html>), Leslie Kaufman explains that American's love of soft toilet paper "uses millions of trees, because recycled paper does not have the same feel." You might know this from common sense: soft toilet paper comes from trees rather than recycled paper. Nevertheless, it is a simple fact I had never thought about.

As Kaufman notes "fluffiness comes at a price." Notably, trees from rare old-growth forests are harvested in response to the consumer preference for soft toilet paper. The article reported that a significant percent of wood used in the production of toilet paper in the U.S. comes from old-growth and second-growth forests. Loss of the trees means that their function as a carbon sink is also lost.

Choices in every area of our lives can have significant impact, particularly when the choice reaches the tipping point of influencing the choices of other people. Cass Sunstein, formerly a professor of law at Chicago and Harvard and now director of the Office of Information and Regulatory Affairs (OIRA) as a member of the Obama administration, makes the same point in his

latest book, *Nudge: Improving Decisions About Health, Wealth, and Happiness*. The book, which Sunstein co-authored with Richard Thaler, argues that consumers will alter their buying habits if they have the information necessary to understand the impact of their choices. Implementation of Sunstein's vision of disclosure requirements that provide relevant information about products and life style choices could have dramatic impact on both industry and consumers. His vision of choice architecture suggests that "nudging" consumers toward healthy and green choices could make a real difference in consumer-driven demand. Sunstein's writing explains in memorable ways the fact that humans acting and interacting in reality do not function in ways attributed to the economic rational actor in economic theory, a point with clear implications for environmental policy.

Nudge presents a compelling case for the use of choice architecture as an environmental strategy. An excerpt presents the general idea of his approach:

It helps to think about the environment as the outcome of a global choice architecture system in which decisions are made by all kinds of actors, from consumers to large companies to governments. Markets are a big part of this system, and for all their virtues, they face two problems that contribute to environmental problems. First, incentives are not properly aligned. If you engage in environmentally costly behavior next year, through your consumption choices, you will probably pay nothing for the environmental harms that you inflict. This is what is

**Innovation, Management Systems
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In this issue:

Message from the Chair: Information As
Innovation
Irma S. Russell 1

Mainstreaming Innovation
LeRoy Paddock 3

Going Green? Take a Closer Look at the Issue
of Greenwashing As Spelled Out in the Federal
Trade Commission's Green Guides
*Michelle Diffenderfer and
Keri-Ann C. Baker* 4

How Cap-and-Trade Legislation Can More
Effectively Foster Community Partnerships
Michael D. Wallander 6

Electrical Grid and Innovation: Improvements
That Are Needed to Expand Use of Distributed
Generation and Renewable Energy
Neil M. Peretz 8

The Montreal Protocol: Greenhouse Gas
Success Story
Catherine Ware Kilduff 9

Transmission Investment Key to Continued
Renewable Energy Growth
Brian Buie 10

Solar Energy: A Mediterranean Approach
Anthony Craiker 12

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often called a “tragedy of the commons.” Each dairy farmer has an incentive to add more cows to his herd, because he obtains the benefits of the additional cows while suffering only a fraction of the costs; but collectively the cows ruin the pasture. Dairy farmers need to find some way to avert this tragedy, perhaps through an agreement to limit the number of cows that each will be permitted to add. Similar problems plague the fishing industry.

The second problem that contributes to excessive pollution is that people do not get feedback on the environmental consequences of their actions. If your use of energy produces air pollution, you are unlikely to know or appreciate that fact, certainly not on a continuing basis. Even if you know about the connection, it is probably not salient to your behavior. Those who turn up the air conditioning and leave it on for a few weeks are unlikely to think, moment-by-moment or even day-by-day, about all of the personal and social costs. We thus begin our discussion of environmental problems with these two aspects of choice architecture: incentives and feedback.

It seems unlikely that disclosure of environmental information is a full strategy for addressing climate change or other environmental and public health issues. Nevertheless, Sunstein’s insight is significant. It suggests that choice is only real choice when it is based on accurate and relevant information.

This year, the Section’s leadership used its Web site to match up people traveling to the leadership conference in Carlsbad. The drive from the San Diego airport is short, but each mile has a carbon footprint. Scholars are now distributing their work electronically and on the internet. If this catches on as a trend in scholarly publication and other publications, some reductions of carbon are assured. Of course the small changes will not be sufficient to address global climate change, but they can make a difference.

It may be overly optimistic to believe that consumers will alter their behavior based on a story about toilet paper. On the other hand, providing information to consumers seems clearly to present a move in the right

direction. The simple change of significant disclosure of information relevant to impacts of consumer choice on the environment could have a profound impact on government policy—and on the environment.

MAINSTREAMING INNOVATION

LeRoy Paddock

The Environmental Protection Agency (EPA) and many state agencies have innovation offices or programs that have developed important new approaches to environmental management. However, the process of integrating these innovations into line programs has often proven difficult and controversial. EPA's flagship innovation programs of the late 1990s—the Common Sense Initiative and Project XL—have long since died.

Perhaps the most significant challenge to innovation is that simply running existing programs uses much of the environmental agencies' limited financial and human resources. For many states, most federal funds are directed to support ongoing activities in the air, water, and waste programs rather than innovation efforts. Further, longstanding programs with their established constituencies and budgets often resist shifting resources to new, untested programs. Cf. LeRoy Paddock and Suellen Keiner, *Mixing Management Metaphors: The Complexities of Introducing a Performance-Based State/EPA Partnership System into an Activity-based Management Culture* 11.32-11.33 and 11.45-11.46, in NAT'L ACADEMY OF PUB. ADMIN., ENVIRONMENT. GOV: TRANSFORMING ENVIRONMENTAL PROTECTION FOR THE 21ST CENTURY, RESEARCH PAPERS 11-17, VOLUME III (2000).

Other problems associated with innovation efforts can be traced to the complexity of environmental legislation and the fact that EPA has no specific "innovation" authority. Part of the difficulty with Project XL was that EPA had to cobble together legal authority in the form of a "site specific rule" to grant the flexibility in facility permits that was at the heart of the program. This slowed experimentation and reduced the number and enthusiasm of program participants. While these are all understandable reasons why innovation programs often

have to take a back seat to established air, water, and waste programs, this situation is increasingly problematic given the complexity of the problems discussed in this article.

NGO acceptance of innovation efforts has also been an issue, especially for EPA. NGO concerns have often focused on priorities—asking whether innovative programs are solving important environmental problems or simply accommodating the economic interests of a few well-connected companies—and cost—asking whether these programs, which tend to be resource intensive in their start up phase, divert scarce resources away from important permitting and enforcement activities. These are important but solvable issues. Clearly, innovation should be focused on important problems and innovation programs should be cost-effective compared to other management approaches over the long run. NGOs have also been concerned about innovations being mainstreamed without adequate evaluation. Innovations should be subject to stakeholder-based evaluation before they are mainstreamed to assure that the programs have broad support among all relevant constituencies. EPA has historically not had a widely accepted stakeholder-based innovations evaluation process.

The National Academy of Public Administration (NAPA), in a recent review of how EPA delivers environmental services, observed that "most of these innovations [initiated by EPA] presently remain small and outside the mainstream of tools and coordinating mechanisms that are used to implement EPA's primary programs." NAT'L ACADEMY OF PUB. ADMIN., TAKING ENVIRONMENTAL PROTECTION TO THE NEXT LEVEL: AN ASSESSMENT OF THE U.S. ENVIRONMENTAL SERVICES DELIVERY SYSTEM 179 (2007). It found that innovation was essential to more effective environmental service delivery, noting:

Innovation programs that can have direct impact on environmental quality should be made readily available more quickly to policymakers, program directors, and implementation organizations. To accelerate innovation, EPA should place more emphasis on the importance of innovation for environmental problem solving, and on enhancing the culture of innovation within the agency.

Id. at 178. To accelerate innovation at EPA, NAPA recommended EPA

- Recognize and value innovation;
- Regularly invest agency resources in innovation;
- Allow promising innovative ideas to be tested for a sufficient period of time to understand the effectiveness of the idea;
- Regularly evaluate, in consultation with key stakeholders, how innovative ideas are contributing to environmental outcomes;
- Aggressively mainstream innovations that have been demonstrated to produce results by incorporating them into the way the agency operates, by funding them, and by helping to build capacity in implementing agencies to enable effective use of new tools;
- Seek legislative authorization for particularly promising innovations that have wide stakeholder support but that, without specific legislative authorization, are unlikely to achieve desired results;
- Assist development and promotion of model state legislation and model local ordinances needed to enable new implementation tools.

Id. at 179. Changes such as those proposed by NAPA at both the federal and state level would significantly enhance the ability of environmental agencies to develop and mainstream innovative approaches to environmental management, a process that is essential to effective green governance.

Governments, working with NGOs and businesses, need to employ a wide range of behavioral drivers—the regulatory system, economics, and values—to achieve desired environmental results. The country needs a diverse and flexible regulatory tool box that can help solve environmental problems. It also needs a box of collaboration tools, a box of tools that work with internal corporate economic drivers, a box of public engagement tools, and a box of public values tools—as well as inventors who will consistently test out and then replenish our tool boxes with new approaches.

GOING GREEN? TAKE A CLOSER LOOK AT THE ISSUE OF GREENWASHING AS SPELLED OUT IN THE FEDERAL TRADE COMMISSION'S GREEN GUIDES

**Michelle Diffenderfer
Keri-Ann C. Baker**

In an attempt to appear environmentally friendly many companies are using green messages to label and advertise their products. In certain circumstances these products have little or no positive environmental benefits. In other cases the green marketing claims are so vague it is difficult to determine definitively what, if any, environmental benefits exist. Green advertising has the potential to mislead consumers by ascribing environmental benefits to a product when these benefits may not actually exist. “Greenwashing” is defined as the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service. The issue of greenwashing is so prolific that the Federal Trade Commission (FTC) is now revising its “Green Guides” a year earlier than planned due to the rise of consumer complaints about greenwashing.

There is no doubt that eco-friendly products have an edge with our socially conscious society. Admittedly, we are drawn to products that make us feel good about buying them. After a hectic day at the office we are tantalizingly drawn into the opportunity to buy baby wash, laundry detergent, and other products that allow us to feed, clean, and clothe our kids and save a small rain forest in some obscure part of the world at the same time. Put simply—green is good for business. However, now companies wanting to advertise their company, services, or products as green need not only pay attention to the Green Guides in order to comply with the law, but also need to take into account today’s consumer who is becoming more wary of environmental marketing.

The Green Guides were created by the FTC in conjunction with the Environmental Protection Agency (EPA) in 1992 and were later revised in 1998. The Green Guides were developed to assist companies who desire to avoid greenwashing claims and to protect consumers by establishing environmental

marketing criteria compliant with fair trade practices. The Green Guides are the FTC's administrative interpretation of § 5 of the Federal Trade Commission Act (FTC Act) as applied to environmental marketing. Thus, while the Green Guides are not binding, they provide companies with a safe harbor to avoid lawsuits for unfair or deceptive advertising. During the current rulemaking process for the revisions to the Green Guides the FTC conducted three public workshops in 2008 on three new areas to incorporate into their Guides: (1) Carbon Offsets & Renewable Energy, (2) Green Packaging Claims, and (3) Green Building & Textiles. The Green Guides go into detail on what companies that engage in eco-marketing in various areas should do in terms of substantiation, specificity, general claims, seal of approval and eco-seals/certification. The Green Guides help businesses understand the limits of what can be claimed in an advertisement and what substantiation for environmental claims is necessary. The Green Guides provide many examples for consideration of what should and should not be done to environmentally market your product, services, or company. The Green Guides are likely to have a positive effect on consumers by establishing green marketing norms and allowing the consumer to make educated decisions about the environmental attributes of the products they purchase.

Companies need to be aware that greenwashing has given rise to grass roots campaigns aimed at debunking the exaggerated environmental claims which in some cases is leading to successful legal action. Consumers have also developed Web sites and blogs devoted to revealing and debunking greenwashing claims. See for example, <http://www.greenwashingindex.com>. Section 5 of the FTC Act gives rise to consumer litigation and the FTC itself can institute a lawsuit against an eco-marketer to prohibit greenwashing and to punish those that engage in greenwashing. Moreover, many states have similar "baby" or "little FTC" acts as well as additional consumer protection laws aimed at protecting consumers from misleading advertisements, including green advertising. The FTC Act and state laws are being used in conjunction to curb the practice of greenwashing.

Two recent cases demonstrate how state consumer protection laws are being applied to instances of alleged greenwashing. For example, in *Paduano v. American Honda Motor Company, Inc.*, 69 Cal.App 4th DCA (CAL 4th DCA 2009), Honda made the following green claims about its Hybrid vehicle: "(1) With impressive fuel economy of up to 51 mpg you save money, the planet conserves resources and the air is just a little bit cleaner; (2) Is there anything special I need to do [to get up to 51 mpg]? You just have to love saving money and getting terrific gas mileage; and, (3) Just drive the Hybrid like you would a conventional car and save on fuel bills." The consumer alleged that the Hybrid vehicle only obtained half of the advertised 51 mpg and a California state court held that the consumer could bring a claim against Honda under state law for unfair and deceptive advertising as to its Hybrid vehicle and that such claims were not preempted by federal law. In another case, *Euro-Pro Operating LLC v. Euroflex Americas*, 2008 WL 5137060 (S.D.N.Y. 2008), a federal court held that the manufacturer's claim that its product was "EPA Tested" was literally false and that while the manufacturer was required to register the pesticide contained in its product such registration did not constitute an endorsement by EPA that the pesticide was safe. The Portable Hand Held Steam Cleaner manufacturer claimed in its infomercial that its product was "EPA Tested so you know it's Safe" even though EPA has no testing or approval, rather, EPA merely requires the manufacturer to register the pesticide used in its products. The court granted the competitors request for an injunction even though the infomercial included a disclaimer that the "EPA Tested" claims only applied to the cleaning solution. The court noted that as a general rule what the body giveth the footnote may not taketh away.

Obviously, consumers are becoming skeptical of greenwashing and as they do so consumer rights and environmental groups are taking steps to debunk the misleading claims. Further, as regulators are becoming wise to the practice, policies, and procedures are being developed and strengthened in order to protect consumers from misleading advertisements that exaggerate a product's environmental attributes. Eco-marketers need to be aware of not only growing

consumer backlash but now also of the legal ramifications of their eco-advertising.

If you have any questions about the FTC's Green Guides please contact Michelle Diffenderfer (mdiffenderfer@llw-law.com) or Keri-Ann C. Baker (kbaker@llw-law.com).

HOW CAP-AND-TRADE LEGISLATION CAN MORE EFFECTIVELY FOSTER COMMUNITY PARTNERSHIPS

Michael D. Wallander

Local governments are on the front lines in the fight against global warming, but may be unnecessarily limited from utilizing one of the most powerful tools being contemplated by prospective climate change legislation: the ability to sponsor greenhouse gas (GHG) emissions reduction projects that lead to offset project revenue streams.

In the absence of federal action on climate change, cities and counties nationwide have taken the lead in steps to address global climate change. For example, nearly 1,000 mayors have now signed the U.S. Conference of Mayors Climate Protection Agreement. Additionally, various cities and counties voluntarily joined the Chicago Climate Exchange (CCX) and undertook the binding commitment to internally reduce their GHG emissions or externally through the purchase of CCX-approved Carbon Financial Instruments.

The historic economic stimulus bill demonstrated a recognition of the central role that cities and counties must play in facilitating the adoption of energy efficiency and renewable energy technologies. However, current drafts of comprehensive energy and climate change legislation that will be debated by Congress throughout 2009 may undermine this relationship. With the Obama administration and Congress expected to adopt a regulatory approach that features an economy-wide cap-and-trade model, Congress should consider including language that clarifies how local government agencies that sponsor emission reduction projects may qualify for revenue

streams from these carbon mitigation programs. Specifically, the lack of clarity stems from the definition of “additionality” in the context of creating a carbon “offset” regime. In a cap-and-trade program where certain “covered sources” must provide an allowance for each ton of GHG they emit, an offset credit may be used (subject to limits) in lieu of an allowance. Offset credits are created by projects outside of covered sectors that demonstrate a potential for avoiding, reducing or sequestering GHG emissions. These credits can be banked or traded to emitters to be used towards reduction goals.

While there are numerous requirements that must be met to certify a viable offset credit for sale, “additionality” is that most mind-bending of requirements that demonstrates the environmental integrity of a carbon offset project. Additionality ensures that the project is providing a GHG reduction benefit that is “in addition to” business-as-usual. Said another way, if a project “would have happened anyway” it is not “additional” and therefore is ineligible for carbon offset status and the financing stream provided by the sale of offset credits.

Each of the legislative drafts that have been released to date would generally define additionality as an activity that is “not required by or undertaken to comply with a law or regulation.” The problem with this language is that it might be construed to limit a local government’s ability to generate revenue from the sale of offsets by a government-sponsored GHG emissions reduction, mitigation, or sequestration project.

For example, the discussion draft of the American Clean Energy and Security Act of 2009 (the “Waxman-Markey Bill”) would require the Environmental Protection Agency (EPA), as Administrator, to determine which standardized project methodologies are additional, but such methodologies “shall ensure, at a minimum, that any greenhouse gas emission reduction or avoidance, or any greenhouse gas sequestration, is considered additional only to the extent that it results from activities that—(i) *are not required by or undertaken to comply with any law, including any regulation*; (ii) were not commenced prior to Jan. 1, 2009, except as provided in section 740(a); and (iii) exceed the activity baseline established

under subparagraph (B).” Other proposed cap-and-trade bills (e.g., the Dingell-Boucher bill and the Boxer-Lieberman-Warner Climate Security Act of 2008) would define additionality similarly.

Suppose a city or local government agency would like to develop a project to minimize its “carbon footprint.” Perhaps the city is doing so voluntarily to aspire to publicly stated goals of reducing emissions to certain levels by a specified time frame (e.g., 80 percent reduction to 2005 levels by 2050). The city has conducted a baseline analysis and determined its operational boundaries to include emissions from government-owned and/or operated buildings, vehicles, street lighting, water pumping, and sewage treatment operations. Perhaps the city has gone further to include indirect emissions from supply chain, waste, business travel, employee commuting, etc.

The city has exhausted cost-feasible alternatives to reduce its emissions internally. The city would like to implement a project that falls squarely within a recognized methodology for sequestering GHG emissions. To keep the example simple, suppose the city would like to engage in a wide-scale tree planting (afforestation) campaign. Suppose further that the city chooses to do so on land that is not suitable for a park or public recreation and that the land may have otherwise remained degraded or developed for some other more carbon intensive use. Assume, essentially, that the city can demonstrate a real, measurable, permanent, and *additional* reduction in GHG emissions.

Should such an offset project be disqualified solely because the city authorizes a resolution or codifies its program guidelines into its municipal regulations? The spirit of the proposed legislative language suggests that the enactment should not disqualify the project because the city is not required to implement the project. Moreover, the project arguably would not have occurred but for the stated goal of reducing GHG emissions.

The language, “not required by or undertaken to comply with a law or regulation” should be understood to refer to laws or regulations promulgated by some supervisory authority, as opposed to a city’s own self-

executing or self-authorizing laws or regulations. As written, however, there is the danger that this language would be interpreted to preclude cities or local government agencies from voluntarily implementing community conservation programs (or waste reduction campaigns or landfill methane capture projects, etc.).

Failure to address this ambiguity, and to instead leave the ad hoc task of doing so to the Administrator of EPA or the courts, would be highly detrimental to the carbon markets. Project developers need clear price signals that such certainty provides. If, for whatever reason, Congress is of the opinion that local governments and agencies should not have the opportunity to participate in the carbon markets, then that should similarly be clearly stated.

Without guidance, local lawmakers may find themselves in a quandary when trying to determine whether to adopt a stick approach (i.e., command and control legislation, such as zoning or building codes that mandate certain development standards) at the risk of removing the carrots (i.e., offset credits and other private incentives). By providing local governments with a carbon-finance revenue stream for its regulatory programs, it would enable the local government to generate, monetize, and perhaps share these incentives with private parties. This would provide local lawmakers with an additional tool to help facilitate more effective community partnerships.

In the end, cap-and-trade legislation is about influencing choices and behavioral changes that wean us off of fossil-fuels. Local governments can play a critical role in facilitating community partnerships that achieve this purpose. At a time when many governmental budgets are strained and unemployment is rising, the opportunity for local governments to serve as training grounds and innovators and to supplement their operational revenues by sourcing carbon offsets would help further the goals of the economic stimulus package as well as aid in the transition to a low-carbon society.

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ELECTRICAL GRID AND INNOVATION: IMPROVEMENTS THAT ARE NEEDED TO EXPAND USE OF DISTRIBUTED GENERATION AND RENEWABLE ENERGY

Neil M. Peretz

In a speech at George Mason University on Jan. 8, 2009, then President-elect Obama pledged to double alternative energy production within the next three years. Achieving this goal will require more than just a massive investment in solar panels and wind turbines. Because these sources of renewable energy are intermittent, and generation is sometimes located far from population centers, a significant investment in the electrical grid is also required.

Because many of the most consistently windy locations are quite remote, a significant electrical grid expansion will be required to maximally harness windpower. Offshore windpower needs to be hauled back to shore and America's foremost onshore "wind corridor" is in the often rural Great Plains. Power from these locales to urban areas is best transmitted via high voltage direct current (HVDC) lines, which are up to 97 percent efficient for distances of around 600 miles. HVDC lines also require fewer and shorter towers than high voltage alternating current (HVAC) lines; and HVDC can readily be run underground and underwater. HVDC advocates suggest that existing railroad rights of way may provide the easiest first avenue for increasing HVDC deployment through the Great Plains: yielding a side benefit of enabling the electrification of freight trains. Because HVDC lines may pass through many states, federal involvement in setting tariffs and securing rights-of-way may be necessary in order to avoid duplicative state tariffs that, when compounded (known as "pancaking"), could make HVDC transmission economically infeasible.

Increasing storage capacity within the electrical grid is another key challenge, as solar energy can only be generated during the daytime and the wind may not blow steadily when people most need power. While batteries are the most well-known form of power storage, studies by the Electric Power Research Institute suggest that using compressed air to storage energy may be half the cost of batteries. Compressed

air storage facilities, similar to natural gas storage facilities, could be setup near major metropolitan areas.

Power could also be stored by leveraging plug-in hybrid vehicles. As these vehicles become more commonplace, they can have a symbiotic relationship with the power grid when parked: the vehicles' batteries provide power to the grid when it hits peak demand, while the batteries receive a charge during non-peak hours when power demand dips.

To take advantage of distributed power storage and distribution, more intelligence must be built into the power grid, creating a "smart grid." The smart grid can automatically allow the inflow of power to the grid, from both storage systems and renewable power sources, when it is needed most, and limit the inflow when the system is overloaded. More importantly, a smart grid can modulate the demand for power when the grid is nearing capacity. This can be done in two ways: by allowing the power company to remotely shut-off non-mission critical customer premises equipment in exchange for a credit to the customer's account, and by enabling utilities to change power prices real-time, in the hope of reducing consumer demand through higher prices at times when grid capacity is stretched thin.

In addition to physical changes, such as the expansion of HVDC lines and smart grid technologies, power regulators must develop policies that incentivize consumers to invest in their own on-site renewable energy generation. Many states have individually implemented net metering and feed-in tariff policies in this regard; however, setting nationwide minimum standards might further spur such investment.

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THE MONTREAL PROTOCOL: A GREENHOUSE GAS SUCCESS STORY

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The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer required a freeze in halon production and a 50 percent reduction in the production of chlorofluorocarbons (CFCs). Since 1987, the Parties to the Montreal Protocol have repeatedly strengthened the treaty, requiring a 100 percent CFC phase-out in 1996, and setting targets for additional chemical compounds. Adaptation to scientific evidence and accelerated phaseouts have characterized the treaty's evolution into "the most successful multi-lateral environmental agreement" and "world's best climate treaty." Compared to the Kyoto Protocol, its controversial younger sibling, the Montreal Protocol is older, wiser, and more accomplished. So why its relative obscurity in the public discourse on climate change?

The Montreal Protocol has only recently established itself as a climate change treaty, not just a treaty on ozone-depleting substances. The substances it covers, such as CFCs and hydrochlorofluorocarbons (HCFCs), not only damage the ozone layer but are also greenhouse gases (GHGs). Therefore, by reducing use of these substances, the Montreal Protocol also has reduced GHG emissions. The World Meteorological Organization predicted that by 2010, the Montreal Protocol will have reduced emissions by an amount equivalent to ~11 billion metric tons (Gton) CO₂ per year between 1990 and 2010. The Kyoto Protocol target for the first commitment period (2008-2012) is to reduce emissions by an amount equivalent to 2 Gton CO₂ per year. Scientists estimate that without the reductions under the Montreal Protocol, the amount of heat trapped due to ozone-depleting substances may have been twice as much as it is today.

But the success of the Montreal Protocol necessarily will reduce its impact on climate change—as the use of ozone depleting substances declines, the potential for emissions reductions also declines. The useful life of the

Montreal Protocol may be longer as a model for other international agreements and their domestic implementation. For example, similar problems arose in negotiation of the Montreal Protocol as arise today in the context of the Kyoto Protocol, such as, is there enough scientific evidence to justify regulatory activity? Are affordable alternatives available, and are they available equally to developing and developed countries? Negotiating countries will have to debate these questions in the context in which they arise, but the history of the Montreal Protocol gives hope that these questions may have answers which lead to climate change solutions.

The U.S. implementation of the Montreal Protocol, through a combination of market-based and traditional mechanisms, could also provide a useful case study. The U.S. established a domestic trading system parallel to the system for international trading of ozone-depleting substances. The Environmental Protection Agency's rules specified that each time a production allowance was traded, 1 percent of the allocation was "retired" to assure environmental trading benefits. In addition to the trading mechanism, the U.S. implemented an excise tax on production of CFCs. This accelerated the use of substitutes and, in theory, captured the "windfall profits" resulting from the declining supply and higher price of ozone-depleting substances.

One of the most remarkable aspects of the Montreal Protocol is its ability to garner international support even after twenty years of existence. At the November 2008 meeting of its Parties in Doha, Qatar, developed countries agreed to provide an additional \$490 million in funding for efforts to reduce the use of ozone-depleting substances in the next three years. In addition, the Parties agreed to take steps to speed destruction of stored ozone-depleting substances. These actions are a vote of confidence in the future of the Montreal Protocol and an indication of its past success in reducing ozone-depleting substances.

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TRANSMISSION INVESTMENT KEY TO CONTINUED RENEWABLE ENERGY GROWTH

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During every period that a new form of electrical generation was targeted for investment, there was a coinciding investment in new transmission construction. Development of hydropower coincided with installation of new long-distance power lines. Investment in nuclear power required installation of interstate high-voltage lines. Even gas-fired generation facilities, which can be located closer to load centers and is the only generation type that has grown over the last two decades without a corresponding investment in new transmission, nevertheless requires investment in pipelines. U.S. Department of Energy, Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2007 (2008).

The Obama administration's goals of encouraging substantial investment in renewable energy, likewise, will require a major investment in new transmission. This is particularly true regarding an investment in wind energy. According to the Department of Energy (DOE), "lack of transmission availability remains a primary barrier to wind development." U.S. Department of Energy, 20% Wind Energy by 2030 (2008) ("20% by 2030"). In 2008, the United States surpassed Germany to become the world leader in installed wind energy capacity with the addition of 8,358 megawatts (MW) of new wind generating capacity. This brought total domestic installed wind energy capacity to 25,170 MW, which meets approximately 1 percent of the country's energy needs. Press Release, AWEA, Wind Energy Grows by Record 8,300 MW in 2008 (Jan. 27, 2009) (http://www.awea.org/newsroom/releases/wind_energy_growth2008_27Jan09.html). This is merely a drop in the bucket compared to the more than 300,000 MW of wind energy installations waiting to connect to a grid that is currently incapable of carrying the electricity that would be produced. AWEA & SEIA, February 2009, *Green Power Superhighways*, White Paper.

Thus, the wind energy industry, as well as solar, geothermal, and hydropower industries, each face the need for costly investment in transmission infrastructure. This includes replacing aged and outdated equipment that is unable to handle the electrical load that will be produced. Additionally, this includes the construction of new transmission because these energy sources are typically located great distances from population centers. Specifically, while the majority of the population can be found near the coasts, wind resources are best in the plains from Texas to North Dakota. *Id.* Although some wind energy generators could be sited closer to population centers, according to the DOE model, an additional 12,000 miles of new transmission at a \$20 billion price tag would actually prove to be more cost-effective. *See* 20% by 2030.

On Oct. 20, 2008, the Office of Electricity Delivery and Energy Reliability created a new regulatory process to hasten the review process and approval of proposed transmission facilities. Under this new process, a single environmental review document is compiled in order to coordinate all permitting and environmental reviews required under federal law. *Coordination of Federal Authorizations for Electric Transmission Facilities*, 10 C.F.R. § 900.1 (2008). When a request for coordination is received by DOE, any entity that is responsible for issuing federal authorizations to site a transmission facility must coordinate with the appropriate lead agency for preparing all National Environmental Policy Act compliance documents. *Coordination of Federal Authorizations for Electric Transmission Facilities*, 10 C.F.R. § 900.6(a)(1) (2008). The single environmental review document is available to all permitting entities for making their agency decisions. *Coordination of Federal Authorizations for Electric Transmission Facilities*, 10 C.F.R. § 900.6(b)(4) (2008). State agencies, Indian tribes, and multistate entities that have separate environmental and permitting reviews may also participate in the coordination process. *Coordination of Federal Authorizations for Electric Transmission Facilities*, 10 C.F.R. § 900.6(a)(2) (2008).

Beginning in the late 1990's, investments in transmission infrastructure, after a two decade decline,

saw a marked increase in transmission investment that continues to rise. In 2006, investor-owned utilities and independent transmission companies invested \$6.9 billion in transmission. *Id.*

This growth in investment has been buttressed by actions of state and federal agencies who have noted the importance of transmission and implemented rules and approved the funding of numerous renewable energy transmission projects. For example, on Dec. 3, 2008, the Federal Energy Regulatory Commission (FERC) approved rate incentives for two transmission projects that will increase wind power penetration in the south central United States. Tallgrass Transmission, LLC, proposes to build a two-segment, 765 kilovolt (kV) transmission project in Oklahoma, to run separately from Woodward, Oklahoma, to the Kansas and Texas borders. At the Kansas border, Tallgrass' project would interconnect with the second transmission project, Prairie Wind's 230-mile, 765 kV project near Medicine Lodge, Kansas. The completion of the \$500 million Tallgrass project is expected by 2013. Press Release, Oklahoma Department of Commerce, FERC Approves Incentives for Two Transmission Projects (Dec. 17, 2008).

On Feb. 19, 2009, FERC approved the rates for Chinook Power Transmission, LLC and Zephyr Power Transmission, LLC projects to transfer energy from wind farms in the Northern Rocky Mountains to Las Vegas, Nevada. Chinook's 500 kV high voltage direct current transmission line will travel 1,000-miles from Harlowtown, Montana to a point south of Las Vegas. Zephyr's 500 kV high-voltage direct current transmission line will travel 1,100-miles from Medicine Bow, Wyoming, to a point south of Las Vegas. This approval, in particular, demonstrates a change in FERC policy regarding merchant transmission projects. Merchant transmission project developers do not have a set pool of customers from which they may recoup project costs and, thus, assume all market risks. "FERC's new policy will allow Chinook and Zephyr to use an "anchor" customer model, in which each developer contracted with a wind generation company for half of the capacity on its line." Press Release, FERC, FERC Signals New Flexibility in OK of Rates for Renewable Energy Transmission Projects (Feb. 19, 2008) (<http://www.ferc.gov/news/news->

releases/2009/2009-1/02-19-09-E-15.asp). Section 402 of the American Recovery and Reinvestment Act of 2009 (Recovery Act) granted authority to the Western Area Power Administration (WAPA) to borrow up to \$3.25 billion dollars from the U.S. Treasury “to assist in financing the construction, acquisition, and replacement of the transmission system” within WAPA area. American Recovery and Reinvestment Act of 2009, PL 111-5, 123 Stat 115a Pursuant to this authority, WAPA announced on Feb. 20, 2009 the availability of a Request for Interest in indentifying proposed transmission projects. Notice of Availability of Request for Interest, 74 Fed. Reg. 9391 (Feb. 20, 2009) Bonneville Power Authority (BPA) was given the same authority in section 401 of the Recovery Act. American Recovery and Reinvestment Act of 2009, PL 111-5, 123 Stat 115a. The BPA has not wasted any time in utilizing this authority and decided to build a 500 kV transmission line at a cost of \$246 million. More than 700 MW of new wind energy is expected to be provided when the project is energized in 2012. Press Release, BPA, BPA Outlines Major Transmission for Pacific Northwest (Feb. 19, 2009).

The Federal Power Act, as modified by the Energy Policy Act of 2005, requires that DOE issue an electric transmission congestion study every three years. Based on the congestion study, DOE is authorized to designate geographic areas experiencing capacity constraints or congestion adversely affecting consumers as a national interest electric transmission corridor. On March 25-26, 2009, the Office of Electricity Delivery and Energy Reliability conducted a Technical Workshop to receive input from subject matter experts on the historical transmission data and studies of future transmission projections in the Western and Eastern Interconnections to be used in preparation of the study. Having issued the first study on the one-year anniversary of the Energy Policy Act of 2005, the 2009 National Transmission Congestion Study is due on Aug. 8.

Congressional policy should seek to promote policies that lead to further expansion of the renewable energy industry by facilitating investment in transmission grid infrastructure. This will have the dual benefit of furthering job retention and creation. Approximately

85,000 people are employed in the wind energy industry today, which is an increase of about 15,000 from one year ago. Press Release, AWEA, Wind Energy Grows by Record 8,300 MW in 2008 (Jan. 27, 2009) (http://www.awea.org/newsroom/releases/wind_energy_growth2008_27Jan09.html). DOE estimates that the 20 percent wind energy scenario could create more than 500,000 jobs and generate more than \$450 billion dollars for the economy by 2030. U.S. Department of Energy, 20% Wind Energy by 2030 (2008) Similarly, a recent study showed that over the next eight years, 440,000 jobs and \$325 billion of economic development could be created by the solar energy industry. AWEA & SEIA, February 2009, Green Power Superhighways, White Paper (quoting Navigant Consulting, “Economic Impacts of Extending Federal Solar Tax Credits,” <http://seia.org/galleries/pdf/navigant%20Consulting%20Report%209.15.08.pdf>). Of course, none of these economic and renewable energy goals can be met without a concomitant investment in transmission grid infrastructure.

SOLAR ENERGY: A MEDITERRANEAN APPROACH

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As the U.S. Congress and individual states consider incentives and regulations to promote renewable energy, it is helpful to examine policies and programs that have seen success outside the United States. For example, Turkey’s success with solar power for hot water production provides a framework through which a state such as California, which has a comparable Mediterranean climate in certain areas, could promote development of solar thermal technologies. *See e.g.*, Environment California Research and Policy Center, “Solar Water Heating: How California Can Reduce its Dependence on Natural Gas” (Apr. 2007), *available at* http://www.environmentcalifornia.org/uploads/at/56/at563bKwmfrrJI6fKI9U_w/Solar-Water-Heating.pdf.

Due to its geographical location, the Republic of Turkey is uniquely positioned to embrace solar energy

as a significant part of its overall energy strategy. Turkey boasts a daily average of 7.2 hours of sunshine over 12 months (Renewable Energy Report, *Turkish Lawmakers OK Measures to Promote Rooftops Wind, Solar* (Apr. 2, 2007), available at 2007 WLNR 7209257), and the country's total solar energy potential is 35 Mtoe per year. Guner Law Office, *Turkey: Renewable Energy Market Opportunities and Legislation in Turkey* (Apr. 3, 2008), available at <http://www.mondaq.com/article.asp?articleid=59066> (account required). Although solar energy currently makes up a relatively small part of Turkey's energy supply, solar roofing panels, used primarily for hot water production, have been a common sight on Turkish homes for years, mostly in the Aegean and Mediterranean regions. Turkey General Directorate of Electrical Power Resources, Survey and Development Administration, http://www.eie.gov.tr/english/solar/solar_Turkey_e.html. The prevalence of these water heating systems was not born out of any specific legislation, but began in the 1970s as a market response to the growing tourism industry and the need for hot water. The solar thermal market expanded greatly in the 1980s due to Turkey's energy supply difficulties and political and economic uncertainty. World Energy Council, *2007 Survey of Energy Resources: Solar Energy*, available at http://www.worldenergy.org/documents/ser2007_final_online_version_1.pdf. Consequently, Turkey is one of the leading countries in the world in the use of flat plate collectors for domestic hot water systems with a total installed capacity of 8.2 million m² collector area as of 2001. *See supra* note 3.

To further promote the expansion of solar energy, the Turkish government has begun to implement incentive programs and legislation. For example, the success of solar energy for hot water production led to an effort to expand use of solar panels to Turkey's more remote forest regions. Turkey's Forest Authority launched a pilot program to persuade three villages in forest regions to switch from wood-burning water heating systems to solar systems. Under this initiative, residents were offered up to \$900.00 in interest-free credit to install solar-operated water heating systems. As a direct result of this program, the consumption of firewood fell by 70 percent, cutting firewood use by 3,500 tons. The results have proven so successful that

the Forest Authority is extending the program to cover fifteen villages. The Forest Authority also has long-term plans to spread the program to all 588 villages in Turkey's Bursa forest region. Renewable Energy Report, *Turkish Forest Agency Looks to Expand Solar Heating Project* (Mar. 5, 2007), available at 2007 WLNR 5193251.

Additionally, Turkey's parliament recently passed a new energy law with provisions that would allow for solar and wind power generators on rooftops. The new law, which as of April 2007 was still awaiting ratification, would allow owners of buildings—including residential buildings—to not only supply the power needs of their buildings through these alternative methods, but also to sell any excess power produced to local distributors. In light of Turkey's success in the use of solar water heating panels, the new law is expected to garner widespread interest in solar generation. *See supra* note 1.

These examples provide insight into the types of innovative strategies that can be effective as countries in both the developed and developing world begin moving towards greener and more energy efficient economies. Furthermore, Turkey's example demonstrates the need for governments to consider a variety of factors at the local and national levels, including geography, climate, and market forces, in order to effectively promote clean and renewable sources of energy through incentive programs and comprehensive legislation.

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Global Climate Change and U.S. Law

Michael B. Gerrard, Editor

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