

Meeting of the Board of Directors

623 SE Oak Street, Third Floor, NBI Classroom, Portland, Oregon 07205
December 7th and 8th, 2016

Meeting Notes

A meeting of the Board of Directors of New Buildings Institute was held December 7th and 8th, 2017, convening at 8:30 AM Pacific Time for the purpose of transacting all proper business of the corporation.

Those present, representing a quorum of the Board:

Board Member:	Dec 7th	Dec 8th	Staff:	Dec 7th	Dec 8th
<i>In Person:</i>			<i>In Person:</i>		
Brendan Owens	x	x	Ralph DiNola	x	x
David Goldstein	x	x	Mark Frankel	x	x
Jeff Harris	x	x	Cathy Higgins	x	
Ed McGlynn	x	x	Amy Cortese	x	x
George Malek	x	x	Jim Edelson	x	x
Doug Baston	x	x	Anna Gabis	x	x
Peter Turnbull	x	x	Stacey Hobart	x	
Steve Nadel	x	x	Sean Denniston	2 hr	
<i>By Phone:</i>			Alexi Miller	2 hr	
Mark MacCraken	x	x	Mark Lyles	2 hr	
Marge Anderson	x		Heather Flint Chatto	2 hr	
Patrick O'Shei	x	x			
Michael McAteer					
Nancy Jenkins					
Gregg Ander					

Wednesday, December 7th

David Goldstein called the meeting to order at 8:30 a.m.

- Ralph reviewed the agenda
- Review and approval of the meeting minutes

Home of:

Board Meeting Notes, cont.

Vote: Motion to Approve Meeting Minutes from October Board Meeting

Steve moved to approve the minutes as amended

David seconded

Discussion:

- Ed suggested more detail on the meeting minutes related to votes and board actions
- Ralph called for comments or changes from the Board
- Correction to the Minutes: Ed was not present, need to add staff. Copy edits related to periods, etc.

David called the vote.

Vote: Approved on a voice vote calling for objections. Brendan and Ed abstained.

Ralph called for gratitude. Various board members expressed thanks for the good work, staff and each other.

The State of Play:

Board members provided updates on the state of the industry and the state of their business from their perspective.

George Malek

As of Thursday, a bill signed today by the IL Governor highlights the evolution of energy efficiency. I'm trying to figure out where else it's happening outside of Illinois. The acronym I want to trademark EEaB, which is Energy Efficiency as a Business. ComEd can prove to the world external and internal that EE makes sense and there are benefits to be had by customers and shareholders.

I am thinking what we need to do to build this huge business. Largest focus and priority is on the structure that needs to take place b/c when it becomes a business we need the tools and business process to get us there. What needs to happen on tracking—savings and revenue. The major change in the legislation is that it allows ComEd to earn on the spending which puts saving on equal terms with consuming in terms of sales.

We need systems to track that. As I keep thinking about all the infrastructure and foundation that needs to take place, I think who are the people that you need to make this happen? It takes on a different flavor.

The shift has been more about business process than things we traditionally think about EE.

Discussion about whether ComEd is the largest or only utility to try this approach. The timing is good, the ratemaking structure has to change.

Board Meeting Notes, cont.

George: The need for EE measures is high. The lighting measures are going away and we are losing EE options. We start counting and earning in 2018.

Jeff suggested high attention on M&V—the need to have measured performance of whole buildings. In order to get savings, you have to go to the whole system level and look at the savings of the entire building/system including operations rather than incremental or measure-by-measure savings. Having the systems in place to measure use and have someone looking at that all the time is probably where we need to.

Ed: This is the convergence of EE and the DERs—everything behind the meter.

Steve Nadel

George, I agree that lighting has been a great ride, we probably have a few more years. Just came from Intelligent Efficiency conference. May not be as big as lighting but is the next big thing for savings—enables performance-based monitoring and measurement. You have to make some assumptions about what the savings would have been, but intelligent efficiency is a major part.

There's lots of other things we need to do too. Intelligence could take off quickly. What are the states doing: Illinois, New Hampshire has a new EE requirement, MS and LA are getting ready to set energy saving targets. New governor in NC so perhaps opportunities there and in SC. On the other hand, we need to be careful to defend. In Ohio—bill to put moratorium on EE measures for three years. Looks like Kasich will veto. This would be a continuation of a current moratorium.

Problems with an industrial carve out for industrial 10 MW or higher in Illinois.

Doug Baston

It used to be a tighter family between the utilities and regulators. I worry that as programs get more sophisticated, legislators may try to carve out funds from programs as the programs get more complicated. We need to continuously defend these programs in the states.

Threats come in renewables and the inequity of who can afford and access renewables. There's a chunk in the middle who don't qualify for low-income federal program and can't afford the incremental expense of energy efficiency or renewables.

Marge Anderson

Day after the election developers event, we saw millennials disappointed. We need to help younger generations understand what this means and how they can keep going. How do we need to change our messaging to appeal to the private sector? On the topic of social equity, there were two big things that were popular: big data driven by Silicon Valley (does not represent diversity) and social equity. How can we think about our work and new and market-

Board Meeting Notes, cont.

ready technologies, leverage education platform to give more voice and exposure to hyper local diversity programs?

We cannot sit back and rely on the environmental messages b/c that did not ignite the general public. Midwest may be falling behind although there is movement. Echo having been through this before and it's too late for pessimism. This is a moving train and it's not going to stop. Feel energized in this work.

David Goldstein

The thing we have not noted is that on Oct. 4, the Climate Change agreement went into effect by 190 countries. Regardless of what the U.S. does to maintain the commitment, most of the energy efficiency leadership in our country has been on the state and local level. What did we agree to in Paris—stop temperature increase at 2 degrees. Studies exist on how to do that. End use efficiency is the biggest savings—we know how to do it at zero or slightly positive cost. We also saw something new which is a 1.5 degree increase target. We just took an emissions goal and cut it in half. How do you do it? You have to accelerate the savings now. It changes the focus to near-term savings now and elevates the importance of retrofits (see David's blog 1.5 degrees that explains 5 or 6 programs). In terms of framing and marketing, after the election I looked at list and saw the economic development plan that gets them what they need. There's a strong economic story that touches every community in the country. This is targeted assistance with high energy bills, transportation expenses and job creation.

NBI is very well positioned to push on these things. 2 degree goal is the requirement. 1.5 degrees is aspirational, we need the resources to do it.

Steve added that today ACEEE released a study showing how we could cut U.S. energy use in half—retrofits, ZNE and smart buildings—which we find is achievable.

Jeff Harris

If you actually care about carbon, actual building performance matters. It doesn't matter that you checked the boxes of efficiency measures installed. We're finding that even if high efficiency lighting is installed, we're not seeing the EUIs come down.

In the NW we're finally bumping up against capacity constraints which is making us look at time dependent delivery. There are huge implications for the power system if buildings can be part of the solution to peaking at sundown or a huge challenge. We need to start talking about buildings as a grid asset.

The temptation to run a 'peaker' is great, but if we could address through efficiency, then there would not be the temptation to bring other generation on line. In addition, Energy Storage is a huge consideration. If CA hits RPS in renewables, then the grid is awash in kWh. There are market economics that will make it extremely difficult for energy efficiency to compete with

Board Meeting Notes, cont.

generation. When it's over producing, what do you do with it? Spot markets might go negative. The old model of using electricity markets as the benchmark is not going to work.

Patrick O'Shei

We are seeing and expecting much less disruption than many others. It's exciting in that we have 10-year course of funding, but the goals we are being asked to achieve are very steep compared to what we've done in the past.

NYC is going to work with the stretch code model, which is really exciting. We have money and policies that are in sync with what we're trying to do. Now we just have to produce results. For us, when it comes to us, we're not a new constructions state. Most of my funding is for retrofit work. The economics of upstate NY is very sensitive. I don't expect people to operate outside of their economic self-interest. How can we come up with approaches that lower up-front costs and offer quick payback? We are challenged to bring in private investment that approaches 10x what we're investing. I am very supportive of us looking at retrofits. In NC I have about \$90M to address low-income and MF housing. We are addressing equity in some degree in energy efficiency and renewables as well.

Lots of pressure to deliver.

Steve: NYSERDA probably has the leading ZNE MF program in the country.

Jim: NYSERDA stretch code was a great step, but NYC stretch code will by far, surpass the current standard.

Peter Turnbull

Existing buildings is where it's at. We have looked very carefully at nonresidential retrofits to zero. Talking about whole building approaches. How to expand the audience. Did a survey of architectural schools. There is a group of people excited about sustainability, but it's not a large number. We got 75 student entries, but not from CA. There's a lot of work to do in the design community. We talk to the converted.

Mark MacCraken

Demand and storage are going to happening in a big way in California. Something that I heard at AHRI after the election. It was about the refrigerant law that has to go to Congress (called SNAP). This group that is usually so anti-regulation is wanting this rule to get passed and move to the new refrigerants. They've made plans for the change and having it be up in the air on what's going to happening is worse than the regulations themselves. They want a course laid out for them.

Ed McGlynn

Agree with George on EE as a resource.

Board Meeting Notes, cont.

Brendan Owen

In the context of USGBC to integrate the activities of the supply and demand side. We've been working on LEED for 16 years and it's had some effect on how people think about the design of process. It's had an outsized effect on how people think about metrics for measuring building efficiency. There is a group that's looking at the power industry as a place where they; could affect change and make the industry more accountable to more than just the financial returns, but rather environmental aspects. Out of those conversations, the PEER Rating System has been developed focusing mostly on the supply side and starting to see traction and value of third-party certification in a way that makes it easier to get into the more complicated discussions. The more complicated, the more legislators and others tend to tune out. LEED gave a context and allowed people to say, did you get LEED certified or not. Now we are unpacking that a bit and asking deeper questions about what they did specifically on the project. GRESB took the info and repackaged LEED to do that for the financial market. We are starting to see that standard for the supply side and DER growth. Concurrent with the pushing of PEER, we are seeing the things that the building industry has made life difficult for the power industry and what the power industry has done to make things more difficult for buildings. It does directly go into the idea of EE as a business taking into context the rest of the system that we are engaging in. It's the interconnection between buildings and transportation, food, health and welfare. Building out an ecosystem that will help us assess city-level infrastructure that will allow people the basis around which they will be assessing each of those things from a development standpoint. As we have been doing that, all of the things we've been talking about are bubbling to the surface.

The conversations that we have been having are more and more interconnected and woven so we are looking at the co-development of these systems to optimize outcomes. Intelligent ee is the nexus of all that stuff. USGBC has programs that plug into all those things and market strategies that connect all the stakeholders. In the same way that LEED came on and allowed the building industry context for green design. We are seeing that same emergence from the power industry and building connection.

Jeff wanted to add onto Brendan's comment. In the NW, as the focus is moving off of annual energy systems the utility systems especially in urban environments have been looking at buildings in aging infrastructure. As we add density in urban environments, the questions is how do you upgrade and maintain. In cities, upgrading is very expensive and driven by loads. What can we do to give life extension and allow for new growth in the urban environments w/o an underground feed or other energy infrastructure installations? These are real costs that the EE design and planning departments could utilize. This assumes that loads are going to grow into the future. If we could take them off of that idea, we could save the utilities a lot of money. We are about to invest billions of dollars in the grid and what are we basing it on, old ways.

Steve: We're moving toward a shifting peak to the evening. There's probably going to be a move to winter peaking nationally.

Board Meeting Notes, cont.

Jeff: Distribution planners are maybe thinking about this, but they don't have the tools to understand and deliver what's needed.

George M: White paper by solar city. You're asking utilities to open up the planning process to outside entities. We need to come with data.

Brendan: the challenge is b/c they are not opening it up an optimizing the piece that they control, when that happens it's looking at a narrow view point. It's the same as a building just letting the peak go wherever it wants to do. How to communicate between the two industries what they need for each other and that gets fed into each other's planning. Progressive actors on each side and bring them together in an intentional way.

George: You have to bring the business case. You're giving planners way too much credit in terms of what they know. The data is not there and utilities did not put together a data management system that looked at loads on the feeders. When you start playing with what NY did and San Onofre, there's no data to help the analysis.

Doug: Planning process in NE is more open. The discussion between the ISO and Acadia. If you're a utility and you're going to get payments of 14% to avoid a new transmission line, the ISO is forcing some of that.

Steve: the ISO NE is one example where the projections are being made with an open discourse. Not sure how well that's trickling down to the distribution-level planning.

Peter: We worked on a habitat house in Stockton. The ¾-ton heat pump goes into the house, but most houses have higher tonnage. Planners are not looking at this. Heating load is much lower. The utility distribution planners have not grasped that.

Ralph presented on the strategic planning work and strategic framework of partnership.

George: Plan to write a business plan for each of these work streams. That's a huge amount of work.

Ralph: The business plan is the groundwork that's needed to effectively change the market. I need for us to get that in place. We need one for innovation, policy and research.

Jeff: Will the business plan include the characteristics of partners you want to work with?

Ralph: Yes. For example, if we identify a big intention to focus on MF, we would say what partners would be beneficial to partner with. I think most of that can be sorted out.

Doug: Thought leadership should have a business plan and can identify where you should focus your thought leadership.

Board Meeting Notes, cont.

Ralph: Codes and policy are shifting dramatically. The best intention is to write it down and follow it until things change. Partners and who has leverage are key parts of that business plan.

No other feedback.

George: This whole idea of reinventing. Is there anything you would step back from and review as the reinventing of NBI in terms of growth? Your vision is going to deal with the subject matter vision of what the utility is going to do. On the business side of it, you need a parallel vision that translates into how much you're budgeting and how many staff, etc.

Ralph: Raised that the programs are not showing on the chart and do not show the finer grain of the organization.

George: I want to know as a business, what do you want, what constituencies are willing to pay, and what strategies will you pursue to achieve them.

Ralph reviewed the working document.

Jeff: You created a diagram about how to go out and get the work in targeted markets. Are there other models to get that work done such as in-source/out-source models (i.e., using fellows to drive thought leadership). Think through what we want to do as an organization to encourage that activity in-house rather than out-of-house.

Could be done internally or collaboratively with partners outside of the organizations. NEEA's core competency is outsource model. What are the things that can be done quickly w/o the need to staff-up?

George: Still trying to understand or want to be able to briefly be able to say NBI is going to be X,Y, Z and it's a simple statement. Over the past we were dealing with getting back in balance. Now we need to look at where we want to with growth. In my mind growth provides a great opportunity for the valuable assets you have in people and will bring more money through sponsorships. It's interesting that I don't think there's anyone out there that does what NBI does.

Just to start with "What's Our Brand?"—Ralph suggested that they were going to talk about it tomorrow and asked what questions need to get answered before then.

ZNE is a brand and you rode it—it stuck.

Ralph: When we did our retreat back in the spring we wrote a lot of that down. Rather than saying we do ZNE, we need to say what do we do related to ZNE?

Board Meeting Notes, cont.

Thinks staff presentations are going to help coalesce thinking.

Steve: At some point you were thinking that you were going to rethink the sponsorship model. Will we hear more about that later? Would like to hear from staff about projects that interest them and what they want to do more of.

David: We need more direct connections from the website to partnerships that NBI has.

Ralph: These MOUs with partners helps define the details of what these partnerships are going to pursue. We had these conversations about EB and where we are going to focus. If we don't understand the opportunity or impact then how do we know it's a good course? Need to know market potential and impact.

Steve: Building retrofits is going to be an ENORMOUS place. It's not just getting EB to ZNE. We need some other appropriate targets for existing buildings. Look forward to hearing what you were discussing about this yesterday.

Jim: The other thing that comes up is how we want to touch residential. We are starting to develop codes on that front.

Ralph: Talked about merger/partnership with NZEC. That is turning into a partnership, but not a merger.

Steve: I think we should set aside some time to discuss residential tomorrow.

David: RE the comment, we don't need to get to ZNE for retrofits, we probably don't want to. There's got to be some space left for centralized renewables.

Ralph: If we're going to take the grid to renewables, why would we want to focus on the buildings?

Ralph gave his CEO Report and Operations Review

He reviewed the current operations, fundraising and program activities

Amy presented Mavenlink, inherent budget tracking and the organizational management structure including shared file organization

Ralph shared information about NBI's IT resources and presented the review and compensation.

There was discussion about how the compensation increases are impacting budget. The increases have been projected in the current budget.

Board Meeting Notes, cont.

There was further discussion about the benefits of being able to offer the info as a basis for raises. They discussed flexible work schedules and other benefits. How to manage the expectation about still getting work done even if you are working from home.

Ralph shared that he is taking a leadership course offered by Lion Heart over the next year. It was a two-day intensive and now 4 hours a month. Creating a project around the organization. It's a cohort of 9 individuals. You get to share your work experiences and discuss them with others.

12:00 pm – 1:00 pm Lunch Break

1:00 pm – 3:00 pm **Program Review, Staff Presentations, Discussion and Feedback**

- Amy Cortese for Stacey – Getting to Zero Forum, Comms Update (15 min)
- Cathy Higgins – Research Initiatives (15 min)
- Mark Lyles – ZNE School Retrofits (5 min)
- Heather Flint Chatto – NBI CA ZNE programs and activities (5 min)
- Mark Frankel (+ Alexi on FV)– Zero Cities, MBP, zEPI, ASHRAE 189.1 (15 min)
- Sean Denniston – Multifamily Initiative (5 min)
- Jim Edelson – ICC, NYSEDA, State of Codes and Policy (15 min)
- Amy Cortese – Utility and Jurisdiction Programs (15 min)
- Alexi Miller –Grid Edge (5 min)

Notes on Board Input during Staff Presentations:

Amy - Forum

- Good venue for NBI to be seen and to lead and to partner
- Take pause before assessing if you should do the event annually versus every 18 months. Might help visibility to wait until Spring 2018 and consider the political and market changes
- Is there another event it can nest with? There are other ZNE efforts now - ASHRAE & Greenbuild. Nesting partners within the event is a good approach

Cathy - Research

- Should consider ways to integrate more efficient ventilation into retrofits given the trend toward separating ventilation from thermal comfort
- Transfer of SMART Scale to member utilities is desired
- Proportion of public versus private ownership is a key metric

Mark L - ZNE Schools Retrofit

- Does Resilience come up in the K-12 schools decision criteria? Not in secondary research but can add it into the surveys and thus prompt it as a topic to the interviewee.

Heather - CA ZNE

- Web of ZNE Activities slide is very helpful

Board Meeting Notes, cont.

MF – Cities +

- City Climate Action Plans as the impetus for codes.
- NBI is working with over 20 cities on Policy
- Clarify that zEPI can be either asset or operational – yes it can.
- Clean up intended regarding the ability to distinguish efficiency from generation. We are working to line up Chapter 11 and Appendix G
- zEPI can be correlated to ASHRAE

Sean - Multifamily

Jim – Codes & Policies

- Ag Lighting: There remains a lot of different perspectives among indoor agriculture growers regarding what different plants need.
- There are a range of indoor growth happening in addition to cannabis legalization adoptions that affect energy use including hydroponics
- New zEPI Code Impact Scores is starting with commercial but will also be residential. Will consider efficiency and needs to work with / leverage ACEEE EE Score Card
- IECC has an informative prescriptive that helps you get around preemption
 - But USGBC had an experience with New Mexico where they could not get around preemption

Amy – Utility & Jurisdictions

- Crux issue is that the utility regulatory framework is often siloes so the cost effectiveness is disconnected and not credited. The model to merge and credit (assure attribution) for the programs for the energy efficiency outcomes
- What is in the measure scan? It is populated with data on state of the art code measures

Alexi - GridOptimal

- What is the baseline for your metric? DOE Prototype compared to a code building
- Q: What is the use of the metric – why measure or differentiate them? A: In order to characterize the building by grid “friendliness’ and potentially monetize the status of their grid interaction.
- I don’t understand
- You really need to be talking to distribution engineers!
- You need to characterize the dynamic nature of building operations and distributed generation factors
- You need to have the raw data available for the operator to shift the grid as they need to.
- The LOI will seek funds to get these parties engaged and resolve the questions being discussed here
- Matching this to a utility dispatch is difficult as it is not readily available
- We don’t know what “Good” is. We can calculate ratios etc. but without the context of where the building sits within industry changes. We also don’t currently know the scale.
- There is so much locality to what ‘good’ is but it could be weighted and would have to be.
- This is a good start and glad you are on the topic

Board Meeting Notes, cont.

Response to Nadel “what would you do new or more of?”

- Cathy – Broaden the characterization of the value of buildings (CSR, health, next gen attraction, CRE, financial etc.) to couple EE/ZNE with these market interests
- Jim – Make a nationally recognized commitment for 80%, per the Nadel Study, of new construction to build per ZNE codes - as the standard for the milestone to measure policy progress.
- Amy – Continue to build on relationships with utilities, and in jurisdictions pilot a suite of 10-12 policy tools
- Alexi – Make GridOptimal standard practice

3:00 pm – 3:15 pm Break

3:15 pm – 3:40 pm **Finance Committee Report and Discussion** (Ed, Ralph, Anna)

- Staff fiscal review and update

NOTES:

- McCracken presented the NBI 12 month rolling average
- It appears that the pressure is off the need for NBI to get the Sponsorship early in the CY.
- From NBI on a FY July – June it doesn’t matter but many people are on CY FY so best to get the invoices out end of year and paid early in the CY
- The forum crosses two fiscal years
- The cash flow report is helpful but Anna intends to add a monthly rolling average to increase ease of review
- The graphic on Actual Cash Flows also shows why the early payment of sponsorships is important to bolster cash position moving into a new year.
- Fundamentally we need to increase revenues to match the slightly increase expenses over budget.
- Something to be cautious about is to have an early burn rate that leaves no reserve for end-game activity. NBI tends to run on the opposite trend with the late term being more cash reserve intensive as we do foundation work.
- Can NBI, if in a stronger financial position, choose to reimburse Board members to attend the in-person meetings if the Board member can’t afford their own travel.
- Given the end of year projection that Board said that IF NBI is in a solid position than it should be considered for Doug and perhaps Nancy and Greg or whoever requests travel support.
- A 6 month reserve is more ideal and has been a past target. Current it is a 3-month reserve target. It would take years to accomplish this but it is worth revisiting.

Day One Adjourned at 4:07 PM

Board Meeting Notes, cont.

3:40 pm – 4:00 pm **Fundraising Report** (Stacey, Ralph)
• Review development activities and results

4:00 pm **Adjourn, First Day** (David)

4:00 pm – 6:00 pm **Partners Reception**

Wednesday, December 7th

David Goldstein called the meeting to order at 8:30 a.m.

8:00 am – 8:30 am **Arrive, Settle In, and Breakfast**

8:30 am – 8:35 am **Welcome and Call to Order** (David)

8:35 am – 9:00 am **Recap and Discussion of Previous Day**

David – need elevator speeches of great stuff NBI is doing

Group – meeting felt rushed even at 1.5 days; keep presentations in time limits; wanted to hear more – could pick fewer highlighted topics; Directors could pick 1 highlight each;

Ralph – review Market Leadership Statement and “What does NBI do? Keywords for elevator pitch; Board says more tangible needs should be in elevator speech (on sticky)

“What does NBI do?”

1. Needs to offer Tangible Services
2. Deliver impactful results
3. Tools
4. Access to Experts /
 Subject matter Experts value stream (presence + expertise)/codes, performance
 Using SME to define Best Practice
 Translate tech to market-based solutions
5. Provide / Assist within organization
6. Thought leadership
7. Convening
8. Specialized Trainings /Tech Trainings
9. Provide local presence

JEFF: really appreciated project mgt. (Amy) and tools; allow Ralph to be out there (rainmakers)

THEME 1: Retrofit strategy at NBI

Board Meeting Notes, cont.

Jeff: Real estate is ultimately a financial estimate – NC can lead; TI can follow; EB is the last to adopt; what can NC tech EB renewal – which tools – very time dependent at trigger points – chains do refurbishment – change specs at opportunity – design standards + broader opportunities at time dependent triggers – envelope/HVAC/lighting – how much capital to deploy > master plan – NEEA benefit stream calculation tool on company's terms (leases, turnover, deferred maintenance, capital costs, tax benefits, utility benefits). Can use AB to give framework to developers – Sean's National Grid DER webinars and Guide;

RALPH: amplify single projects into national market deployment – how do we get to market partners that have large national-multinational real estate partners – local bridge partners to get there - Focus on market sectors; public vs CRE have different questions; schools are very different market

GROUP DISCUSSION:

Use a national chain to demonstrate in market – tackle as a large portfolio

DAVID – get cost numbers to see how much cost/value to do the DER;

JEFF – NEEA has tools that generates pro forma; NBI can see where utility \$ can be leveraged best in decision chain (A&E; supplier); work with cities (districts) for leverage but still keeping character of physical assets – could develop a database on DER retrofit; need funding to get additional buildings that are focused at DER – find link to change of occupancy codes – create zEPI target for DERs – create an M3 for DER prescriptive techniques – differentiate by building types such as in Preservation Green Lab work

Brendan – partner with Investor Confidence Project to get financial validation of concept

THEME 2: GridOptimal

- Acadia center as a partner (MA RI New England)
- NYSERDA and Northeast ISO
- Brendan- make sure projects are set up for TOU
- Natural place in LEED; layer in as a pilot credit
- Direct applications to assess projects
- Get this tool in front of master planners
- George – break down value stream in how bldg. looks to grid
- Demand flexibility has higher value to grid to
- Signature has to be a curve maybe rather than a single number >>> tiered capacity benefits -- It would be fantastic to have a building signature regarding the capability and variability to react to DR. The resilient ability of the building to 'drift' – a band or curve needs to be developed. Have several KPIs and a sliding scale to say here is how you measure it
- Need to characterize building responsiveness at the system level

Board Meeting Notes, cont.

- George - Look at some way to fund a pilot on the Grid
- Jeff – some at looking at winter peaking
- Thermal mass – control strategies – flexibility precooling
- Part of score / bandwidth to drift – respond
- Don't pigeon hole it to just be about ADR or dispatchability as batteries play a role - flush out the details here
- Might not be standalone- There is a tremendous amount of momentum regarding distributed generation and Brendan can direct us to resources
- GridOptimal should be diagrammed – series of KPIs
- Need to work with distribution network engineers
- Load shed – microgrids – efficiency - EVs – batteries
- Dimension of score has to include baseload continuous load reduction – reducing capacity overall needed for transmission (piece of score) – baseload reduction is always there – DR folks do not value it – can you value that for incentives - bid KW savings (capacity) into PJM – ISO NE
- The EE may be separate from the score as it is distinct from DR (GM). It may help the score and the market to recognize the value of the building to provide allocation that is not used at the building and can be transacted elsewhere (JH). George translates the energy savings into the annual market and sells it into the market. New England gets payments back from selling the negawatts. Capacity valuation is already happening through the ISOs. (\$100 million from IDO for DR in Connecticut)
- Micro grid developers are looking for this flexibility from buildings.
- How to link valuation of GridOptimal into the capacity markets

• **RALPH BOARD FLIP CHARTS:**

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- Potential with New York Regarding NE ISO opportunities
- Partner with Acadia Center
- USGBC – where Supply & Demand intersect micro-grid, storage, ADR etc.
- LEED pilot/ innovation credits for GridOptimal
- Potential for PEER Project – campus master planning
- How does Grid need impact building design – make emphasis on dynamic response rather than static
- Relationship to DR. IE: Rate the building design to pre-cool or potential for energy storage
- Need an Info-graphic for GridOptimal of the “Internet of Grid” with all the potential uses and interactions
- Consider how an ultra-low energy building contributes to the base load reduction and is able to free up base load capacity
- ComEd/NE (CT) bids saving into the PJM/NE ISO – Base Load Capacity

THEME 3: Residential

Residential - single family opportunity

Are there NBI resources to do residential?

ERI and based on RESNET 301 – provides technical basis for efficiency

Board Meeting Notes, cont.

Which parts of residential scope are NBI involved in- Codes, RESNET, ZNE, City Services, small MF program?

NZEC has residential data – Paul Torcellini can align Shilpa / NZEC database with NBI

NZEC can be partner in snowflake – rush to merge doesn't make sense

Residential emphasis should be on codes – ZNE –

Social Equity as a key issue for cities – will be integrated into Zero Cities program

This project is a GO – John will continue to fund

CNCA – Johanna – well connected with fundraisers

Doug worried that orgs are concentrated in same cities

Review City Tracker

FUNDRAISING

Review of Business Development Tracker – and Viability scoring

George - How do we keep viability updated? Is it necessary?

Review funding streams from Maine, VT, and Northeast

Talk to Michelle Thomas at SCE

SoCal Gas

SMUD – Rachel?

LADWP – David Jacot – grid optimal would an interest – LA Unified is his customers

DUKE – it's been tough; board members should send likely candidates to Ralph

XCEL – opportunities through Jennifer Elling (she has since moved on from XCEL)

With implementers it needs to be Fee-for-service wired into the utility budget

Vicky Cuo (Steve) and Paul Romano (Doug) at Con Ed in NY – will take the lead in NC programs in 2018

Paul Torcellini at NREL (great addition to the Board)

EPRI – knowledge of all the big projects in this space – (but more take than give)

RMI is great to work with

CRE companies

Gerdling Edlin Development

Arizona Public Service / TEP

Energy Trust of Oregon

Board can support follow-up contacts at events

New Board members can be an entrée - for instance for CRE

NEEA/ACEEE - Break points for logical leap of organizational infrastructure is 25-30; 50 is a good spot to end at

Partnerships with Board Organizations –

COM ED – develop a roadmap of services interactions for Board Member – Partners

Next Meeting - East Coast, in person for review of next FY budget draft. April would be good

Hold Finance Committee in advance to review draft budget.

Board Meeting Notes, cont.

Anything else in the M&A space?

RECODE – is it worth the time? – Probably not - Is there a project we can work on together to test it out? Water could be a path to work on with NRDC partnership.

Reviewed Growth Plan budget

Expensed write-off of 32k, have a hit of 54k from one large account receivable

Strategize within NEEA strategic plan – defining partnerships

Solidify plans

MEETING ADJOURNED at 11:58 am