

MINUTES OF THE ONE HUNDRED FOURTH MEETING OF THE  
PROGRAM PLANNING COMMITTEE  
HELD ON SEPTEMBER 18, 2018

Pursuant to a Notice and Agenda dated September 5, 2018, a copy of which is annexed hereto, the one hundred fourth (104<sup>th</sup>) meeting of the Program Planning Committee (“Committee”) of the NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY (“Authority”) was convened at 12:00 p.m. on Tuesday, September 18, 2018, in the Authority’s Albany Office located at 17 Columbia Circle, Albany, New York, and in the Authority’s New York City Office located at 1359 Broadway, 19<sup>th</sup> floor, New York, New York.

The following Members of the Committee were present:

Mark Willis, Committee Chair  
Richard Kauffman, Chair of the Authority  
Sherburne Abbott  
Charles “Chuck” Bell  
Kenneth Daley  
Kate Fish  
John McAvoy (by videoconference from New York City)  
Gil Quiniones (by videoconference from New York City)

Member Jay Koh was unable to attend.

Also present were: Alicia Barton, President and CEO; Janet Joseph, Senior Vice President for Strategy and Market Development; Jeffrey J. Pitkin, Treasurer; Noah C. Shaw, General Counsel; Sara L. LeCain, Esq., Senior Counsel and Secretary to the Committee; and various other staff of the Authority.

Mr. Willis called the meeting to order, noted the presence of a quorum, and stated that a Notice of the meeting was mailed to Committee Members and to the press on September 4, 2018.

Mr. Willis indicated that the first agenda item concerned the approval of the minutes of the 103<sup>rd</sup> meeting of the Committee held on June 26, 2018. Upon motion duly made and seconded, and by unanimous voice vote, the minutes of the 103<sup>rd</sup> meeting of the Committee were approved.

Mr. Willis stated that the second item on the agenda was proposed revisions to the Clean Air Interstate Rule (“CAIR”) Program Plan. Jason Doling, Program Manager for Energy Storage presented this item. Mr. Doling reported that the CAIR Program Plan, which included approximately \$26 million in total allowance proceeds was used to help seed the NY-Battery and Energy Storage Technology (“NY-BEST”) Consortium and accelerate growth in the energy storage sector.

Mr. Doling explained that since the last Program Plan modification, new funding totaling \$108,365 in interest earnings has become available and previously allocated funds totaling \$1,128,000 have not been expended. No additional CAIR allowances have been sold. Approval is requested to allocate these funds for the following activities, each of which will be important in supporting the goal of deploying 1,500 megawatts (“MW”) of advanced storage by 2025 (from 60 MW today) and growing the sector to 30,000 jobs by 2030 (from 4,000 today).

Mr. Doling stated that the first approval sought is to have \$1,147,365 allocated for Energy Storage Economic Development Initiatives. This would be used to assist start-up companies and to attract and grow new companies in New York State. NY-BEST will also seek matching grants to leverage these funds through the federal Economic Development Administration, Empire State Development and utilities.

Mr. Doling indicated that the second item for approval is a reallocation of \$1,008,000 in unspent research and development funds. These funds had previously been allocated to support projects at seed stage. Fifty-four projects were awarded, 13 were terminated because they did not demonstrate technology or commercialization potential. The funds allocated to those now-terminated projects are proposed to be used for economic development initiatives NY-BEST to expand the energy storage sector.

Mr. Doling stated that the last request was for a net decrease in administrative non-programmatic expenditures by \$31,000. The level of market engagement and administrative support required by the Authority to manage this initiative since 2010 was greater than anticipated, and an increase of \$89,000 is requested for Authority Administration. This extra effort would be funded through savings realized in the NYS cost recovery fee (\$80,000) and program evaluation costs that were under budget (\$40,000).

Mr. Doling explained that the reallocation of these funds will pay significant dividends for the goals of the CAIR Program and for the State. Since 2009, the Authority has provided \$4,350,000 in seed funding for NY-BEST's operations, decreasing support for the consortium's operating budget. This has catalyzed significant support for the consortium's operating budget and core member services. Beginning in 2019, core member services will be supported entirely by membership fees, sponsorships and testing revenue (approximately \$600,000 annually). This concluded Mr. Doling's report.

#### Resolution

RESOLVED, that revisions to the "Clean Air Interstate Rule (CAIR)/New York Battery and Energy Storage Technology Consortium™ (NY-BEST) Program Plan" presented to the Members for consideration at this September 18, 2018 meeting, with such non-substantive, editorial changes and supplementary schedules as the President and Chief Executive Officer, in her discretion, may deem necessary or appropriate, are recommended for approval by the Board;

AND BE IT FURTHER RESOLVED, that the Members direct the President and Chief Executive Officer to develop a revised program plan incorporating such revisions as soon as reasonably possible.

Wherefore, upon motion duly made and seconded, and by unanimous voice vote of the Committee members present, the following resolution was adopted.

Mr. Willis stated that the next item on the agenda was a presentation on the Authority's Strategic Outlook, entitled *Toward a Clean Energy Future – A Strategic Outlook 2019-2022*. This item was presented by President and CEO Alicia Barton, Senior Vice President for Strategy and Market Development Janet Joseph, Senior Advisor for Energy Efficiency Markets, and Workforce Development and Training Program Director Adele Ferranti.

Ms. Joseph began the presentation by stating that the *Strategic Outlook* lays out the priorities of the Authority over the next couple of years and presents the general strategic framework that the Authority will adopt. Ms. Joseph highlighted a couple of items that will be changed in the outlook; going forward this will be presented at the Committee's January meeting, to better align with the budgeting process. The second refinement; initiatives will be presented framed around high-level policy goals, so instead of describing program portfolios we will work to present our efforts within five high level state policy goals.

Ms. Joseph reported that the renewable energy goals were to have 50% electricity from renewable energy and a 40% reduction in greenhouse gas goal from 1990 levels, all by 2030. By 2025, there are two high level goals, one of which being the energy efficiency goal of 185 TBtu based end-use savings in buildings and industrial facilities. Another recent, but significant goal of 1.5 gigawatts of energy storage, is important in creating a distributed, resilient, and flexible goal. Moving into current, the goal is to stimulate a clean energy economy in terms of creating a vibrant, skilled workforce, and also leveraging private dollars to achieve Authority goals.

Ms. Joseph noted that the Authority will be using the Strategic Outlook to lay out more of a long-term roadmap. This roadmap is split into four areas: energy storage, offshore wind, net zero carbon buildings, and workforce development. Over the next Strategic Outlook cycle (2020-2023), the Authority will begin diving into the topics of resiliency and transportation.

In response to an inquiry from Mr. McAvoy, Ms. Joseph noted that the Authority's first focus in the area of resiliency is to ensure that the distributive energy resources, the energy technology that we put out into the marketplace, is being done to best practices of advancing resiliency. She explained that the definition of resiliency that they will be following is that which was outlined in the most recent State Energy Plan, which is generally about making investments that can be resilient to changing conditions, can respond and recover quickly, and deliver critical services.

Mr. McAvoy added that it is important, going forward, that it is understood what other organizations use for their definition of resiliency. This is necessary to ensure that the Authority is not misunderstood in what their objectives are.

Following the overview of the *Strategic Outlook* given by Ms. Joseph, Mr. Hale reported on the topic of Net-Zero buildings, which is in an early formative stage. He began by stating that the NY 80x50 emission reduction target is really what is driving the push towards net zero. Buildings are very long-lived assets, so to achieve the goal of 80% reduction by 2050, it is necessary to have a carbon neutral building stock state-wide by 2050.

In response to an inquiry from Mr. Willis, Mr. Hale clarified that net-zero and carbon-neutral are different things; net-zero is netting out energy production and energy consumption over the course of a year, which may or may not be carbon-neutral. Carbon-neutral means owners must electrify their buildings, and the energy used to power a building must be coming from clean energy sources.

Mr. Hale stressed that in the attainment of the 80x50 goal, buildings must be thought of in relation to the electric grid and transportation, and how buildings can be a way to manage demand and help the grid to balance itself with the distributed energy resources and building infrastructure integrated with vehicle and charging infrastructure.

Mr. Hale explained the importance of deep efficiency in reaching the Clean Energy Standard target of 50% by 2030. After electrifying all of the buildings, the peak demand will no longer be the hottest day of the summer, but the coldest night of winter and is projected to be between two and five times the level of summer peak. This will require a lowering of the cost of a kilowatt hour by reducing the load, and will eventually result in a reduction of the assets needed to generate and transmit that load. Going forward, it will be important to keep costs under control as there is movement toward much higher performing buildings. This is a great way to address housing needs as well as energy needs. The multi-family sector is the starting point, renovating these buildings to provide a much higher quality of life, with a better value proposition than the way these buildings are being built today.

Mr. Hale explained that the Net-Zero roadmap emphasizes deep efficiency, providing a path for carbon emission free growth, which must also be economic. Net-Zero must also stand on its own, in order to prioritize, sequence, and understand what the appropriate level of investment is needed to be successful.

Mr. Hale highlighted the programs that are already underway including work being done to make codes require net zero construction. He indicated that the Buildings of Excellence competition, highlighting net-zero buildings, will be released in early 2019. The economic development initiative provides support and monetary assistance to new companies to either build new facilities or expand existing facilities. The portfolio support program provides technical assistance for large portfolios like the State University of New York, to help entities think through their portfolio, where to start, and how to approach the process through a capital planning system.

Mr. Hale explained that the last program was Retrofit NY, which is based upon a Dutch model, entitled Energy Sprong, that has been very successful in the Netherlands and is spreading at a rapid pace. New York is the first place in North America, and the most advanced, to be leading this work. It is about building a market, which is mostly about demand aggregation in order to show manufacturers why they want to get into this space and develop the right solutions. Retrofit NY will take existing multi-family buildings and develop net-zero solutions for them. There are currently six live “PILOTS” (property-in-lieu-of-taxes), halfway through the design phase, with the first submission of six different teams working on six buildings both upstate and downstate to develop net-zero design concepts.

Mr. Hale continued his report by explaining that it has been difficult to reduce the costs of energy efficiency. In comparison, solar has been hugely successful in that area, with the cost of panels continuing to decrease every year. With standard weatherization projects, there is no ability for cost compression, although the deep retrofit sector shows promise in this manner with the use of an industrialized prefabricated approach that has proven successful in cost compression efforts in the Netherlands.

Mr. Hale explained that the Authority has several partners across New York to assist in the design and implementation of the prefabricated design approach. The key components of a net-zero retrofit solution begin with the building of a highly insulated, prefabricated shell, with air ceiling in place and windows already installed at the factory, to then be applied rapidly on site. These prefabricated shells will be applied to the respective buildings with the residents still in place. There will then be reduction in the size of mechanical systems, adding on site distributed generation, all while thinking about the relation to control sensors and grid activity. As opposed to conventional construction, these models will be constructed in a factory, transported to the site, and applied directly over the existing building. It is important to note that productivity in the construction sector has essentially been flat since the 1960s, whereas all other major industries have undergone productivity revolutions, this retrofit type of building for multifamily buildings will be a great area of opportunity for the construction industry with a potential increase in productivity levels by five to ten times.

Mr. Hale indicated that work has begun on the development of mechanical pods that encompass space heating, space cooling, ventilation and domestic hot water all in one simple spot. In terms of scale, it is important to excite the manufacturing sector to get them to develop these processes so that the costs can be reduced dramatically. There needs to be a cohesiveness to all these elements in order to show the demand to the manufacturing sector.

In response to an inquiry from Ms. Fish, Mr. Hale explained that regulatory barriers, along with supply and demand, and financing, are points of focus for the retrofit model. The team has already compiled a preliminary list of regulatory issues that will need to be changed to get these designs built. Zoning codes will also need to be amended to allow these buildings to become a part of Cleaner Greener Communities, creating a different element that these communities can adopt.

In response to an inquiry from Mr. McAvoy, Mr. Hale stated that this project currently has a pilot with SUNY retrofitting a dorm to net zero. There has been an effort to engage New York City Housing Association (“NYCHA”), though there are some challenges figuring out a way to

fund this because NYCHA does not pay into the system benefits charge, therefore the Authority cannot subsidize work with them. Instead, NYCHA will use its Business as Usual budget for the substantial renovations of the Affordable Housing properties, and then add the energy savings to that. Within that budget the cost can be brought down over time to and result in a new business model.

In response to an inquiry from Ms. Abbott, Mr. Hale noted that the embedded carbon in the materials is something on their radar, though it may not be solved in the first generation.

In response to an inquiry from Mr. Daly, Mr. Hale explained that the solutions for these retrofits, based on the Netherlands model, fit in very well with new construction. The solutions that work for New York State can also work for other geographical locations and can be tweaked to accommodate different climate zones. Mr. Hale added that within the multifamily sector, a lot of scale can be demonstrated to the manufacturers, whether it be new or seasoned panel manufacturers. This is an economic development opportunity that has already peaked the interest of manufacturers that are new to panel fabrication, many have expressed their desire to build their first plant in New York State.

In response to an inquiry from Mr. Quiniones, Mr. Hale explained that if electrical components can be downsized, then there is a way to make it cost effective and bring energy efficiency affordability in line with other methods of carbon reduction within the Authority's portfolio of programs.

Next, Ms. Barton provided the Committee with an introduction to the Authority's workforce development efforts. She indicated that the Authority's emphasis on a deep dive in strategic thinking on workforce efforts represents a shift in how the efforts have been thought about in the past. Workforce development and economic development are opportunities for improving the Authority's clean energy initiatives, an effort that is on the critical path of meeting the Authority's energy goals. The Authority has been made aware, through certain data, that employers within the clean energy field have encountered difficulties in hiring, retaining and retraining workers, and finding cost effective ways to deliver clean energy. If these issues can be

resolved, clean energy services will be able to be delivered in a more targeted and cost-effective manner.

Ms. Ferranti explained that clean energy economy is an important part of the New York labor market, with over 46,000 workers across the state. When referring to workforce training, the Authority is looking at all sectors. Most of the jobs, between 70% and 80%, are in the installation or support services area: maintenance, operation and repair. This is a significant growth area in the State, with growth 3% faster than the rest of the job growth statewide. As clean energy demand and market expansion continue, employers expect to see more growth, not just referring to new workers, but the amount of time existing workers spend on clean energy work. The biggest sector is energy efficiency, which represents 75% of all clean energy jobs, while renewable power generation is a lot less, but a very high growth area.

Ms. Ferranti explained that employers are having difficulty finding skilled workers. 75% of firms have reported hiring difficulty, and that number increases to 90% for energy efficiency. Engineers, sales positions, installers and technicians, are the most difficult positions to fill. The most common problematic areas for employers are the costs to hire, recruit, and retain workers. New York State Department of Labor statistics show it costs an employer about \$15,000 to recruit and hire a new worker, with additional costs for training. Additionally, there is a lack of qualified workers for these positions, and there is a disconnect between what businesses need from their employees and the skill set of the trained workers available. In building operations and maintenance, employers need technicians that are comfortable with all the facets of building maintenance, not someone who specializes in only one area. Another difficulty that companies and training providers are encountering, is that it is very hard for them to keep up with technologies and training equipment, which is necessary to keep workers up to date on new skills. The lack of hands-on training experience is another ongoing issue, it's not just classroom training, but comfort working with technologies and systems.

Ms. Ferranti identified that another area of focus is start-ups. These companies have very limited access to capital, limited resources and they struggle to hire new workers with minimal experience as well as veterans who have a lot more experience and could be mentors.

Ms. Ferranti stated that the focus is on a comprehensive strategy for workforce training, with efforts towards creating a pipeline of skilled workers, good paying jobs, and helping employers to grow their businesses both in expanding current work in the clean energy field and allowing new businesses to enter into the clean energy field. It is necessary to partner directly with building owners, building managers, and facilities that are designing and implementing training that really meets business needs. There must be a strong business focus, with awareness to what the job placement opportunities are, the skill gaps, and ensuring that there are programs to deliver impacts that are meaningful to businesses. The Authority is excited to be able to signal to clean energy businesses that this is a long-term commitment and investment. Through 2025, the Authority has already dedicated nearly \$70 million for workforce training, will continue to partner with utilities, organized labor, leverage work of other state agencies like SUNY, Empire State Development, and New York State Department of Labor, while building on past successes and leveraging private dollars wherever possible.

Ms. Ferranti stated that the Authority will make sure its investments are driven by business needs, focusing on skills, the level and type of training needed, and preparation for workers in specific occupations. The Authority will be focusing on reducing costs associated with hiring and training workers, while lowering the soft costs of delivering these services, we can't afford to allow workforce to be a barrier to reasonable costs to consumers. All strategies in development will be self-sustaining, integrated into existing training where possible, tied to current demand. Flexibility is important in discovering where new opportunities are, what new technology needs are, and what the new industries are such as offshore wind and net zero buildings. Energy efficiency is not only the highest employment area, but has the fastest growth and the most difficulty in hiring.

Ms. Ferranti indicated that there are development areas, specifically offshore wind, that are critical to meeting the Authority's clean energy goals. A recent award from the U.S. Department of Energy ("DOE") will administer \$18.5 million to the Offshore Wind Research and Development Consortium ("OSW Consortium"), resulting in thousands of new jobs in this \$6 billion industry. Staff is currently looking into a training plan to support 3,500 peak new jobs, and an additional 1,500 existing workers to upgrade their skills. Workforce Development staff have been working

closely with the Large-Scale Renewable team and with a committee to figure out what that strategic plan is for offshore wind, with the goal of developing that plan in the next 6-12 months.

Ms. Ferranti explained that the Authority will be accelerating its energy efficiency goals over the next 7 years, focusing on heating, ventilation, and air conditioning (“HVAC”). Local community colleges have indicated that they cannot produce enough HVAC technicians for businesses to hire. The Authority needs to help community colleges expand their capacity in addition to training them on new technologies. These new technologies include renewable heating and cooling, air source heat pumps, geothermal water heating, high efficiency lighting, and building automation and controls.

Ms. Ferranti indicated that another area of focus is building operation and maintenance (“O&M”), the Authority began investing in building O&M two years ago, and recently doubled the budget for building O&M. This sector has approximately 120,000 workers with similar training needs, as well as a lot of opportunities for scale and replication across building portfolios. In addition, there is a huge potential for energy savings. DOE projects 5-20% potential energy savings. The Authority is currently funding approximately 20 projects, with a total investment of about \$9.5 million between the Authority and private investors, resulting in approximately \$8 million a year in energy savings just from workforce training.

Ms. Ferranti explained that cleantech startups have also become a great opportunity to develop further workforce development by training clean energy workers. The Authority has made efforts to get research and development funding for cleantech startups. Through their training and internships, the shortage of both entry level workers and experienced workers will be addressed.

Ms. Ferranti provided an overview of the tactics for the talent pipeline beginning with those pertaining to the enhancement of training infrastructure and capacity. Working with talent providers, training institutions, and unions to build what is needed to support the clean energy economy with focus on curriculum development needs, the enhancement of apprenticeship training programs, training of more trainers, training equipment acquisition, and developing career pathways through preparing people for jobs and career advancement. There is a new internship

program in development that is modeled after a successful program in Massachusetts, to really help to bring talent to cleantech startups to introduce students to clean energy careers. The other element of the business support is an On the Job Training (“OJT”) program that the Authority will be developing and implementing in partnership with the New York State Department of Labor, this has been done successfully in the past under Green Jobs, Green New York. This is a way for the Authority to subsidize the cost of bringing on a new worker, by paying a certain amount of a workers’ wage for a certain amount of time. In doing this, the employer will be able to bring the worker up to speed quickly, bringing them to full productivity in a timely manner.

Ms. Ferranti concluded her presentation by stating that with these programs, there are significant goals that have been laid out. These outcomes include the training of about 18,000 workers, 2,000 OJT hires, 3,200 internships, and leveraging \$66 million in private funding. Additionally, there will be energy savings of 18 MMBTU in the building O&M area, with significant energy and greenhouse gas emission reduction, and tremendous annual savings for customers. The reduction of soft costs for this type of clean energy work and figuring out how to have better partnerships with training providers will assist the Authority in meeting business demands.

In response to an inquiry from Ms. Fish, Ms. Ferranti stated that she was aware that some employers were already offering student loan forgiveness as part of a workforce training plan, and that is some of the private sector funding that could be leveraged with training dollars. Further, there is a focus on opportunities to train veterans. The Authority has already implemented a successful solar program in upstate New York at Fort Drum, and is seeking an opportunity to replicate that model. Veterans are viewed as a priority population for the Authority’s efforts in workforce training activities, in addition to low income individuals, Native Americans, and individuals with disabilities.

In response to an inquiry from Mr. Daly, Ms. Ferranti explained that there has been success with community colleges in the past, while there have also been programs developed with select high schools for technical training. The students who enter in to the training programs at the high school level will complete their degree at local community colleges. Ms. Ferranti went on to

explain that contractors have joined with community colleges in providing adjunct professors and bringing students out into the field for real time installations as part of their training.

In response to an inquiry from Ms. Abbott, Ms. Ferranti noted that it takes about two years to change curriculum at the university level, additionally it takes almost as long to implement a new apprenticeship program in New York State.

Mr. Willis stated that the next item on the agenda was a presentation on the Authority's OSW Consortium by Richard Bourgeois, Senior Project Manager for Renewable Optimization and Energy Storage Innovation.

Mr. Bourgeois reported that in December 2017, DOE put out a funding opportunity announcement for an administrator to lead a voluntary consortium to deliver technology improvements to the offshore wind industry. It made available \$20.5 million in funding, \$2 million of which goes directly to national labs, requiring a full cost match that will be awarded over four years. This is a great opportunity because it aligns so well with New York's and the Authority's goals, reducing the cost of electricity, and just achieving the 10% reduction in levelized cost of energy delivers \$100 million worth of benefit annually when we billed out our 2400 MW of offshore wind by 2030, and if you go beyond that to 2050, the benefit extends.

Mr. Bourgeois reported that in a very macroscopic view of the funding flow, the Authority will pass through the \$18.5 million, along with its matching funds to the OSW Consortium set up as a not for profit entity, a 501C-3. A small portion of that will go to administration and operations, and the rest will go to research and development projects through a competitive solicitation. The additional \$2 million will go to a national lab, and will also be competitively solicited. Additionally, the OSW Consortium will be set up so that it is self-sufficient and self-sustaining beyond the period of funding from DOE and the Authority. There are already commitments from many of the members for dues, which are understood to increase over time, and there is communication with other potential sources, eventually enabling operation beyond that initial four-year DOE and Authority seed period.

Mr. Bourgeois stated that the OSW Consortium's Board of Directors is comprised of the Authority, DOE, independent members representing national energy stakeholders, and offshore wind developers that are the end users of this technology. This Board is supported by advisory groups, including representatives of the supply chain, strategic advisors, a tech-to-market group, and a research and development advisory group. The OSW Consortium, in addition to its own staff, will be supported by Authority technical staff as well as finance, procurement and legal support, as well as some key consultants. The Renewables Consulting Group ("RCG") and the Carbon Trust participated with in the Authority's proposal to DOE. The Carbon Trust is particularly vital in this as they have set up a consortium in Europe that has been successful in reducing costs and driving technology to market.

Mr. Bourgeois indicated that support from the offshore wind developer in the Authority's proposal to DOE, and nine additional developers have been very active in set up of the OSW Consortium and setting the initial direction. A couple of the key original equipment manufacturers are onboard as well as a couple of other states besides New York supporting the proposal. There was support from the research community.

Mr. Bourgeois stated that post-award, the Authority has been diligent in reaching out to expand the membership of the OSW Consortium, again with an eye toward self-sufficiency and self-sustainability. Power US is an existing coalition that also submitted a proposal that includes a good network of key research facilities including a wind turbine blade test center and dynamometer facilities. There have been preliminary and ongoing discussions with other states who have expressed some interest in joining and supporting the OSW Consortium.

Mr. Bourgeois explained that the research priorities are organized into three pillars of effort and these were first put out in a 2016 National Offshore Wind strategy that was published by DOE along with the U.S. Department of Interior. The first, is offshore wind plant technology advancement which includes turbines and foundation, with the goal of reducing the capital cost and increasing annual energy production. The second, is technology to measure and characterize offshore wind power resources and the physical site, which helps to reduce cost as well as the risk involved in installations. The third pillar is devoted to installation, O&M, and supply chain

technology solutions to support each of these areas. There is a technology roadmap in development, beginning with polls and interviews to understand the priorities of the developers. This roadmap will be put in front of the OSW Consortium at the first formal meeting which is scheduled to take place in October 2019.

Mr. Bourgeois acknowledged that the timeline is aggressive as the Authority expects to have the contract with DOE finalized by the end of October, and work towards the first formal board meeting of the OSW Consortium in October. Following that will be the development of the solicitations and getting those out in an attempt to attract the best and brightest in proposed research. It is expected that the first solicitations will be finalized in January 2019 and published in February 2019. The first award will be made by the end of March 2019. The March date was a key feature of the DOE solicitation, it is important to DOE to move quickly and get projects awarded in that time frame.

In response to an inquiry from Mr. Kauffman, Ms. Barton explained that financial partners are very much in the formation stage. At this point, it is important to bring partners to the table that will ensure long term success. Finance is one area that has not been as squarely on the radar screen, but there is a lot at stake, not only for improving and driving down initial capital costs, but certainly as the Authority looks to the performance of these facilities over time and making sure that the operational risks and opportunities are well understood.

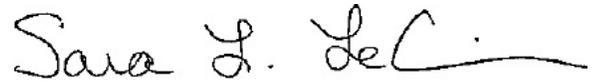
In response to an inquiry from Mr. Bell, Mr. Shaw indicated that there is a very compressed schedule to get the structure put together. There will be, in accordance with not only Authority policies, but with the contracting rules of DOE, an intellectual property management plan that will make sure that to the extent possible intellectual property is open. There will be conflict management plans in place to ensure that those making decisions about research and development are not on the wrong side of the conflict. The governance structure is still in formation in terms of the roles of the board of directors, the advisory groups, and the different committees. The board will decide the final membership of each of those. It is currently under discussion on how to properly structure that to ensure appropriate stewardship of public money, not only at the start, but also to ensure that we stay on the right side of the federal and 501C-3 status. This must be aligned

with research and development activities, not necessarily the things that a trade association would do.

Mr. Willis indicated that the last item on the agenda was other business.

There being no additional business to consider, upon motion duly made and seconded, and by unanimous voice vote, the meeting was adjourned.

Respectfully submitted,

A handwritten signature in black ink that reads "Sara L. LeCain". The signature is written in a cursive style with a long horizontal flourish at the end.

Sara L. LeCain  
Secretary to the Committee

