



TECHNOLOGY MARKET SUMMIT
May 14, 2012
EXECUTIVE SUMMARY

I. Introduction

Jointly sponsored by EPA and American University, the 2012 Technology Market Summit brought together government, industry, academia, and private investment decision makers to begin a dialogue on how to accelerate the development and adoption of technologies to achieve economic growth through environmental protection. After welcoming remarks from American University's President and EPA's Deputy Administrator and speeches from the EPA Administrator and three other Cabinet-level officials, summit participants chose one of three concurrent case study sessions to attend. In each session – fenceline air quality monitoring, the automotive supply chain, and biodigesters and biogas – guest speakers and invitees explored barriers and solutions related to technology, policy, and finance. In the afternoon, participants reconvened to hear “market talks” (concise presentations from the investor perspective) from several distinguished guest speakers, who shared their views on opportunities for advancing the development of technology for environmental protection.

II. Supporting Materials

A one-page fact sheet on the Summit, including a list of Summit speakers, can be found at: <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=P100EDIN.txt>.

Case study primers are available as follows:

- Fenceline Air Quality Primer - <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=P100EDIT.txt>
- Automotive Supply Chain Primer - <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=P100EDJZ.txt>
- Biodigesters and Biogas Primer - <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=P100EDJ5.txt>

Recorded videos of the Technology Market Summit are available on UStream as follows:

- Plenary Session – <http://www.ustream.tv/recorded/22582958>
- Fenceline Air Quality Case Study Session – <http://www.ustream.tv/recorded/23329337>
- Automotive Supply Chain Case Study Session – <http://www.ustream.tv/recorded/23247548>
- Biodigesters and Biogas Case Study Session - <http://www.ustream.tv/recorded/22584216>

- Keynote Session – <http://www.ustream.tv/recorded/22586511>
- Market Talks – <http://www.ustream.tv/recorded/22588476>

III. Plenary Session

The Summit began with welcoming remarks from American University President Neil Kerwin, who expressed interest in continuing the university's relationship with EPA on future technology-based initiatives. The EPA Administrator Lisa P. Jackson, Secretary of Agriculture Tom Vilsack, Secretary of Commerce John Bryson, and U.S. Trade Representative Ron Kirk all addressed potential opportunities for regulators and investors to foster market-oriented solutions to environmental and health issues which could simultaneously bolster the U.S. economy through job creation and increase exports.

IV. Concurrent Case Study Sessions

Summit attendees participated in one of three concurrent sessions designed to examine the following: innovations in environmental protection underway in each industry or technology designated for study; barriers to continued advancement of innovative technology within each study area; and, steps that government and the private sector can take to promote or accelerate the adoption of innovative methods. To prepare for these sessions, EPA sponsored pre-Summit workgroups to draft primers that described the three selected industries/technologies and gave participants background information to use as a foundation and guide for the breakout discussions.

Fenceline Air Quality Monitoring

Presentations and discussion at the Fenceline Air Quality Monitoring session identified opportunities for regulators to help drive innovation and investment in air quality monitoring technologies. Discussions ensued regarding how improved real-time air quality data can help create better regulations. Participants also noted that EPA standards can pave the way for communities and industries to engage with each other and develop working relationships centered on the dissemination of information and the promotion of public health.

Private sector representatives identified areas in which regulators can help foster new technology development. Panelists noted that innovation is driven by advance notice of regulations and clear guidance on what those regulations require. Additional discussions focused on how EPA can continue its historical role in researching and bringing to light new monitoring technologies and the markets for those technologies. One panelist noted that a market that is absolutely dependent on a federal regulation may not appeal to venture capitalists. Participants noted that EPA could help accelerate technology adoption curves by identifying and endorsing specific technologies.¹ Encouraging development of intellectual property is important to help startup-stage tech developers to succeed and attract investors.

¹ The information and views expressed at the Technology Market Summit reflect the opinions of authors and summit participants and not necessarily those of EPA. EPA does not endorse specific commercial products, goods or services, and no official endorsement is intended.

Members of the panel and audience discussed how regulatory strategy needs to move from estimating emissions factors to measurement of actual emissions.

Discussion at the session brought forward ways to promote emerging technologies in international markets and among community stakeholders. EPA's research into and validation of these technologies within the U.S. could open up international markets, since environmental regulators around the globe look to EPA as a leader in environmental issues. Making other countries aware of successes within the U.S. would further promote EPA's role as an international leader. Regulators and technology developers can interface more with communities and stakeholders in new monitoring technologies. As monitoring technology becomes less expensive and more accessible to community stakeholders, EPA could provide "gold standard" air quality information to calibrate or validate emerging monitoring technologies. Identifying and taking advantage of these broader markets could allow EPA to maximize its role in promoting widespread development and adoption of new monitoring technologies.

Biodigesters and Biogas

Presentations to the biogas workgroup included case studies of successful programs undertaken at public and private levels, including the city of Philadelphia Water Department, Duke University, and Washington State University, as well as presentations from representatives of the American Biogas Council, the Climate Trust, and the U.S. Department of Energy. The case studies illustrated the potential energy and environmental benefits associated with anaerobic digester systems but also noted the barriers that impede more widespread adoption of this innovative practice. Among the barriers noted were the following:

- It is difficult for projects to compete for investment capital, especially with natural gas being so affordable; the power purchase price is a significant impediment.
- Before equity investment, some requirements must be met:
 - Owners and developers may need to demonstrate project viability.
 - Finding the right site is a challenge: "right" means close enough to feedstocks to get them to the facility at low economic and carbon costs but far enough away from "sensitive receptors" or neighbors.
 - Feedstock needs to be secure. Clean substrates are needed at high enough prices for project economics but low enough to be economical to eliminate wastes in this manner.
 - There is a loophole in Renewable Portfolio Standards (RPS) which needs to be fixed, where biogas qualifies for Renewable Identification Numbers (RINs) unless it comes from stand-alone food waste.
- Right technology – fit the technology to feedstocks, and need affordable technology
- Regulations for Agricultural Digesters are out of date and need updating.
- Participants (such as farmers) often have to make significant risky investments and learn a new business.
- Effective implementation often requires meeting non-revenue goals and objectives.

Session participants also discussed what government can do to support the digester industry. Recommendations included:

- Putting a price on renewable energy that is sufficient.
- Providing USDA guarantees to organizations other than banks to open up funding to new projects.
- Using performance-based requirements that don't pick technology winners or losers.
- Passing new IRS rules for program-related investments and enabling foundations to be impact investors.
- Improving existing mechanisms such as the New Markets Tax Credits.
- Making available and providing government land for siting digester projects.
- Sharing information and best practices.

Automotive Supply Chain

Various observations and recommendations emerged from the Automotive Supply Chain presentation from panel members and the audience, many of which were reiterated by the Original Equipment Manufacturers (OEMs) and suppliers in attendance. Presenters noted that employees are happier when they work for companies that value sustainability, just as customers appreciate purchasing from a company that is environmentally conscious. One panelist noted that many consumers, however, are not willing to sacrifice quality or cost to obtain sustainably produced goods. Nonetheless, in response to increased environmental concerns, OEMs and suppliers have already begun taking steps to set and meet company-wide sustainability goals; for example, several OEMs and suppliers are now producing zero landfill waste.

Lessons learned and successes achieved at the level of the OEMs could cascade down the supply chain. Tier 1 suppliers attested to having adopted technologies innovated at the OEMs with which they do business. While this concept of knowledge sharing across the industry was broadly endorsed by the presenters, they acknowledged that competition among OEMs is fierce and that innovation that impacts the bottom line or drives efficiencies is highly protected. These circumstances may delay or create disincentives to the dissemination of sustainable technologies, but there exist areas in which OEMs do work together (e.g., used tire recovery). Moreover, OEMs benefit from the cross-fertilization of technologies that occurs across different markets and industries.

Private sector representatives had several suggestions for the Federal government, including: set measurable industry-wide goals; educate, get buy-in and create a level playing field by consistently and fairly enforcing goals; and invest in efficient infrastructures and technology development.

Presentations to the Plenary

Following the completion of the breakout sessions, a participant from each work group briefly summarized the conclusions reached at each session to the full group of summit participants.

V. Keynote Presentation by Mark Fulton, Managing Director and Global Head of Climate Change Investment Research, Deutsche Bank

Mr. Fulton focused on analyzing the investment environment to better understand how regulators, policies, and investors may interact in optimal ways. Mr. Fulton noted that “one person’s regulation is another person’s market,” and listed three roles of regulators, such as EPA, in promoting technology investment: pricing externalities, eliciting technology responses, and investing in solutions to environmental problems. Ultimately, investors want to see policy that exhibits transparency, longevity, and certainty, or “TLC.” Transparent policies are easily understandable and open to all, making it easier for investors to identify opportunities for investment generated by policies and regulations. Policies with guaranteed longevity, certainty, and consistency foster a stable regulatory environment, reducing risk in policy-driven markets and ensuring that incentives are financeable.

According to Mr. Fulton, countries and states with TLC in their regulatory environment provide clear investment opportunities. The policy framework of a TLC country would include emissions targets, carbon pricing, mandates at a sector and technology level, and incentives such as feed-in tariffs, loan guarantees, and tax rebates. The three broad groups of policy available to climate change regulators consist of traditional regulation, carbon pricing, and innovation policy. Mr. Fulton indicated that since the U.S. does not have carbon pricing and its innovation policy is fading, investors are relying on EPA to pass traditional regulations.

Mr. Fulton identified several areas in which public policy can help scale production and accelerate technical progress. In the pre-venture capital stage, public policy supports research and development in agencies and universities on high-risk, high-impact technologies (e.g., DOE’s Advanced Research Projects Agency-Energy, or ARPA-E). Public policy can also stabilize market expectations and perceptions of risk about future demand for renewable energy. This increases the scale of renewable energy manufacturing and reduces its cost. Public policy can create incentives to invest in scaling production capacity and other cost-reducing activities. These trends ultimately lead to stabilized cost of energy trends and competitiveness of renewable technologies. Renewable energy and energy efficiency creates jobs, and is expected to create roughly 500,000 new indirect and direct jobs in 2030 as compared with 2010. Policymakers can emphasize this message more to make investment in renewable energy a more attractive policy goal.

Mr. Fulton drew comparisons between the development curves of traditional and renewable energy sources. Once coal and gas were expensive; it took a long time to bring production to scale and reduce costs. Relative to coal and gas, the development of solar and wind energy has been remarkably fast. Because of climate change and other environmental issues, he believes

we need an energy transition in 30 to 50 years that should really be allowed 100 to 200 years based on our history and previous energy cycles. This rapid development will require incentives and regulation.

Returning to his theme, Mr. Fulton predicted that for EPA and the U.S., certainty would be achieved after litigation had run its course. In the absence of successful and clear requirements, Mr. Fulton expects that EPA will play a very important role in achieving transparency and longevity.

VI. Market Talks

Roger Platt, Senior Vice President for Global Policy and Law, US Green Buildings Council (USGBC)

Mr. Platt's talk, "Fueling Environmental Solutions in the Built Environment," focused on an idea he titled, "All Schools In," a potential partnership between EPA, USGBC, and thousands of schools across the country. This partnership could take advantage of the successes of EPA's Energy Star Buildings program and USGBC's Leadership Energy and Environmental Design certification system in order to make schools more energy efficient and high-performing with respect to environmental performance metrics. As part of this partnership, EPA and USGBC could send joint energy and environmental auditors to K-12 schools, where students could be trained and provided with useful job skills. Students in "green" schools could become environmental ambassadors, helping to educate other students and their own families at home in the environmental principles they gained from the program. Mr. Platt points to this program as one example of an initiative that can create jobs, leverage the volunteer and investment communities, and bring the country together around environmental issues in a nonpartisan way.

Mark Tercek, President and Chief Executive Officer, The Nature Conservancy

In his talk, "How Wall Street and the Environment Converge," Mr. Tercek discussed ways in which market-oriented solutions can be applied to environmental issues. He noted that it often makes financial sense for companies to implement environmental initiatives. 3MTM was one of the first companies to lower costs and implement a corporate environmental strategy through the company's "Preventing Pollution Pays" program. Walmart followed suit with a similar program. Investors supported these initiatives because they saved shareholders money. Mr. Tercek discussed his three specific recommendations to the regulatory and investment communities. First, investors need a more stable and long-term policy environment to encourage investors to spend money. The prospect of long-term carbon legislation and tax breaks for renewables sparked investment in solar and wind energy. According to Mr. Tercek, when the climate legislation lost support and federal and state budget deficits rose, the long-term availability of tax incentives became uncertain, and investments in these renewables dropped. Second, bringing together leaders in state and federal regulatory agencies and investment communities can lead to real solutions to environmental problems. For example,

the U.S. Climate Action Partnership brought together Chief Executive Officers from a wide cross-section of companies and non-governmental organizations to think about climate legislation in the U.S. and to draft a list of requests and recommendations for Congress. Finally, Mr. Tercek noted that investments in nature itself, while sometimes difficult to scale, can be cost-effective even if special tax incentives, a price on carbon, or other such incentives are not in place.

Gwen Ruta, Vice President of Corporate Partnerships, Environmental Defense Fund (EDF)

In her talk, “Technology is Only Half the Battle: Achieving Adoption and Scale,” Ms. Ruta centered on ways in which regulators can help disseminate and fully deploy existing technologies that have the capacity to solve many of the most pressing environmental issues. Ms. Ruta identified a need to design and leverage markets that create both economic and environmental benefits. Through its initiatives, EDF tries to prove to corporations that these benefits are simultaneously achievable. Ms. Ruta argued that companies and regulators should not wait for the technologies of the future to be developed, but instead should take advantage of the solutions that exist today. Capable management teams, focus, and foresight are required to adopt alternative business models and environmentally beneficial operating strategies. One of the most common barriers is lack of clear accountability. Many companies do not collect or aggregate data that lets them evaluate new technologies and build a business case for environmental strategies. Ms. Ruta notes that if quick payback is the single priority, then environmental solutions, which can take longer to produce investment returns, often get left behind.

Mindy Lubber, President, CERES

Ms. Lubber’s talk, “Investor Progress Towards More Sustainable Capital Markets,” focused on ways in which investment in sustainable markets can become more appealing to investors. Ms. Lubber maintained that investors want regulatory certainty. Regulatory uncertainty introduces risk and is therefore unattractive for companies and investors. Regulations, however, move capital, alter the environment in which industries operate, and are, therefore, crucial to driving innovation. Regulations are not bad for business. On the contrary, many business leaders understand that environmental issues need to be addressed, and regulation often sparks technological advancements. Technology can also be driven by companies, which make decisions based on the behavior of their investors, customers, and employees. When companies are seen as leaders in sustainability, workers become happier and are more productive. According to Ms. Ruta, customers are not pushing companies hard enough for solutions to environmental issues, such as informative labeling on consumer goods. At the management level, corporate boards could set goals on sustainability or show commitment to environmental responsibility through company-wide initiatives.

Kathleen McGinty, Senior Vice President and Managing Partner, Weston Solutions and Operating Partner, Element Partners

In Ms. McGinty's talk, "How Cleantech Solves Environmental Problems," she discussed ways in which investors can do more within the existing regulatory environment. Ms. McGinty pointed out that despite increasing environmental challenges and a flowering of technology, there has not been a similarly dramatic change in the way the regulatory and environmental communities achieve environmental objectives. Ms. McGinty warned that tools such as the Clean Air Act, the Clean Water Act, and the Superfund program could create compartmentalized benefits and unintended negative repercussions. Ms. McGinty contended that a more holistic and comprehensive approach to legislation will more effectively achieve overall improved environmental quality. Legislation needs to become more flexible and nimble, which will be difficult to achieve in the current regulatory framework. Ms. McGinty concluded by encouraging regulators to push an affirmative agenda that promotes sustainability, rather than focusing on approaches that are restrictive or negative.

Mark Beck, Senior Vice President and General Manager, Corning Environmental Technologies

In his talk, "How Regulations Drive Technology Investment & Economic Development," Mr. Beck pointed to instances within his own company, where EPA regulations have historically led to increased investment in and development of new technologies. He cited Corning's development of a glass component of catalytic converters as a specific example of technology directly springing from federal regulations. Mr. Beck noted that in the past, EPA has been the global leader in promoting clean air, and EPA needs to continue to play this role. Jobs and investments by industry have shown industry's support of EPA initiatives, but companies need EPA to take the lead, particularly for international initiatives on environmental issues such as improved air quality. Mr. Beck cited the Clean Air Act as an example of a regulation that led to major technology development and widespread adoption of new technologies across the globe. Mr. Beck ended by noting that EPA leadership can continue to guide global progress through first-class research in technology, first-class regulatory innovation, and courageous promotion and implementation of new technologies that challenge industry standards.

VII. Conclusion

EPA's Chief Financial Officer Barbara J. Bennett closed the Summit proceedings. She thanked Robert Brenner, Senior Fellow at the Nicholas Institute, Duke University, for moderating the afternoon market talks, extended appreciation to the co-sponsors, distinguished speakers, special guests, panel participants, and attendees for making the day's session a success, and expressed the hope that the momentum generated by the event would help to continue EPA's work with private and public partners toward a more sustainable future for the environment and the economy.