State Energy Advisory Board
Meeting Minutes: October 9-11, 2012
Long Island, New York

STEAB MEETING ATTENDEES

Designated Federal Officer (DFO):

- Gil Sperling, STEAB DFO, Senior Management Technical Advisor, EERE, DOE.

STEAB MEETING ATTENDANCE		
BOARD MEMBERS	Present	Absent
Susan S. Brown, Deputy Administrator, Wisconsin Division of Energy	✓	
Tom Carey, Director, Energy and Rehabilitation Programs, New York State Division of Housing and Community Renewal	✓	
Dan Carol, Strategic Advisor/Organizational Consultant		✓
William Vaughn Clark, Director, Office of Community Development, Oklahoma Department of Commerce	✓	
John H. Davies, Director, Division of Renewable Energy and Energy Efficiency, Kentucky Office of Energy Policy	✓	
Philip Giudice, Chief Executive Office, Liquid Metal Batter Corporation		✓
Paul Gutierrez, Vice Provost for Outreach Services, Associate Dean and Director, Cooperative Extension Service, College of Agriculture and Home Economics, New Mexico State University	✓	
Duane Hauck, Director, Extension Services, North Dakota State University	✓	
Robert Jackson, Manager, Michigan Economic Development Office, Michigan Energy Office	✓	
Elliott Jacobson, Vice President for Energy Services, Action Energy		✓
Peter Johnston, Project Manager, Clean Energy Technologies, Burns & McDonnell	✓	
Maurice Kaya, Hawaii Renewable Energy Development Venture	✓	
Ashlie Lancaster, Director, South Carolina Energy Office	✓	
Lou Moore, Chief, Energy and Pollution Prevention Bureau, Montana	✓	
Frank Murray, President and CEO, New York State Energy Research and Development Authority	✓	
Steve Payne, Managing Director, Housing Improvements & Preservation, Department of Commerce	✓	
Janet Streff, Manager, State Energy Office, Minnesota Department of Commerce	✓	
David Terry, Executive Director, ASERTTI	✓	
Daniel Zaweski, Assistant Vice President - Energy Efficiency and Distributed Generation Program, Long Island Power Authority	✓	

Contractor Support & Other DOE Staff:

- Emily Lindenberg, SENTECH, Inc.
- Felicia Der, SENTECH, Inc.

State Energy Advisory Board
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Tuesday, October 9th 2012

1. Welcome and Review of Meeting Purpose	Janet Streff
2. State Energy Planning Process	David Terry
3. Review of Strategic Planning Task Force Meeting at NASEO	Maurice Kaya and Gil Sperling
4. Update on SEE Action Sub-Committee Activities	Johanna Zetterberg and Gil Sperling
5. Task Force Updates and Review of Fiscal Year 2013 Activities	
6. Coordination and Collaboration between LIPA and BNL	Michael Hervey
7. Stationary Combustion/Burner Research at BNL	Dr. Tom Butcher
8. Office of Technology Commercialization and Partnerships	Dr. Walter Copan

All presentations given at the October 2012 STEAB Meeting can be found online at the Board's website at www.STEAB.org

Welcome and Review of Meeting Purpose

- Janet Streff (JS) welcomed and thanked STEAB members for attending the meeting. JS opened board discussions asking about STEAB Task Forces. Peter Johnson (PJ) noted the Lab Task Force (TF) worked with Brookhaven National Lab (BNL) before the October 2012 meeting to focus on generating communication between STEAB and National Labs. PJ noted the purpose of this meeting is to begin successful dialogues with BNL and hopefully replicate these conversations and interactions at other Labs. Frank Murray (FM) gave an overview of the successful partnership with NYSERDA and BNL regarding oil burning partnerships, and encouraged the STEAB to ask questions of BNL employees about other areas states could partner with Labs to deploy technology.

State Energy Planning Process

- Gil Sperling (GS) introduced the State Energy Plans presentation (SEP) provided by the National Association of State Energy Officials (NASEO) and presented to the Department of Energy (DOE). GS noted he hopes the SEP Evaluation will give STEAB new information to present a stronger argument making a case that SEP funding should substantially increase. If funding cannot be provided through SEP than maybe it could be given in a similar form but not under the auspicious of the program. The slides provided an overview of the findings from SEP and what SEP does and how it works by creating a 30-year cost-share program, authorized by Congress at $125 million, delivered by the State Energy Offices (SEO), providing a fundamental capability to design and carry-out programs tailored to states' individual energy needs and goals. The importance of the SEP planning process is to be more competitive. A key finding of this NASEO study was that SEP provides strategic long-term and comprehensive approaches to state energy needs.
- GS noted some state plans were successful and others were not. NASEO looked at 42 different plans and found they varied greatly by state because of need. A matrix was developed which shows commonalities among plans, and correlations between state government involvement and the comprehensiveness of the plan. As for the NASEO energy planning initiative, NASEO wants to become a technical assistance tool to the states and is in the process of collecting additional information.
- When looking across plans and assessing what is important to each state and how they will accomplish their goals, not only is financing an issue but so is driving customer demand. States can push for energy

efficiency (EE) and renewable energy (RE) advancements, but consumers need to adopt these practices in order to make them successful.

- Although there are no general statistical complications yet, SEO's are who lead the planning process. Areas of focus are renewable energy, energy efficiency and energy education, but low-income energy affordability is very low on the list. The question is in terms of plans, how many are different or identical? States prioritize natural gas and clean oil as NASEO saw from plan action items.
- Maurice Kaya (MK) asked how states can structure market drivers to be able to get where we they to go. GS responded the dominant discussion is about eliminating tax subsidies, and by not the variety of technologies on the same footing.
- Lou Moore (LM) commented states are moving away from all subsidies so there needs to be a change in focus. FM stated New York is providing more tax incentives. GS responded that institutionalizing state energy planning and broadening the process is required to build consensus toward a larger national plan. Elevating the role and prominence of SEO's to promote coordination within the states and provide technical support is a way to really move forward with Federal goals for energy in this country. GS proposed STEAB review the planning process, and maybe this can be one of the topics discussed by the newly formed Strategic Planning Sub-Committee. The Assistant Secretary (AS), Dr. David Danielson, has given the go-ahead for a small-group comprised of STEAB members and EERE Sr. Staff who will periodically meet to discuss challenging state and national energy goals.
- JS commented there is some confusion over what the State Energy Plan is and whether it is dependent on the state to develop. FM replied that New York has an energy planning process, and it is statutory. The governor created five cabinet members to talk about an energy information center. He feel executive driven planning works best.
- VC countered with energy planning in Oklahoma saying it is fractured and is not a priority as EE and RE is not a priority to the current governor. Duane Hauck (DH) responded North Dakota is an energy producing state and the governor want to grow all sectors related to EE and RE by putting together a broad based plan called Empower North Dakota, led by the Department of Commerce, to be an economic development plan as well as an energy plan. If you look at ND today, it is exploding in terms of energy development in all sectors and a lot of this is due to the philosophy of *diminishing regulation*. DH noted that does require the players in the plan to be both private and governmental.
- GS stated the political environment in DC is not going to intact a National Energy Plan due to jurisdictional issues between states. The question is how different are the states? Are they too different or is there a way to create a partnership and planning process that could effectively create more consistency and direction which in turn may change the political dynamic in Washington D.C?
- FM responded to GS's comment saying the unifying theme across all plans is promoting development of resources in the state and looking for opportunities to invest in clean technology. The SEO is linked to the economic development of people and state officials know the type of investment needed from the local community to make any energy plan successful. VC agreed with FM's statement adding DOE needs to come to terms with what STEAB is talking about.

Strategic Planning Process

- GS then asked the STEAB to move onto the agenda topic of Strategic Planning. Dr. Danielson agreed to the July letter which suggested STEAB work directly with the highest level of EERE to iron out strategic issues. The question now is what this looks like, how it meets, how topics are decided, and how topics are brought to the table. STEAB's initial role will be to work with states and determine a shared vision which can then be presented to EERE as this STEAB/EERE partnership begins to unfold.
- Ashlie Lancaster (AL) from South Carolina (SC) reported about the importance of electric vehicles (EV) in her area. SC is also supporting nuclear power. There have been positive and negative results, money is not always the issue but can become a main factor. Due to the fact that several south east states share utility companies and industry, these states have come together in a partnership to determine how best to

move EV forward in their states. There are now quarterly meetings to determine how to move forward efficiently. The question is how other states can establish relationships like this. A quarterly meeting does not require a lot of financial resources and support from the federal government.

- MK noted from a small state perspective the idea of energy planning is a critical process. First the SEO's have a powerful role of conveners. This allows for the development and maintenance of the right types of relationships. Secondly, realizing the stakeholder process drives relationships with energy in states and at the federal level is key. SEO's and DOE do not exist in vacuums and they have to work together and with stakeholders both nationally and locally to be successful. MK then recounted the live meeting of the Strategic Planning Task Force from September 2012 where the outcome was to develop a collaboration between states and EERE which would focus on mutually agreed upon strategic initiatives to achieve strategic objectives. The three areas STEAB felt were most vital to focus on with this partnership are deployment, state and federal partnership, and innovative financing. Moving forward now that EERE is ready to engage in this process is how to ultimately engage the states and DOE. David Terry (DT) talked about in the past how there was an individual within EERE who worked with the states to foster relationships, but this role no longer exists.
- GS commented that Dr. Danielson's focus is on three developing sectors: manufacturing, transportation and renewables/efficiency. EERE is also interested in hiring a Director of Commercialization. FM added EERE should seriously think about creating a liaison within the agency to engage with states.
- MK asked about the functioning of a Sub-Committee of this nature. GS indicated the larger Strategic Planning Task Force should determine two to three key STEAB representatives who would be on the Sub-Committee with high-level EERE officials like Mike Carr and other Sr. Managers. He suggested determining who would represent STEAB, how often this committee would meet, and figuring out an approach for this initiative.
- Susan Brown (SB) commented DOE has to recognize states want to make the decisions about spending money in their states and not be dictated to by DOE. GS said there are several topics for this Strategic Planning Sub-Committee to discuss. The four focus areas discussed at the September meeting of the greater Task Force were clean energy entrepreneurship, global competitiveness in manufacturing, clean transportation, and vehicle electrification.
- MK suggested that STEAB needs to be more responsive and show DOE that we are listening and acknowledging issues but are also looking at other areas. JS added we have a lot of different ideas but should focus on how the sub-committee will be formed and managed on the STEAB and EERE sides. JS reminded the Board the key is creating the partnership and strengthening the relationship between states and federal entities. The letter STEAB wrote was talking about solidifying this partnership and working together on key energy strategies. FM agreed noting STEAB needs to come up with initiatives to show how the Board can add value quickly to DOE as the representatives of the states.
- VC noted that from a state level perspective DOE has little knowledge of how state governments operate. As this Sub-Committee is formed, STEAB needs to elect representatives from SEO's, Weatherization Assistance Programs (WAP), and other stakeholders like utilities so there is a fair and balanced perspective from all entities involved in EE and RE.
- GS thanked VC and noted there will be vacancies for STEAB within the next few months and what the Board is currently missing is a state utility regulator and hopefully that group can be represented on the Board.

Update on SEE Action Sub-Committee Activities

- GS then presented the State and Local Energy Efficiency Action Network (SEE Action) slides and reminded the STEAB there is a SEE Action Sub-Committee on STEAB which works with this group to bring forth for discussion and debate any policy ideas generated by the greater SEE Action Network. He continued by providing an overview of the SEE Action network noting there is an executive group which

identifies the major areas SEE Action should focus on, and then 8 Working Groups which tackle the different issues.

- VC, a member of the SEE Action Sub-Committee on the STEAB noted one of the challenges SEE Action has as a greater network is defining leadership and working group roles. The executive group has one role and meets annually. The working groups were hoping the executive committee would provide feedback to the working groups on their priorities and how best to move forward. This has not been happening as the executive group has yet to provide feedback to the working groups on their action plans.
- JS noted that members of SEO's have not been doing a good job of coordinating or communicating with other SEO's about what is going on at the state level. If all of SEOS were updated and informed then this would allow states to partner with other SEO's and stakeholders to move programs or proposed initiatives forward.
- GS then talked about the next steps and future publications for the larger SEE Action Network. He noted the role of the SEE Action Sub-Committee grew out of the need to publicize the papers generated by the larger network. SEE Action focuses on state issues, but if there are concepts that are applicable at the federal level, the STEAB Sub-Committee will review and discuss state needs to then determine if something should become federal policy. A lot of good ideas are coming out of SEE Action but not making it on the national level. The Sub-Committee should continue reviewing documents and publications and bring forth discussion on items which have national clean energy implications.

Task Force Updates and review of FY 13 Activities

- **Lab Task Force –** PJ gave the Lab TF update noting communication between Labs and states and Labs and DOE is key. The goal is to identify ways STEAB can facilitate a stronger relationship with labs and SEO's. The TF discussed how the connections will be made and what SEO's can offer to the labs in terms of help, and visa versa, especially in the areas of commercialization and deployment. PJ also noted the TF is addressing what type of approach EERE and labs can design for mutual cooperation.
- **USDA/ DOE Task Force –** DH gave the update for this Task Force. The Task Force engages with the greater State Energy Extension Partnership (SEEP) Working Group on monthly conference calls. The main focus of this Working Group and the TF's involvement is to push forward the MOU between DOE and USDA to bring energy education from DOE via the Cooperative Extension Service (CES). DH noted the MOU was originally just between a small group within USDA, but now has grown within USDA to include Rural Development. The MOU is expected to be signed before the end of the year. This TF also focuses on energy literacy with Michelle Fox and Beverly Samuel. These women are working on creating a matrix of educational focus which will be shared with the TF and greater working group on an upcoming call.
- **Weatherization Task Force –** The goal of this TF is strengthening the case to continue the Weatherization Assistance Program (WAP) after ARRA funding is gone. One way the group is doing this is by participating with DOE on the agency sponsored Weatherization Plus 2015 Task Force. This group is looking at revisions for the program and ways to make it more effective. A number of areas are of concern are being addressed, such as leveraging communication. A proposal was recently distributed from this agency working group, but edits are still being made. This paper looks at efforts to restructure WAP and find ways to support future programs both financially and by the appropriate staffing levels. Additionally, the TF wants to arrange a meeting with stakeholder agencies and organizations actively involved with Weatherization in Washington D.C this fall. This meeting would address how to change the program but keeping it relevant and allowing for continued support to low-income families. The TF will keep the Board posted on any potential meetings so all states can have their WAP program status presented and discussed.
- **Strategic Plan Task Force –** Continuing the discussion from the morning, the Board talked about how to choose representatives from the larger TF to sit on the newly formed Sub-Committee. STEAB member's ability to contribute substantively and understand what the states are doing, what states want to do, issues

faced by the states, the understanding of what it takes to effectively deploy technology, and other state issues are what STEAB brings to this Sub-Committee and partnership with EERE. This group now needs to understand what EERE feels are vital goals to accomplish moving forward so the Sub-Committee can focus on key strategic issues of importance to both states and DOE. There are four broad areas STEAB identified at a September meeting which are of importance to states; electricity systems of the future, clean energy and entrepreneurship, global competitiveness in manufacturing, and clean transportation and vehicle electrification. The question now is who within the EERE organization would agree to sit on this Sub-Committee with STEAB representatives. MK suggested the Board reflect and talk about this issue on Thursday morning to discuss options and establish an action plan.

Coordination and Collaboration between LIPA and BNL

- Daniel Zaweski (DZ) introduced Michael Hervey, the acting CEO for the Long Island Power Authority (LIPA). DZ noted LIPA is fortunate to have such an active CEO and is at the meeting to provide insight from a utility executive perspective about where utilities are going and how utilities may be able to collaborate with states or federal agencies.
- Mr. Hervey thanked the Bard for inviting him to speak noting Long Island is in a unique situation as it is lightly tied to the grid. LIPA was created by municipalizing an investor owned utility, and now has 1.1 million customers. The utility deals with a variety of issues including high density, tree canopy, old infrastructure and the incoming of more agricultural space on Long Island.
- LIPA invested in smart grid before it had made a name for itself, and is now the most reliable utility in the nation. This is a theme for the utility with is constantly looking ahead and planning for the future. For instance one project LIPA moved on was superconductors. Now LIPA has the only transmission level 138 KB super-conducting cable in North America, and the research for this type of technology was generated by BNL.
- Mr. Hervey continued saying more recently the Long Island Solar Farm (32 megawatts array) was built. The Long Island Solar Farm created a few hundred jobs while it was under construction and was commissioned in 2011. The farm has just under 200 acres of solar panels and is considered the largest installation east of the Mississippi River and one of the largest arrays on federal lands. This farm was formed via a public-private partnership between LIPA, BNL and BP. The farm is located on the BNL campus and the lab has a data feed for research purposes. BNL involvement has been a huge help to LIPA as a utility. Because BNL monitors the panels and collects data, they are able to see how panels are operating. BNL also installed a small test array allowing the lab to test inverter technology. LIPA has been active in R&D and interfacing the lab to push solar technology further. This relationship provides both the utility and the lab a perfect position to test emerging technology. BNL has a small internal system and runs simulations and tests within that system before suggesting roll-out to the larger distribution grid.
- Mr. Hervey stressed the point that this relationship allows for testing which the utility could never manage on its own. The utility would not want to submit its customers to outages or increased prices to test emerging technologies that may not be effective on a large scale. Having BNL run these test on the farm using their internal grid allows for a real-life sample testing with real-life and real-time results. This R&D partnership is key to moving the utility forward.
- PJ asked if LIPA has annual meetings with the lab and if so, who does he meet with. Mr. Hervey responded that LIPA deals with the Director and Associate Director of the lab and that BNL is also a customer of the utility. MK spoke about Hawaii and how partnerships with his state have been established with BNL. MH responded one of the results of the partnership for New York has been the reliability of the system.
- PJ asked Mr. Hervey is there were opportunities for education research when LIPA and BNL work together on R&D. The response was that yes, there is a full-time person who deals with municipalities

and schools and 75% of schools on Long Island now have EE programs. Introducing EE and RE into the curriculum in schools has been very successful.

Stationary Combustion/Burner Research at BNL

- PJ thanked the BNL staff for coming to the meeting and introduced Tom Butcher and Walter Copan of BNL to the Board members. Mr. Butcher is a Research Engineer and the head of the Energy Conservation Group at BNL and Mr. Copan is the Managing Director for the Office of Technology Commercialization and Partnerships.
- Mr. Butcher opened his presentation noting he would be talking about the energy efficiency side of his work with BNL, where the lab is now and how the Lab is interacting with outside groups. Heat is one area of focus, usually associated with residential areas, but the main focus of BNL has been how to make the largest impact by transitioning to low sulfur heating oil. When people talk about energy rights and what makes economic sense in a home, heating systems do not get the credit they deserve and thus there are large missed aspects of energy saving potential. There is already equipment available to achieve savings of 25% by replacing several parts in home heating systems. BNL has an online calculator which allows consumers to enter in various data points about their home systems to estimate average energy costs and then compare against the values of an updated system to see the average energy cost savings. The main objective for people to see the value and know the updates are simple and achievable.
- Gas-Fired Water Heating is a sponsored program with DOE, NYSERDA LBNL and other organization. This looks at the different types if water heaters and how much energy can be saved by using instantaneous water heaters.
- Another partnership surrounds sulfur. Sulfur is corrosive and an impediment to high-efficiency equipment. BNL did a study on the effects of sulfur and its responsibility for premature corrosion failure. Because of this study, sulfur is being reduced in the heating oil which impacts air quality This was NYSERDA sponsored study and initiative and now New York is one of the first states to significantly reduce sulfur.
- Alternative fuels are another major area BNL is involved in. There is a lot of interest in replacing petroleum with other fuels like soy, palm, bio-diesel and pyrolysis oil. BNL conducted a study with Fulton, a commercial company, and NYSERDA which resulted in an analysis of ways to eliminate as much petroleum as possible and introduce other alternative fuels for residential and commercial uses. A study like this has a huge impact since in just New York state $12 billion is spent per year for heating residential and commercial buildings. Anything BNL can do to impact that sector with alternative fuels will have a huge monetary and environmental impact.
- GS wanted to compare and contrast the relationship BNL has with NYSERDA and talk about the underlying policy. He noted STEAB is trying to facilitate and create more of these partnerships with labs and states so what can STEAB learn from BNL and what best-practices could be institutionalized between other labs and other states. FM replied a lot of the relationship is personal, and both sides need leaders willing to think differently and reach-out to one another on a regular basis. DOE looks at labs with an old pair of glasses and BNL is moving in all different directions. DOE looks at some labs from what they were in the past but now they have changed over time. DOE needs to recognize things are changing and so do the states before a partnership can exist.
- Mr. Copan added to this saying BNL is on a journey to drive discovery, capability and relationship development from all perspectives….state and federal. BNL sees the value of market realities. Where once labs were more focused on the Office of Science agenda, many are now broadening the perspective and leveraging funding at the state level to move forward and engage with the community and state.
- FM commented on how DOE can use states to deploy technology. Earlier this year DOE put out a solicitation to find another energy HUB to the tune of $125 million for energy storage. NYSERDA and BNL were interested in energy storage also so they submitted an application and expanded this into the University system in New England and to companies like IBM and GE. This HUB could bring science to

the table, but NYSERDA would be the network of deployment which could bring technology to end users and consumers.

- Pat Looney from BNL states that in 2008 the lab focused on what the customer expected of them. The customer was DOE. While great scientific discovery is part of that it was clear to BNL that the lab could have a broader impact. BNL looked at the energy challenges of the northeast and how they were unique to the area because of climate, population, resources, etc. By working with the state, the companies in the surrounding area and other stakeholders, BNL was actually able to address some of the regional energy challenges while still providing scientific advancement to DOE.

Office of Technology Commercialization and Partnerships

- Walter Copan represented the Technology Commercialization Partnership at BNL and was the final speaker of the day. Mr. Copan praised BNL Director, Sam Aronson, for being a great asset for connecting the labs with people, and for working with DOE on the ACT agreements to commercialize technology. BNL's approach was built from the agency mission to create "discovery to deployment" impact through interdisciplinary research. BNL needed to find their niche and work from there to have the largest impact. BNL is associated with the Higgs-Boson discovery, the Center for Functional Nanomaterial's, which are advance batteries and synchrotrons, and the Joint Photon Institute which is a collaboration between Stony Brook University and BNL.
- Entrepreneur mentorship is a program sponsored by NYSERDA and identifies entrepreneurs focused on clean energy business. Additionally the lab has partnered with Stony Brook to develop clean energy markets, culminating in the Advanced Energy Conference focusing on establishing connections for success. Although these start locally, there is also leverage to go outside of local boundaries such as going to Silicon Valley and leverage the Battelle network of labs for engagement in this type of activity.
- BNL's Intellectual Property (IP) portfolio consists of inventions and applications developed at the lab or in conjunction with the lab. The main responsibility is getting the balance of patented technologies against deployment and practical applications. The developed technologies can be found on the website at www.bnl.gov/techtransfer.
- The Agreements to Commercialized Technology (ACT) is a new agreement established to assist labs with commercializing technology developed under R&D at the labs. DOE recognized it was difficult for labs to get the technology into the marketplace, but under this new ACT it allows for more teaming and consortia agreements between labs and contractors which provides more freedom to negotiate terms sinc the contractors will be assuming more risk. This mechanism is aimed at supporting a wider-range of industry and lab partnerships allowing contractors to negotiate business-appropriate terms and incentives that the labs, as government entities, are not allowed to assume. This program launches in 2013 and BNL is anxious to see what it will bring. Currently 8 of 17 labs have signed up to be the pilot programs for ACT.

Wednesday, October 10, 2012

1. Round Table Discussion/Meet-and-Greet with BNL Leadership	Sam Aronson/Pat Looney
2. Overview and Discussion of BNL Energy Strategy	Gerry Stokes and Jim Misewich
3. Review, Presentation and Discussion of Smart Grid	Gerry Stokes, Pat Looney Stephanie Hamilton and Robert Lofaro, Pat Looney
4. Review, Presentation and Discussion on Solar	Pat Looney

5. Review and Presentation on Catalysis — Alex Harris, Jim Misewich

6. Review, Presentation and Discussion of Energy Storage — Jim Misewich

7. Depart of Tours of BNL Campus and Installations

8. Wrap- Up and Discussions

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Round Table Discussion/Meet-and-Greet with BNL Leadership

- Pat Looney (PL) gave an overview of the lab, facilities and assets of BNL strategies and changes. BNL is an Office of Science Lab managed by the Office of Electricity out of DOE. With over 5,300 acres of land, 300 buildings and about 3,000 full time staff, BNL focuses on energy sciences and nuclear energy. BNL is a science based lab with a diverse discovery-to-deployment portfolio. The National Light Synchrotron Light Source (NSLS II) is nearly complete, and the lab has a Center for Functional Nanomaterials and a center for computational sciences. The strategy for increasing BNL's impact is to grow and focus on commercialization and partnerships. Mr. Copan is helping with commercialization via the ACT, and there is an office of commercialization and technology to help with better Intellectual Property management.
- GS asked what BNL's engagement with EERE was. Mr. Looney responded that there are areas within Solar Energy. There is also engagement with the Biomass Program in terms of pyrolisys, and supporting SBIR projects at Virginia Tech. With fuel cells BNL works with EERE on the basic science and research on how to reduce platinum usage by looking at electric chemistry.
- PJ asked who manages the lab and the response was Stony Brook University and the state of New York help to fund BNL through the management of Battelle. Mr. Looney noted the lab recently went through a strategic planning process at the senior leadership level via a series of retreats. Jim Misewich added that the lab has always focused on basic science but this planning process was to determine a way to get the fruits of the labor with R&D out to the marketplace. That is why BNL is now focusing on this "discovery-to-deployment" idea aligning research with commercialization and solution conceptualization.
- JD asked Mr. Misewich to expand on his comment and talk about collaboration with other labs, and asked about the metrics for success on the commercialization side. Gerry Stokes answered this question with Mr. Looney noting BNL cooperates with NREL and Sandia National Lab regularly. Additionally, one way labs measure success is the number of licenses for new technologies, the number of CRADA's, and the number of companies coming to the lab for assistance with energy related issues.
- PJ asked how BNL maintains communication with other labs and Mr. Looney said most of it was through personal relationships with other Lab Directors or scientists. He spoke specifically about an example where NREL and BNL came together to solve a batter issue, and another example of how BNL is part of the Energy Frontier Research Center (EFRC). EFR came about due to labs recognizing that while they competed for awards they also needed to collaborate as many labs had similar strengths but needed collaboration to solve weaknesses.

Overview and Discussion on BNL Energy Strategy

- Mr. Stokes reminded the STEAB that BNL is very well connected in the New York region, and the state has some of the most pressing grid problems in the county such as congestion and an aging infrastructure. The goal of BNL is to find solutions for NY which has a variety of energy sources to draw from but has to also abide by the carbon reduction law which calls for an 80% carbon reduction by 2050. BNL is

aware collaboration is needed to solve these issues and the lab is leveraging their assets and working together with local universities.

- Mr. Misewich commented that the large LIPA 32 megawatt solar farm helps with the load, but there is a need for more solar farms. The only way to make that competitive is to make manufacturing of PV less costly. BNL is focusing R&D on generation and transmission looking at superconductors. BNL knows the research behind superconductivity, but is working now to improve the technology so it can be commercially viable. Right now BNL is working with Super Power to help get this technology out of the lab and into the marketplace. They are doing that by establishing CRADA relationships. Both men noted NYSERDA was instrumental in helping make initial connections which facilitated the relationship between Super Power and BNL.
- Mr. Stokes summarized his remarks noting BNL's focus remains first on the basic science, then looking to applied science, and finally working with partners to commercialize the new technology. He noted the Board would hear more on this topic during the energy storage presentation which would be occurring later in the afternoon.

Review, Presentation and Discussion of Smart Grid

- BNL has a great relationship with LIPA and NYSERDA on Smart Grid proposal collaborations, winning utility partners and several larger contracts.
- There are three problems with Smart Grid; renewable integration and penetration, distribution efficiency and reliability, and the role of micro-grids and related concepts. BNL is attempting to be a 'real world' test facility that utilities and others can utilize to test the grid. Mr. Stokes indicated Smart Grid problems are unique and the focus of BNL's research is on real problems which, when solved, can advance the grid nationally. He added it made sense for BNL to first consider something economically and geographically linked with the northeast, but ultimately the goal is to make sure research and development at the lab has a national appeal.
- Currently there are developing research collaborations with NY and other states that are looking to solve issues based on what BNL and the utilities are seeing during testing. Testing the Smart Grid with PV integration requires testing integrated PV generated energy and determining if it is possible to get the same results in other areas. The question is how you think regional connections and philosophies are changing because of distributed generation, and that is what BNL is looking at dealing with and addressing with their research. Advanced Electrical Grid Innovation and Support (AEGIS) works with the Empire State Development Corporation to solve these types of issues and problems together.

Review, Presentation and Discussion on Solar

- Mr. Looney provided the overview on solar power at BNL noting the Long Island Solar Farm (LISF) developed in April 2008 as part of the renewable energy push for New York. LIPA issued an request for proposal (RFP) for generation of solar within the service territory. There were thirty-seven proposals in twenty-eight different groups, and after the RFP was distributed BNL received a lot of phone calls regarding solar power generation. BP won the contract for the 32 megawatts facility and then again for the 17 megawatt facility at Suffolk County owned parking lots. DOE and BNL were determined they could host the large array on-site at the lab.
- The LISF life is estimated thirty to forty years. It hosts a mix of PV comprised of BP solar modules using polycrystalline silicon. The building of LISF encountered several environmental concerns such as animal sanctuaries and old growth forests. The building of LISF created 250 jobs for the local Long Island and the first rack of panels was laid in December 2010, and the sub-station was turned on November 1, 2011.
- The question to many is why DOE would make this land available for the LISF, and the answer is there is a mission tie between R&D and clean energy production. The lab is learning a lot by collecting data and running test scenarios with LISF. The lab is doing environmental studies, weather mapping, power impact studies and looking at how the array is affecting the soil and the local animal population. The lab

is also interested in how this array would integrate with the Smart Grid and is conducting field testing to look at reliability and degradation. Universities and companies are also partnering with BNL to help figure out a cheaper and more effective way to manufacture solar cells, as well as determine areas where arrays like this could be erected in other states.

Review and Presentation on Catalysis

- Alex Harris provided this presentation on catalysis and is the chair of the Chemistry Department at BNL where sustainable chemical conversion is key to sustainability. He spoke briefly about sustainable chemical conversions, provided an example of sustainable fuel production and fuel cell electrocatalysis, as well as partnerships with other organizations to help deploy the technology being worked on in the department. He reminded the group that fuel cells cost a lot of money because of the use of platinum. At BNL they have been studying catalysts without using platinum. Based on research done in conjunction with Los Alamos National Lab, they found a mixture of particles in fuel cells which are better than just straight platinum. While the use of platinum cannot be removed, the amount actually needed is much less, while the durability of the fuel cell itself increased.
- Mr. Harris indicated while the lab is making strides with new fuel cells that are more durable and less costly, car companies are rather conservative when it comes to testing and roll-out. BNL is involved in a CRADA with Toyota which is testing a new fuel cell at this time, and there are signs of commercial viability.

Review, Presentation and Discussion on Energy Storage

- Jim Misewich informed the STEAB that BNL is one of four finalists for the Energy Storage HUB; an area of particular importance to the state. There are always challenges with renewables like time-scale issues and energy generation fluctuations. The drivers behind the focus on energy storage is peak state demand and high-cost energy rates for consumers. There are also power quality considerations. Power quality has a huge economic impact and this is an area where batteries can play a large role.
- The model BNL is embarking on is a shared partnership with GE to study battery degradation. GE wanted to know what was going on inside the battery as it was being used and what the degradation process looked like. Using BNL's NSLS, GE was able to go into the battery while it was operational and see where improvements needed to be made.
- BNL acknowledged most of its work was regionally based noting proximity plays a important factor with new projects and R&D. They did note that the connection between the lab and NYSERDA is key because that is really the true discovery-to-deployment pipeline. BNL performs a discovery analysis and accelerates the generation of prototypes. The infrastructure and partnership with NYSERDA allows for the demonstration and deployment. Partnership with the state and the ability of NYSERDA to help make connections for BNL to companies or regions facing energy issues allows BNL to more easily overcome the commercialization valley of death.
- MK asked Mr. Misewich was EERE is doing, and what DOE is doing, in all of these partnerships other than just putting out funding announcements. Mr. Misewich replied BNL is heavily involved in the Vehicle Technologies Program working on the basic energy side looking at new materials.
- PJ asked what the role of the SEO's other than making connections to organizations, and Mr. Stokes noted NYSERDA participates in a no-cost role. BNL converses with NYSERDA on a variety of issues to help the lab understand who they should be partnering with and where the energy issues are that BNL may be able to help solve.
- VC asked how to connect other State Energy Offices with labs should his office receive a call from a business or local leader inquiring about an energy issue. Mr. Misewich noted the lab has evolved and is now much more responsive because BNL specifically eels their role is to help change the energy discussion in the community. BNL works to be responsive to all inquiries whether via phone or email.

- GS commented there is no specific mechanism to engage labs and states. BNL has a relationship with NYSERDA, but not all labs have that same relationship with their SEO, and many states do not have a lab at all. Labs don't know who to go to in the states to discuss issues or find out about problems they could help solve, and states don't know how to reach out to the labs. How can STEAB help to institutionalize a process or procedure or establish points of contact so that we can connect states, organizations, communities with the national labs?
- PJ replied that regional meetings could help, and Mr. Misewich replied that many labs have started to host workshops where labs, specifically BNL and Argonne, go out to communities and ask about energy issues. Upon hearing about the issues the labs then demonstrate the tools already available to help solve the problem, or work with the community to determine how to move forward. It was through these types of workshops that GE partnered with BNL on the battery issue. Mr. Stokes and Mr. Misewich indicated BNL has a matrix of local issues and solutions. That could be expanded nationally. Each lab could provide a list of their resources, technologies, research areas, etc. and states could provide a list of their energy issues be it grid, storage, renewables, etc. That would be a great way to begin the conversation. While this may not expose all the capabilities, it certainly gets people to be aware of the types of science occurring within the national lab structure.

Tours of the NSLS II, the Center for Functional Nanomaterial and a drive-by of the Long Island Solar Farm

- The Board then departed for brief tours of areas around BNL to see the types of research currently underway and view the LISF in light of the morning's presentations and discussion about the solar farm.

Wrap up and Discussions

- After the tour of BNL campus, STEAB members gathered together for discussion and a wrap-up with BNL staff. There were great reviews of the Long Island Solar Farm, inside NSLS-II and CFN. There were a few conversations regarding cooperation and an understanding of how to gather the needs vs, abilities of the labs. The STEAB asked how SEO's access the capabilities of the labs and use their own state relationships to help labs reach a broader audience and find potential partners for deployment.
- There was a discussion to list the capabilities of each lab and utilizing the tech portal is a way to get out information. STEAB believed the capabilities of the institutions are relevant even post commercialization of a technology.
- Mr. Stokes noted that without existing relationships between labs and energy offices it will be difficult to establish partnerships off the bat because the player may not know each other. Perhaps if organizations like NASEO or EERE facilitated those conversations, and BNL could be used as the example of how national labs help communities and states. PJ agreed and suggested STEAB liaise with NASEO to spread this information.
- JD asked about the differences between BNL and other labs. He remembered BNL had gone out to areas to ask about issues or problems and worked to solve them, but at other labs, many times they solve an issue and then try to find the problem. How can STEAB help labs stop putting the cart before the horse?
- Mr. Stokes answered that making labs think about end users is critical. Mr. Misewich added that publicizing a success story is also a big way to get stories out into the open and to other labs to show how engagement with the community leads to progress.
- Ashlie Lancaster (AL) suggested the eight labs participated in the ACT group create a formal mechanism where states know how to reach out to them. There are guidelines for energy offices, s for screened calls, so states would be able to take in calls about energy issues and then reach out to the labs to find help solving them.
- PJ continued saying communication is always a two way street. The question is do states have the ability to appoint someone at SEO's to become the liaison with national labs? RJ indicated economic development is where the most likely candidate for a role like this would be found. VC noted NREL runs

a leadership and mentorship program. VC asked if BNL will be executing this program also and if BNL would consider this.

- Mr. Stokes responded that BNL could perform the program NREL implemented as BNL looks more into smart grid. He asked how to gain access at other national labs user facilities. He finds at BNL that user facilities were easier to access if you have a "friendly native" at the lab, but that it can be done even without a personal relationship it would just take longer.
- Mr. Misewich reminded the STEAB that by BNL creating this matrix of issue and lab solutions, it allowed BNL to find the low-hanging fruit of energy issues. This would be a great area to focus on where labs already have the expertise. If a state or organization has an issue where they need something and the state or other labs do not have the capability, BNL may be able to assist. There are a suite of tools which could be solutions to a comprehensive set of problems if labs start locally with addressing issues or asking about energy needs.
- PJ asked BNL to please share the matrix being discussed with the Board so they could review the layout and list of energy issues to see if there are similarities in other states which could reach out to BNL directly based on what the Board saw at the meeting. GS thanked BNL for hosting them for the day, and for the presentations and the tours. The Board then departed BNL after wrapping-up the day's events.

Thursday October 11, 2012

1. Follow –up Discussion on Outstanding Items

2. Board Discussion- How to Promote Commercialization at the National Labs

3. Board Discussion- How to Facilitate Engagement between Labs/DOE/SEO's

4. Next Steps, Wrap-up & Other New Business and Board Logistics

Follow up Discussion on Outstanding Items

- JS opened the final day of the meeting asking for comments or feedback on the visit to BNL the previous day. TC indicated he was impressed, as did RC who saw an opportunity for engagement of the Lab Task Force on a variety of activities. DH thought the conversation at BNL was much more focused on lab engagement with the state and on commercialization efforts. He was impressed by the types of technology being worked on and thought this was one of the better lab tours he has taken while a member of the STEAB.
- PJ commented that BNL seemed to have more external users than other labs. Not all of the users were university students. Many were commercial businesses and other enterprises that were involved with technology development. While BNL is parochial, they are willing to reach out to other states and regions and engage with them to help solve energy issues.
- LM was pleased to see the labs willingness to engage with a variety of stakeholders and partners. The lab already had a listing/matrix of issues and solutions. It would be great for all states to view this document and figure out where they could partner with BNL, or where they could assist universities or companies by putting them in touch with BNL.
- GS noted BNL's matrix is a good guide to use across the country. All labs and all states could coordinate via EERE or DOE or STEAB to create and pull together a national listing of capabilities and solutions.
- JD noted BNL was the best lab STEAB has visited in terms of commercialization and collaboration. Two areas of interest are first the matrix, and secondly the collaborative R&D and outreach underway with BNL and the lessons-learned from that.
- JS did comment she was still surprised by the continued regional focus of all the labs. They work so well regionally but have no knowledge outside of their state about issues or concerns facing users. She

wondered if there was an opportunity for STEAB to lead this lab charge via the Task Force and present the lab capabilities at NASEO meetings.

- AS agreed and said that each lab has a different focus. There is a need for regional relationships, but that is not enough. If you have a business or a need in the southeast and a northeast lab is doing the work, how do you get in touch with that lab?
  GS agreed there is no easy guide showing labs the issues of states on a national or regional basis. A tool or compendium could really help. STEAB is right, however, the declining federal budget is forcing the labs to stand on their own and an increasing percentage of their revenue will be coming from private companies and other sources.
- DZ noted each lab its too program focused and too small. STEAB needs to help them see the larger picture. The idea of a national matrix is great but if we asked a lab to tell us everything they are working on it will be very difficult for us to understand and sort through all of that material. If, however, the states were to go to labs and ask for help in specific areas, the labs would be able to respond with only the capabilities to solve that issue. If states talk about what they need from the labs, the labs will be able to work to solve those problems.
- GS suggested the Board write a letter to the Assistant Secretary stating STEAB believes there is a national need to improve communication and knowledge about the science and discovery occurring at national labs. There is an immediate need for states to understand what resources and tools are available at the labs to help solve current issues, and there is a need for open lines of continued communication between states and labs to solve problems of the future.
- RJ agreed and felt the Lab Task Force should write this letter maybe in the form of a resolution.
- GS asked the group how a network or process like this would be funded and how it would move forward.
- TC suggested looking at the lab training centers and perhaps having STEAB tour a training center for ideas about what is currently underway and what the Board could then take back to states with them after taking a tour of a training center.
- JS agreed and urged the STEAB to move forward drafting a letter or resolution to EERE.
- AS and DH believe it is important that labs are not dictated to by this document to lend or give away expertise, but the emphasis should instead be placed on facilitating and building partnerships between states and labs to help both entities solve problems.
- RJ and PJ let the Board know they would work together as the Lab Task Force with FM to draft a resolution which would be circulated to the Board on a future teleconference call for review and a vote.

Strategic Planning

- MK provided an overview of what was discussed at the September 11, 2012 meeting while the group met at the NASEO meeting in Minnesota. He asked the group about their thoughts on forming an official STEAB Sub-Committee to address key issues and interact with EERE to help the office move forward effectively. He reminded the group they three key areas that were on the table for discussion were Deployment, Partnership and Innovative Financing. MK also suggested looking at these areas and put forward a Resolution or white paper to DOE that discusses the key parts of each of these three overarching areas, but first the group needs to talk about who will be involved in the Sub-Committee and what the outcome should be.
- GS asked the group to resolve to form this Sub-Committee as it would allow for an institutional involvement with EERE on a strategic level to solve these problems. By creating a Sub-Committee it will make a lasting connection with EERE instead of the usual one-off Resolutions sent to EERE. He also mentioned the need to have WAP interests represented on this Sub-Committee noting that WAP is not just an energy program, but a human one as well. He felt it was the human part of this program which holds back the program from receiving as much funding as it could get and the focus of the program

should really look at taking a shift to the buildings and retrofit aspects and away from the personal stories associated with WAP.

- Steve Payne (SP) volunteered to sit on the Sub-Committee as a WAP representative and Tom Carey (TC) agreed SP would be a good addition because of his connection not only to the program but to NASCSP as well.
- MK reminded the group that the Sub-Committee, if formed, has to be functioning on the management level of EERE and not just within the programs or with specific programs. The point of this group would be to engage at the highest levels in EERE.
- JS nominated Frank Murray, Vaughn Clark, Maurice Kaya and Steve Payne for members of a new Sub-Committee. GS agreed that this group should get no larger than these representatives from STEAB, and then bring in at least 3 to 4 of the senior managers from EERE into the mix as well. Keeping the group small keeps it functional, but the membership looks across WAP, State Energy Offices and SEP as well as other areas.
- JS recommended that even if the Sub-Committee is formed, the larger original Task Force should remain involved and engaged to continue support. That original Task Force has a depth of knowledge on issues which the Sub-Committee could pull from if additional information, background or details were needed.
- GS agreed with JS and suggested the STEAB form a Sub-Committee of 3 to 4 STEAB members who would engage routinely with people at EERE like Dr. David Danielson, Mike Carr, himself and the new Commercialization Czar which DOE would be hiring. He also suggested pulling in contacts like Bob Adams and Dr. Kathleen Hogan to discuss WAP issues.
- MK and JD also commented on addressing electricity, manufacturing, entrepreneurship and competitiveness, and clean transportation as sub-topics to the three main areas of focus. JD continued by saying the best way to make this Sub-Committee effective is to make sure the goals of the group align directly with the strategic goals that Dr. Danielson has laid out for EERE. He suggested that the group and the Task Force work together to create a comprehensive strategic focus, breakdown the details and present that to EERE as a jumping-off point for discussion.
- MK asked if meetings would be face-to-face, and GS said the best way to ensure the success of this group was to do face-to-face meetings.
- LM motioned that STEAB create a Sub-Committee of STEAB members to work directly with EERE to solve strategic issues, policies and programs.
- SP seconded
- The motion passed on October 11, 2012 at 10:00 am.
- JD motioned the membership be Vaughn Clark, Maurice Kaya, and Frank Murray.
- TC asked that Steve Payne be included.
- Robert Jackson seconded this amendment to JD's motion.
- The motion for the membership to the Sub-Committee passed on October 11, 2012 at 10:03 am.
- GS indicated the next step should be to have a call of the new Sub-Committee and the larger Task Force. On that call or at that meeting a more specific set of topics would be outlined and the group could reach-out to EERE about initial engagement with EERE staff to bring together the STEAB players and the EERE players.

Public Comments

- JS the moved the meeting to the portion of Public Comments. JS indicated no one had contacted her about making a statement, and no one had contacted GS about providing comments. JS then asked if there were any members of the public who would like to make comments. Seeing that there were none, she then moved onto the final agenda item on the October agenda.

Monthly Call Times & Dates

- The monthly call times and dates will remain as the third Thursday of each month. The next call will be November 15, 2012.

Spring and Summer STEAB Meeting Dates and Locations

- The spring meeting will be in Washington, DC March 12-13th. The meeting will be two full days only allowing members to travel on Thursday morning. The summer meeting will be June 25-26th the location is to be determined.
- JS asked if there was any new business. Seeing as there was none, she asked about any old Board business. Seeing as there was none she asked if there was a motion to adjourn the meeting. SP motioned, RJ seconded. JS called for a vote and the Board unanimously agreed to adjourn the meeting at 10:22am.

Minutes were scribed by Felicia Der and Emily Zuccaro, contractor support to the STEAB