From Deployment Chasms to Energy Solutions

DOE's Role in Accelerating Job Creation and Clean Energy Deployment

US State Energy Advisory Board (www.steab.org)
Market Transformation and Deployment Task Force Report
Approved Final Report: 2/23/11

The U.S. State Energy Advisory Board (STEAB) has taken on as a top priority to identify any and all ways for the US DOE to accelerate clean energy deployment and job creation in America. To carry out this priority, the STEAB created the Market Transformation and Deployment Task Force to develop recommendations for adoption by the STEAB and for inclusion of these recommendations in its annual report to the Secretary of Energy and to the US Congress, in accordance with section 365 of the Energy Policy and Conservation Act (42 U.S.C. 6325).

Success at addressing this deployment challenge could mean millions of more Americans employed in high-wage jobs in clean energy technology infrastructure in all areas of the country. Effective deployment will also help achieve the President's goals on jobs and competitiveness, and do more for less with scarce Federal resources.

We observe that we have extensive and cost-effective clean energy technology that we have not deployed at scale because we have not sufficiently aligned all of the necessary public policy and private sector levers. DOE has the distinguished opportunity to relieve these bottlenecks and align public and private forces to solve this competitive challenge.

DOE's Role in Deployment and Market Creation

While within the Department of Energy there are some divergent views as to whether the agency is responsible for *job creation* or *technology development*, outside of the agency it is clear that the DOE is accountable for *clean energy deployment* and a central actor in a national drive towards economic competitiveness.

In parallel, a number of concerns and recommendations have been offered in the last several years to enhance the Federal government's and the DOE's effort in strategic deployment, innovation and collaboration. In 2005 and 2010, for example, the National Academies (Science, Engineering, and Institute of Medicine) were tasked by the Congress to offer insights on the increasing concern over America's competitive posture. The Academies issued two reports, "Rising Above the Gathering Storm" (RAGS, 2005) and RAGS Revisited (2010). These reports address the national need to create an innovation ecosystem that adequately addresses basic

research, and foster an environment that facilitates the transition of that research into markets, calling for deliberate speed.

A number of other studies and reports have made even more pointed recommendations regarding how the DOE could organize itself more effectively around deployment. For example, the Association of State Energy Research and Technology Transfer Institutions (ASERTTI) recommended in November 2008 that the DOE create a new high-level position at DOE on State and Local Innovation and Collaboration. ASERTTI's reasoning was that such a position "would help strategically focus and align human and financial state, local and federal resources to accelerate the adoption, commercialization and implementation of clean energy and energy efficiency technologies."[1]

More recently, the President's Council of Advisors on Science and Technology (PCAST), in its report, *Accelerating the Pace of Change in Energy Technologies Through an Integrated Federal Energy Policy*, called for significant changes in the way the Federal government coordinates the complex job of fulfilling the Nation's energy needs across individual agencies and programs.[2]

A wave of additional studies and task forces have also recommended changes in Federal energy deployment and economic development.[3]

More recently, the President in his January 25, 2011, State of the Union, and Secretary Chu, in recent speeches, have declared that the competitive challenges this nation faces, especially with regards to clean energy, to be this generation's "Sputnik moment". In addition, DOE's new Federal advisory committee has called for transformative goals, such as a $1/watt Sunshot solar initiative, to drive deeper deployment and wholesale market penetration by 2016.[4]

In addition, a significant set of changes potentially affecting Federal energy deployment are expected to occur as a result of the January 21, 2011, executive order creating a new White House Council for Jobs and Competitiveness, to be chaired by GE's Jeffrey Immelt. The President's new budget proposals also call for the creation of innovative mechanisms to do more with less, and emphasize the role of public-private partnerships and place-based

[1] ASSERTI letter to President-Elect Obama, November 16, 2008, http://www.asertti.org/about/index.html.

[2] http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-energy-tech-report.pdf

[3] See, for example, The Kaufmann Foundation (2010) (http://www.kauffman.org/newsroom/acceleration-of-u-s-energy-sector-requires-reform-at-every-stage-of-the-innovation-pipeline.aspx.aspx), the Clean Economy Network Roadmap, 2011 (expected) and various recommendations emerging from the Federal inter-agency workgroup, the Task Force on Regional Innovation Clusters, 2010-2011. http://www.eda.gov/AboutEDA/RIC/

[4] See http://www.eere.energy.gov/sunshot/

innovation as critical catalysts in US job creation and competitiveness.[5]

In short, the wake-up call on deployment has been sounded both for the DOE, and by the DOE's Secretary Chu. The question is what exactly to do next.

Fundamentally, DOE will need to think through every aspect of its role in terms of how the entire ecosystem of Federal, state, local and private sector participants will work together to get the desired results. This is clearly not just about better technology solutions or Federal funding, but it is about thinking through for each solution how best to work together to get results. Many detailed questions will need to be addressed as DOE wisely considers revising its role in deployment, including:

1. Should DOE re-engage a regional structure to enable communities from locations beyond the Federal labs?

2. Should its role be limited to largely technical review and assistance on behalf of other agencies whose job it is to engage and build public-private-community partnerships?

3. Should the DOE engage deeply in creating collaborative public/private-partnerships among businesses, communities and government agencies across the US?

4. Should DOE limit its role to lab- and hub-focused research and re-program economic development funding for clean energy deployment and market transformation to other actors?

The Deployment Gap: Defining The Problems We Need To Solve

STEAB believes that the clean energy job creation and deployment gap results from a combination of the wrong policies with a lack of the right *implementation mechanisms* on-scene to engage state, city, business and community leaders in problem-solving beyond the Beltway. Understanding this context and what's missing is critical to defining the appropriate role of the DOE in deployment.

Many, many important economic challenges lie ahead for the US economy and for the DOE; suffice it to say here that there are four *systemic and persistent challenges* that demand urgent attention and new mechanisms if we are to effectively accelerate deployment and the transition to a stronger, 21st century foundation. We need to:

[5] See, for example, the President's closing remarks at the Winning The Future forum held February 22, 2011 in Cleveland, Ohio. (http://www.whitehouse.gov/the-press-office/2011/02/22/remarks-president-closing-session-winning-future-forum-small-business-cl)

- Lift up young, job-creating companies, seed entrepreneurship, grow worker skills and dynamically re-think the Federal economic development pipeline to meet the challenges of the 21st century – to create not just small businesses but *new* businesses and *new* industries.

- Understand that start-ups alone won't define success; we must also build what Intel's Andy Grove calls job-centric, effective business eco-systems to drive the scaling of new businesses, new industries and US manufacturing opportunities that make economic sense.[6]

- Deeply engage the private sector as a critical solutions partner in addressing these systemic changes, or risk a continuing and negative narrative that these efforts are simply wasteful public sector programs -- rather than the next catalytic success in a long line stretching from the Erie Canal to the Internet.

- Recognize that public funds are limited and must be committed in ways that leverage private capital.

These challenges exist not only for the deployment of existing proven technologies that have not scaled, but also to the path from idea inception to new product development. I n fact, we believe there are an important set of issues and implementation tensions that need to be resolved at DOE around how best to accelerate *innovation*, a key priority of Secretary Chu[7]. A competitive economy depends on infusion and embedding of technology, and successful technology implementation to *achieve* innovation means that not only must you invent in the laboratory, you must deploy that technology to gain benefits in economic productivity and thus, compete effectively.

Resolving this tension with clarity is an important challenge for the DOE, and for its Federal and non-Federal partners in achieving the President's goals on jobs and competitiveness.

[6] Grove further notes: "Without scaling, we don't just lose jobs—we lose our hold on new technologies. Losing the ability to scale will ultimately damage our capacity to innovate." See Grove piece here: http://www.bloomberg.com/news/2010-07-01/how-to-make-an-american-job-before-it-s-too-late-andy-grove.html and discussion of regional economic ecosystems here: http://www.eda.gov/NewsEvents/Speeches/NADOSpeech.xml

[7] Secretary Chu has spoken more to the innovation rather than the deployment issue recently here: http://www.energy.gov/news/documents/Chu_NationalPressClub112910.pdf

The Need for Bottom-Up Acceleration Mechanisms

Creating and scaling transformational clean energy jobs, industries and success stories is hard to do – it's even harder using stove-piped Federal and state programs and institutions. Too often individual entities – both public sector (eg, Federal, state and local governments) and private sector (non-profits, startups and established businesses) are acting alone or with only ad hoc coordination. Acting alone, they are unable to remove hurdles necessary for success. The deployment challenge is therefore much more than just creating better technology solutions, which has been a central focus of US DOE's efforts; it is taking responsibility for the end goal – deployed clean energy solutions at massive scale and the jobs necessary to create the solutions.

That's why it is critical that the DOE adopt a transformative goal of understanding and changing the entire deployment value chain to enable massive scale deployment of clean energy solutions. This work will require intentionally mapping out with all stakeholders -- state and local governments, business leaders, community leaders, community foundations and national foundations to clearly define value added roles and responsibilities, performance metrics and measureable expected outcomes around clean energy deployment and regional market transformation.

(1) <u>The Narrative We Need</u>

This work begins we believe with building a common lexicon. Right now, inside government and outside, all strategic partners are essentially operating as less than the sum of our parts. Large and separate economic policy silos – eg, "small business finance", "clean energy", "infrastructure and economic development", "energy hubs and regional consortia" and "university R&D and commercialization" need to be better linked together into one integrated *jobs & innovation* effort for championing 21st century American competitiveness, with one narrative and <u>shared lexicon.</u>

Within DOE, an opportunity to do this exists within the new leadership in the "technology transfer" program and technical assistance programs now being ramped up, as well as through ARPA-E. These programs could move swiftly to develop clearer lexicon and cross-agency cohesion to enhance service and clarity from the perspective of the DOE's many "customers" – which include states, cities, counties, private grantees and universities, to name a few.

(2) Critical Policy, Implementation and Finance Gaps Also Need To Be Addressed

Just as a new, integrative narrative is needed to define collaborative efforts around clean energy deployment, we also need flexibility and new implementation and finance mechanisms to drive our economic transition.

The DOE may fail to meet its Sputnik moment on deployment if it doesn't actively engage with other Federal, state and private sector partners around efforts to fix a broken Federal economic development pipeline that directs billions in formula funding to well-intentioned programs that are often 40 years old -- and miss the target by failing to reach key companies ripe for job creation and commercialization.[8]

Can DOE achieve its goals simply using its labs and Washington DC headquarters as the sole deployment network? There are other assets. The government supports a long catalogue of efforts by the SBA, EDA, HUD, and other Federal agencies to promote community and clean economy planning, development and deployment. In time, many of these efforts must be pooled through new community centers for jobs and innovation, chartered to promote innovative, public-private job creation clusters and economic development.

These "acceleration networks" would connect entrepreneurs with those who have the resources to create companies, and connect these startups to the opportunities presented by other administration initiatives, such as the newly-announced Jobs and Competiveness Council chaired by Jeffrey Immelt, the National Export Initiative, Startup America, EDA's Jobs and Innovation Partnership, The President's proposal to create 20 Growth Zones[9], and the Skills for America's Future announced in 2010 for community colleges. These centers also would connect job seekers with employment opportunities and training, and offer information and new incentives for companies to locally in-source the key components of their supply chains and workforce development. Restrictions under law that limit this approach need to be remedied. Policy must be aligned with the integrative strategies necessary to success.

The need for this initiative is imminent. In the near term, private sector and community foundations should be recruited to create "Go-Fast Centers" on their own in partnership with

[8] One recent study calling for re-tooling the clean energy and economic development pipeline found that stimulus funds were not effectively reaching young companies, which multiple studies show create the most net new jobs. See The New Policy Institute, 2010 (The Acceleration Agenda, http://www.newpolicyinstitute.org/wp-content/uploads/2010/09/AccelerationAgenda.pdf)

[9] The President's new budget proposal, released February 14, 2011, called for a new Growth Zones initiative to invest $40 million to lever private/public partnerships that drive high-growth industries and markets. Building on its innovative 2010 call for creative jobs and innovation partnerships, EDA will lead a collaborative initiative with HUD, USDA and Treasury to accelerate 20 pilot sites split between urban and rural America. The Growth Zones will include $2 million per site, plus targeted tax incentives replacing the old enterprise zone program.

Federal, state and local government sectors. A current working example is the Innovation Lab created by McKinstry in Seattle.[10]

Critical in any role will be the development of new performance metrics for DOE/EERE (see Task Force Table 2)

An immediate step for DOE to take would be to re-engage with the Federal Agency Task Force on Regional Innovation Clusters.[11]

The President's new Growth Zone initiative (see footnote 9) also offers DOE another opportunity to accelerate job creation and eliminate deployment and bureaucratic barriers in 20 pilot locations.

Another specific first step that the DOE can take now is to connect more closely with USDA's Agricultural Extension Service, as recommended by STEAB Resolution 10-01.

For more:
See STEAB's USDA-DOE Task Force Report (2010).

[10] http://www.xconomy.com/seattle/2010/08/11/mckinstry-innovation-center-cozies-into-position-as-cleantech-%E2%80%98accelerator%E2%80%99-director-elsa-croonquist-on-what%E2%80%99s-next/

[11] http://www.whitehouse.gov/blog/2010/08/20/urban-update-regional-innovation-clusters

(3) Recommendations of Additional Steps DOE Could Take to Strengthen Deployment

At our most recent STEAB meeting, a number of specific ideas were raised to accelerate deployment effectiveness. These include:

- In light of the President's call for 80% clean energy by 2030 and laudable, new efforts by DOE to develop a strategic plan to achieve this goal, ensure that stakeholder involvement in implementing the plan is continuous over time. Experience to date with integrated deployment systems suggests that multiple models will be needed to drive scale and market transformation.

- Create a centralized DOE Deployment Services Hub integrated with program offices and infrastructure at the state and local level. This could ideally include ASSERTI's idea of a new DAS for market transformation and deployment or re-visiting new regional office structure or deeper deployment partnerships with other Federal agencies who already have such on-the-ground reach.

- Develop more "market centric" performance measures within the DOE, e.g., number of companies created, jobs created, sales, market capitalization, investment leverage. The need for clear and specific performance metrics is especially acute for DOE's labs in clarifying their mission in the 21st century to achieve desired outcomes from Federal lab investments.

- Work with DOE's expanding Technology Transfer Office and ARPA-E to more closely connect technical assistance and technology transfer to the needs of state and local partners and to the work of the inter-agency Task Force on Regional Innovation Clusters.

- Encourage DOE to create a technology commercialization acceleration cookbook to help clean energy entrepreneurs and state/local officials accelerate their efforts and share their most successful recipes. Align DOE technical assistance and lab capabilities to support these efforts.

- USDOE should create a "SEE-like" action network for Renewable Energy to get more local /state/business input.

- Consider and implement STEAB resolutions adopted 6/20/07 and 9-01 and 10-01 and 10-02 with a renewed focus to include deployment.

- Identify and actively engage regional, state and local partner organizations.

Additional recommendations focused on longer-term agency improvements included:

- Make it easier to engage with the DOE and its programs. Remove unnecessary bureaucratic layers as much as possible. Get front-line feedback on what works and what doesn't, i.e., improve the interface where the market engages.

- Conduct working sessions with state and local leaders and the private sector on ideas around the DOE's role in market creation and expansion.

- Engage leading edge projects at the state and local level to conduct joint research and development around important issues, e.g., circuit-level reliability for large solar farm, better forecasting for renewables.

- Host state/local conferences or seminars to engage the community on DOE capabilities, technologies, and engagement rules.

- Prioritize technology within DOE that has the greatest potential for market creation and expansion for additional funding.

- Develop a client-focused service culture focused on intake and the needs of "clients" – eg, clean energy startups, Governors, utilities, cities, counties, etc

- Review/address deployment issues caused by separation of EERE v Office of Electricity.

- Identify the challenges and opportunities around regulatory innovation and alignment, a critical deployment issue that depends on aligning complex Federal-state regulations involving FERC, state PUCs and many other actors.

- In addition to creating research hubs and engaging with the President's place-based Growth Zone initiative, consider the creation of special **"**Acceleration Zones" based on quantifiable performance standards[12] and key factors such as:

    - Completion of EDA regional job creation/cluster blueprints
    - Presence of public-private partnerships and Innovative Finance Mechanisms
    - Use of 21st century technology to document job creation and other metrics[13]

[12] Various performance standards are currently used in Head Start, substance abuse and mental health services administration and other programs (Examples at: NGA Center for Best Practices, The Government Performance of Results Act of 1993, and GAO Reports B-284548, 2/4/2000 and B-277438, June/1998, HUD CPD-03-09, 9/3/2003).

[13] See http://www.whitehouse.gov/open/documents/open-government-directive for emerging national efforts and FreshwaterTrust.org and www.willamettepartnership.org for innovative new ecosystem credit accounting and streambank restoration tools.

Task Force Table 1
DOE and Deployment Partners: A Look at Roles

Entity	Activity/Role	DOE's Primary Engagement
DOE	Deployment Partner	
State Energy Offices	Market transformation, coalition building	Implementation
Local Government Organizations (Applied Solutions, ICLEI, etc)	Market transformation, coalition building, location based investment	Implementation
Governors	Executive leadership, alignment of state and local support organizations	Development of regional deployment roadmap
Mayors and County officials	Facilitate partnership building within communities	Development of regional deployment roadmap
Regulators	Market rules and transformation	Regulatory Innovation
Universities	R and D alignment with deployment strategy	Tech transfer
ASERTTI and consortia	R and D alignment with deployment strategy	Tech transfer
EDA, SBA	Seed funding, development of regional clusters, training	Technical review
Private sector, utilities and energy efficiency officials	Project development and finance	Development of regional deployment roadmap and financing
Etc.		

Task Force Table 2
Possible Metrics for EERE-Focused Energy Deployment

Activity	**Current Metrics (R & D focus)**	**Supplemental Metrics (Deployment focus)**
Tech development	$/watt	Incr. in % tech jobs created Percentage of program budget devoted to deployment
Tech development	Conversion efficiency	BTU/$ output GDP improvement
Program delivery	% $ contracted	# of satisfied state and local entities
Program delivery	Treat states as grantees	Treat states as co-equal partners
Economic Performance	# lab technologies commercialized	# clean tech companies created
Economic Performance	# of contracts issued	# of public-private partnerships created
Innovation	# of patents issued	# commercial products in market
Transparency	# web sites created and info posted	New culture of openness created
Market transformation	# TAP assistance grants provided	# of clean energy businesses delivering new products and services
Collaboration	Meetings and conferences, R and D awards	# of strategic partnerships created

This Task Force Report was approved and adopted by the US State Energy Advisory Board Meeting on February 23, 2011.

Members of **STEAB's Market Transformation and Deployment Task Force**:

Phil Giudice, Commissioner, State of Massachusetts, Chair
Dan Carol, NDN/New Policy Institute
Cris Eugster, CPS Energy
Maurice Kaya, Hawaii Renewable Energy Development Venture
Steve Vincent, Avista Utilities
Dan Zaweski, Long Island Power Authority

What is STEAB?

The State Energy Advisory Board was established by Public Law 101-440 (The State Energy Efficiency Programs Improvement Act of 1990) to advise the Department of Energy on operations of its Federal grant programs. The Board's statutory charge is to develop recommendations regarding initiation, design, evaluation, and implementation of energy efficiency and renewable energy programs, policies, and technologies. The Board is legislatively mandated to advise and make recommendations to the Assistant Secretary for Energy Efficiency and Renewable Energy (EERE) on efforts relating to EERE programs, with a specific focus on technology transfer and State issues.

The Board is comprised of State energy directors, Weatherization directors, other State officials, representatives of State and local interests, and recognized experts in energy-related disciplines. In its capacity as an advisory board, STEAB serves as a liaison between individual States and the Department of Energy with regard to energy efficiency and renewable energy programs. STEAB is in an advantageous position due to the fact that, unlike other EERE FACA committees, it is not program specific. They offer a forum for the exchange of ideas and information through which Federal, State, and local voices can be heard at the Department of Energy.

In compliance with STEAB's enabling Statute, the Board submits an annual report to the Secretary, the U.S. Congress, and the General Services Administration (GSA) on the activities carried out within the previous fiscal year. This report contains not only a summary of the Board's activities, but also a copy of all of the Board's Resolutions to the Assistant Secretary during that fiscal year.