

# **NYSERDA NY-BEST RAPID-FEEDBACK PROCESS EVALUATION**

*Final Report*

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## Notice

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# Executive Summary

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## Introduction

The New York Battery and Energy Storage Technology Consortium (NY-BEST) is a not-for-profit corporation incorporated in 2010 to help position New York as a global leader in battery and energy storage technology. NYSERDA is helping to fund this industry-focused consortium with approximately \$25 million through Clean Air Interstate Rule (CAIR) proceeds. Within the energy storage industry, NY-BEST aims to create value chain clusters of companies, establish robust New York markets, continue New York's technology leadership, stimulate commercialization, and contribute to economic and job growth in New York State. It strives to become a self-sustaining consortium supporting its core member services through non-New York State funding.

## Evaluation Overview

The purpose of this evaluation is to provide feedback to support NY-BEST consortium planning. This report documents NY-BEST consortium activities and their progress toward the consortium's short- and mid-term outcomes. It also benchmarks NY-BEST in comparison to peer organizations and identifies lessons about the consortium model that other NYSERDA groups may consider. Specific research questions for this evaluation are as follows:

1. How does the consortium work as a method of driving change?
2. Is the NY-BEST consortium meeting the needs of members in the energy storage space?
3. What value do members derive from the consortium? How well is NY-BEST operating?

There were four distinct data collection activities employed for this evaluation. Three of these activities involved primary data collection: the evaluation team surveyed NY-BEST members, conducted interviews with experts in the energy storage industry, and conducted interviews with peer organizations similar to NY-BEST. The final activity was a secondary data review of consortium data, such as data on energy storage technologies, policies, and consortium operations.

## Key Findings, Conclusions, and Recommendations

### How does the consortium work as a method of driving change?

The evaluation team concluded that experts and peer organizations recognize NY-BEST as a leader in energy storage that is able to drive change. The consortium is influencing positive outcomes through its activities and is supporting market development by facilitating connections among its members and the industry in general. Developers find NY-BEST core services helpful, namely facilitating connections (66% of respondents noted this was beneficial), gathering information (59%), and securing funding (50%) (see Key Finding 1, p. 14). Of all members surveyed, 80% indicated that they received helpful assistance from NY-BEST in making connections with energy storage industry players and that they valued the assistance NY-BEST is providing. Most members surveyed mentioned the relevance of connections made through

NY-BEST events as compared to other means. Many members made comments indicating they were interested in further connections with other industry players. This indicates NY-BEST is connecting the right types of organizations, but should increase these efforts to meet member needs (see Key Finding 2, p.15). Experts added that external trends, such as renewables, grid resilience, and distributed energy resources, will drive much of the change in the energy storage industry (see Key Finding 3, p.18).

Recommendation:

- Expand the pool of members and partners to include more developers and buyers, including those beyond NY State.

### Is NY-BEST meeting the needs of members in the energy storage space?

NY-BEST is addressing key market barriers and providing members with valuable assistance. NY-BEST shared market and funding information and helped make connections through personal introductions and conferences, both of which helped break down top barriers as identified by members (such as a lack of company capital, access to markets, and market demand information). Identification of these barriers indicates that most respondents were beyond the stage of producing an initial prototype and were in a commercialization stage of development. Taking a longer-range view, experts suggested that NY-BEST continue to address industry-wide and policy-level barriers identified by experts, including the need for value monetization and the establishment of industry standards to simplify and speed up the sales, installation, and maintenance processes (see Key Finding 4, p.20).

Recommendation:

- Create a “commercialization conference” devoted to connecting developers with buyers.

### What value do members derive from the consortium?

General perceptions of NY-BEST are very positive. Industry experts (seven out of 16) view NY-BEST as a leader, not just in New York, but also nationally. As such, it will be important for NY-BEST to partner or align policies with other energy storage groups outside of the State to have a more global reach (see Key Finding 5, p.23). In addition, NY-BEST members value and regularly use the vast majority of its services, relying most on newsletters and updates to stay abreast of industry news and funding opportunities. The highest valued services (both with 8.5 out of 10 ratings) included NY-BEST’s conferences and assistance in facilitating connections (see Key Finding 6, p.24). Less-used resources include social media and the supply chain search function. Lower use of social media may be a result of (1) small member organizations having a limited web and social media presence and (2) respondents from large member organizations not being involved in centralized communications and social media. It may be worth investigating ways to better leverage social media and the supply chain search function on the website given members’ need to connect with potential business partners (see Insight, p.26).

Recommendation:

- Develop national and international plans to stay informed about, and potentially align with, national and international energy storage policy trends.

### How does NY-BEST compare to similar programs?

Consortia are effective for building networks, connecting supply chains, and bringing natural competitors together to collaboratively address common challenges and barriers (see Key Finding 7, p.27). The findings from the peer organization benchmarking revealed that NY-BEST offers many of the same services as its peers, and is also covering more ground than similar organizations. This includes having goals that span across technology as well as policy and offering services such as matching organizations with common interests, and helping members gain access to testing facilities (see Key Finding 8, p.28 and Key Finding 9, p.30). NY-BEST should consider expanding on areas of strength and niche areas not well covered by others (see Insight, p.31). NY-BEST has a broad membership with many non-industry representatives, which could prove to be a strength in bridging stakeholder groups or a challenge; some peers warned that a broad approach might spread resources too thin, resulting in distractions from core private sector needs (see Key Finding 10, p.31). NY-BEST should consider assessing the pros and cons of forming an industry-only membership with non-industry partnerships (see Insight p.32).

All peer organizations agreed that being self-sustaining is important for long-term success and revenue generation plans should match the type of membership, e.g., large contributions from a small number of key companies vs. dues and event fees collected from a large, diverse membership. (see Key Finding 11, p.33). NY-BEST should consider whether a tiered membership to secure larger contributions from a top tier of more highly invested members would be beneficial for reaching its goals (see Insights p.33). NY-BEST should also consider encouraging members to pursue and financially support entrepreneurial endeavors and line-item activities as a way to combine and leverage funds (see Insights p.33).

Where NY-BEST lags some of its peers in becoming a self-sustaining organization, it is more sophisticated in its methods for measuring progress (see Key Finding 12, p.34), and is on par with its use of best-practices, e.g., letting industry drive direction, building credibility by holding annual meetings and distributing newsletters, and emphasizing collaboration among members (see Key Finding 13, p.35). As the market transforms, peers expect to develop transition plans as opposed to exit plans, helping their membership with mature market concerns, such as improving technology and defending existing markets (see Key Finding 14, p.35).

Recommendation:

- Partner with other storage consortia (ESA, CESA, maybe others) to effectively push policy, education, and industry standards.



## Considerations for Using a Consortium Approach to Drive Market Transformation

NYSERDA often employs competitive project-level funding to drive markets past barriers to technology development and commercialization, such as raising awareness about and proving the effectiveness of a technology, reducing high upfront costs, and optimizing management and operations. In addition to addressing these barriers, the consortium approach can be helpful when the following barriers or market conditions apply: 1) there are common policy, standards development, and technology barriers that competitors are willing to work together to address, 2) supply chain actors are not adequately networked and do not understand each other's needs, and 3) there is a sufficient level of base activity where interventions can establish a working industry cluster (see Table 12).

# 1 Introduction

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## 1.1 Consortium Description

The New York Battery and Energy Storage Technology Consortium (NY-BEST) is a not-for-profit corporation incorporated in 2010 to help position New York as a global leader in battery and energy storage technology, including medium and heavy-duty transportation, electric grid, and other applications. NYSERDA is helping to fund this industry-focused consortium with approximately \$25 million through Clean Air Interstate Rule (CAIR)<sup>1</sup> proceeds. When NYSERDA decided to focus its Energy Storage initiative efforts on establishing the growth of the NY-BEST Consortium, NYSERDA held a series of stakeholder meetings to establish priorities. The results of those meetings included three main priorities to provide: (1) access to testing facilities, (2) research and development funding, and (3) consortium services to foster growth in the battery storage sector. In addition, the consortium aims to contribute to economic development and job growth in New York State. NY-BEST's role is to provide consortium services, notify members about funding opportunities, and promote the testing center to its members. In addition to providing funding through Program Opportunities Notices (PONs), NYSERDA maintains a program management role to support consortium operations and management of testing facilities. Currently NY-BEST is governed by a 17-seat board of directors elected by consortium members. At the end of 2010, the board selected Bill Acker as Executive Director and in early 2011 made Capitol Hill Management Services the association's management company. Program stakeholders include the consortium members and partners representing a variety of companies, academia, research institutes, government, and energy storage end users.

## 1.2 Consortium Goals

As described in the NY-BEST Program Theory and Logic Model Report<sup>2</sup>, program stakeholders established the following goals for NY-BEST. These goals are summarized below, and described in more detail in the New York State Energy Storage Roadmap, developed and published by NY-BEST in 2012.

1. Create value chain clusters of companies comprised of suppliers, material and component manufacturers, system integrators, and product manufacturers to provide the manufacturing capabilities necessary to grow the sector in New York State and support global markets.
2. Establish robust New York markets for energy storage through appropriate technologies, policies and incentives. Continue New York's technology leadership and stimulate commercialization of

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<sup>1</sup> The Clean Air Interstate Rule (CAIR) is a federal emission trading program developed to reduce transportation related emissions of states located in the eastern United States. Details can be found on the New York State Department of Environmental Conservation website at <http://www.dec.ny.gov/chemical/37878.html>

<sup>2</sup> NY-BEST Program Theory and Logic Model Report, August 2014

advanced energy storage technologies through research and development, product development, commercialization partnerships, leveraging intellectual capital, and equipment and supplier relationships.

3. Create a self-sustaining consortium in NY-BEST.

### 1.3 Consortium Activities

As shown in the NY-BEST Program Theory and Logic Model Report, consortium activities are grouped into the following seven categories<sup>3</sup> and summarized below.

- Distribute information and build membership
- Host conferences and webinars
- Provide targeted introductions
- Provide business support
- Promote and distribute project funding opportunities
- Provide testing and prototyping capabilities
- Promote policies that support energy storage

It is important to note that activities in each category are not executed independently, but rather are coordinated efforts intended to complement one another. Each of these activities is described briefly below. For reference, a copy of the logic model is provided in Appendix C.

**Distribute information and build membership.** NY-BEST serves its members and recruits additional members by distributing relevant information and providing resources to existing members, and, to a limited extent, non-members. Specifically, NY-BEST distributes information by:

- Implementing a coordinated communication plan that includes a semi-monthly newsletter (including member spotlights), social media, news media, and funding opportunity notices
- Maintaining supply chain and resource databases on the NY-BEST website
- Helping to facilitate new partnerships between members such as product development, supplier, or research opportunities
- Serving as an information clearinghouse for members and policymakers on issues relevant to energy storage deployment
- Representing NY-BEST and New York's energy storage sector at national or international conferences
- Assessing member needs and opportunities through a member satisfaction survey

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<sup>3</sup> See the logic model found in the NY-BEST Program Theory and Logic Model Report, August 2014.

NY-BEST also aims to improve its website functionality and began keeping content regularly updated in 2014 and beyond. NY-BEST continually tracks its presence in the news and other media to understand trends and improve its communications.

**Host conferences and webinars.** NY-BEST educates members and encourages collaboration and partnerships through regular conferences and webinars. In 2013, NY-BEST organized five conferences and seven webinars. In March of 2014, NY-BEST organized a pre-conference educational seminar for the Capture the Energy Conference, and offered four regional and focused conferences between June and November 2014. Increasingly, NY-BEST has been partnering with other national organizations to expand the reach of their conferences.

**Provide targeted introductions.** NY-BEST staff regularly communicates with and introduces members who have the potential to form partnerships. This communication can be by phone or in person and results in meetings between members to discuss ways in which they may collaborate and partner. NY-BEST also facilitates communication between members and non-members.

**Promote and distribute project funding opportunities.** NY-BEST staff directs members to funding opportunities, including regional economic development councils, federal sources, and NYSERDA Program Opportunity Notices (PONs). As part of the \$25 million NYSERDA investment to seed NY-BEST, projects have been funded through NYSERDA and with input from the NY-BEST membership and board of directors through two separate NYSERDA PONs: (1) PON 1704 (March 2010) – 16 seed stage and development projects, and (2) PON 2458 (2012-2014) – Rounds 1 through 6 commercialization projects from lab to prototype.

**Provide testing and prototyping capabilities.** NY-BEST has collaborated with DNV-GL Energy Power Testing, Inspection, and Certification Group to provide a battery testing facility in Rochester, NY, known as the Battery and Energy Storage Technology (BEST) Test and Commercialization Center. This facility opened on April 30, 2014, and offers support for new technologies to be tested to industry standards. In addition, NY-BEST is working with the Rochester Institute of Technology to provide a battery prototyping facility. Both of these facilities are operated by third parties (not the NY-BEST operator directly) and provide services to NY-BEST members, and in the case of the BEST Test Center, revenue sharing will return back to NY-BEST beginning in the second year of operations. NY-BEST's role is to promote the facility to its members.

**Provide business support.** NY-BEST offers business and technical support to member companies, including assistance preparing for grant funding or investor presentations, as well as guidance for beginning or expanding businesses, particularly to improve understanding the electric regulatory structure in the State.

**Promote policies that support energy storage.** NY-BEST encourages policies and regulations that are amenable to the growth of the industry in the State. In particular, NY-BEST works with state and local officials involved in codes and standards development to encourage regulations that are favorable for

energy storage implementation. Any NY-BEST lobbying activities (i.e., attempts to influence decisions of government officials) are supported entirely with non-NYSERDA funding.

#### 1.4 Intended Consortium Outcomes

The activities described above are intended to accomplish the several short- and long-term outcomes found in the NY-BEST Program Theory and Logic Model Report. In the short-term, NY-BEST expects to find the following: the information it provides is valued and shared; productive collaborations and partnerships form as a result of facilitated introductions; members' business strategies and product pitches improve; and both members' and non-members' satisfaction with NY-BEST offerings increases. In the broader market, NY-BEST expects to support high-quality, targeted R&D that accelerates development of energy storage solutions, to see energy storage technologies proven in the State, and to make sure policy makers and the public support the energy storage industry.

In the mid-term, NY-BEST expects to evolve into a self-sustaining organization through membership dues, testing, grants and contracts, and fees for events. In the broader market, NY-BEST expects to connect outside investors to NY-BEST members to provide follow-on funding, help energy storage technologies reach commercialization in New York State, and reduce regulatory barriers to energy storage. In the long-term, NY-BEST's efforts to commercialize energy storage technologies are expected to help reduce fossil fuel emissions, contribute to developing a thriving cluster of energy storage researchers and companies in the State that provides jobs and economic benefits, and encourage others to view the State as a global leader in energy storage.

## 2 Evaluation Overview

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### 2.1 Purpose of the Study

This section of the report describes the purpose of the rapid-feedback process evaluation, the main research questions the study addressed, the data sources used to address the research questions, and the limitations of the research.

The overarching purpose of this rapid-feedback process evaluation is to provide feedback to support consortium program planning. The report and the logic model cover the NY-BEST consortium and its member services and not the overarching NYSERDA energy storage initiative. Specifically, the objectives of this evaluation include the following:

**Document the consortium program activity progress toward short- and mid-term outcomes.** EMI Consulting used the NY-BEST consortium program theory and logic model as the basis for the evaluation framework. Analysts gauged progress toward consortium goals in part by the extent to which NY-BEST is carrying out planned activities or better alternatives, and assessed how well those activities led to the desired short-, mid-, and long-term outcomes. In particular, they evaluated how well the consortium meets the needs of those in the energy storage sector – including technology developers, systems integrators, and end users – to identify how the consortium is overcoming concept-to-commercialization barriers for members. They summarized feedback from member survey responses and peer and expert interviews. This feedback may aid NYSERDA and NY-BEST staff decisions regarding future program implementation.

**Benchmark NY-BEST in comparison to peer organizations.** To understand how NY-BEST fits in the broader landscape of energy storage and how it operates as a consortium, analysts reviewed NY-BEST's goals, activities, and organizational structure in relation to its peers. To select appropriate peers, they requested program staff's advice on relevant peer organizations and searched independently for appropriate peer organizations. The evaluators provided feedback on NY-BEST's role in the energy storage industry from peer and expert interviews to aid NYSERDA's and NY-BEST's strategic planning and partnership efforts.

**Identify lessons about the consortium model.** The evaluators reviewed the evaluation findings for lessons that may apply more broadly at the consortium level. As NYSERDA adjusts its approach under the Clean Energy Fund, NYSERDA may be able to make use of lessons learned with NY-BEST where a consortium model could effectively address other market transformation issues.

### 2.2 Research Questions

The Logic Model Report describes how the NY-BEST consortium expects to drive market transformation in the energy storage field through the activities it conducts, and the objective of the rapid-feedback process evaluation is to provide feedback about that model. The research questions seek to assess the effectiveness

of consortium activities to drive toward the desired outcomes and goals. The research questions were derived<sup>4</sup> from those that were defined in the Comprehensive Evaluation Plan (CEP)<sup>5</sup> for the NY-BEST process evaluation and are as follows:

1. How does the consortium work as a method of driving change?
2. Is the NY-BEST consortium meeting the needs of members in the energy storage space?
  - a. What value do members derive from the consortium?
  - b. What do members think are the critical barriers on the path to commercialization of their technology(ies)?
  - c. What services or factors are important to new energy storage technologies to overcome these barriers?
  - d. To what extent are these barriers being addressed by NY-BEST?
3. How well is NY-BEST operating?
  - a. How does NY-BEST deliver the services identified in the logic model?
  - b. Are there challenges with consortium program delivery?
  - c. How does NY-BEST compare to similar organizations (benchmark)?
  - d. What lessons can other NYSERDA programs, particularly those with a similar consortium element, learn from NY-BEST efforts?

The evaluation team organized the report by key findings that address the research questions above, noting findings that address specific aspects of the logic model as appropriate.

## 2.3 Data Sources and Methods

There were four distinct data collection activities employed for this evaluation. The first activity was a secondary data review of program data, such as data on energy storage technologies, policies and consortium operations, which were also used to produce the NY-BEST Program Theory and Logic Model Report. The remaining three activities used to inform this study involved primary data collection and included the member survey, expert interviews, and peer organization interviews. Table 1 describes which data sources were used to address which research questions.

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<sup>4</sup> These questions have been slightly revised from the 2014 Work Plan for Process Evaluation of the NY-BEST Consortium.

<sup>5</sup> Comprehensive Evaluation Plan: Technology and Market Development Portfolio, April 2, 2014

**Table 1. Data sources that address research questions**

Research Question	Secondary Data/Logic Model	Member Survey	Expert Interview	Peer Review Interview
	September – December 2014	November 4- December 8 2014	October 16 – October 29 2014	October 17- November 25 2014
How does the consortium work as a method of driving change?		X	X	X
Is the NY-BEST consortium meeting the needs of members in the energy storage space? What value do members derive from the consortium?	X	X	X	
How well is the consortium operating?	X	X	X	X

The number and types of respondents to the various data collection activities are shown in Table 2, with more detailed profiles from the peer organization interviews found in Appendix A. The survey instruments, including details about survey administration, can be found in Appendix B. The evaluators analyzed the interview and survey data using a combination of qualitative and quantitative analysis methods (see Appendix B.4 for description).

**Table 2. Primary data collection summary**

Data Collection Activity	Respondents	Number of Respondents	Target
Member Survey	Members	47 <sup>1</sup>	137
Expert Interviews	Academic Experts	5	16
	Industry Experts	6	
	Policy Experts	2	
	R&D Experts	3	
Peer Organization Interviews	Peers in Energy Storage	4	6-8
	Peers in Other Industry	4	

<sup>1</sup> Response rate was 34%, 47 out of 13 total members.



## 2.4 Limitations of Research and Key Considerations

Analytical challenges and limitations associated with the evaluation approach are described below for the member survey, secondary data review, and interviews, respectively.

**Member Survey.** Members are surveyed every spring by NY-BEST (see “2014 NY-BEST Member Survey”). To reduce redundancy, the evaluators strived to keep the evaluation survey distinct from the internal survey while still collecting key data for the evaluation. Specifically, the evaluation survey did not include some questions about member demographics and consortium satisfaction that are already included in the NY-BEST survey. In addition, only 34% of members responded to the evaluation survey, despite four rounds of email reminders having been sent to members. The response rate to this survey was similar to that of the 2014 NY-BEST Member Survey (n=36). Considering time and budget constraints, the evaluation team chose not to send paper letters inviting participation or conduct follow-up phone calls. In future research, it may be worth sending advance letters and conducting follow-up phone calls to boost the response rate. Due to such a low response rate, it is not feasible to fully assess the representativeness of the sample, nor assume that the responses fully represent the opinions and experiences of NY-BEST members. The evaluators interpreted the findings within the confines of this limitation and encourage readers to keep this in mind while reviewing survey findings.

**Peer and Expert Interviews.** Peers and experts were generally willing to talk with the evaluators. However, the evaluators did not ask all questions of all interviewees. The interviewer decided which questions were most important to discuss with each interviewee based on the person’s expertise and time available to participate in the interview. Where response rates are reported, they are expressed in relation to the total responses to provide adequate context.

**Confidentiality and Data Protection.** Ideally, each member’s specific technology and its development would be traced to compare how the technologies evolved and identify the extent to which NY-BEST influenced that progress. However, many of the members’ energy storage technologies are at critical stages of development and relaying details about their technologies could be harmful to member organizations. EMI Consulting aggregated information shared about technology development to protect the confidentiality and business concerns of the firms developing the technologies. Thus, the developmental trajectory of individual members’ technologies will not be shared at this point. For a future impact evaluation, it may be feasible to review the role NYSERDA funding and the NY-BEST Consortium played in the development of individual members’ energy storage technologies once those technologies are further along in their development.

**Organizational Change.** Organizations such as NY-BEST evolve over time to meet the needs of their members and respond to policy changes. The evaluation only studies the organization for a short time and makes inferences based on observations during that time period. As such, findings and recommendations

from this study may be similarly time-bound and should be read with the understanding that the consortium may have changed since this report was published. This limitation is not at all unique to the NY-BEST evaluation and is present in nearly all studies of this type. In fact, the “rapid feedback” nature and timing of the NY-BEST evaluation may help ameliorate the issue to some extent.

### 3 Study Findings, Conclusions, and Recommendations

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This section presents key findings, conclusions, and recommendations of the evaluation. These findings span the member surveys, expert interviews, and peer organization interviews, and include the survey and interviewee respondents' recommendations for improving NY-BEST operations and/or delivery of services. The subsections map directly to the research questions and follow this order:

- 3.1. How does the consortium work as a method of driving change?
- 3.2. Is NY-BEST meeting the needs of members in the energy storage space?
- 3.3. What value do members derive from the consortium?
- 3.4. How does NY-BEST compare to similar programs?

On the whole, NY-BEST is beginning to achieve many of the intended short-term outcomes identified in the logic model: 1) members have been satisfied with NY-BEST offerings, 2) valuable information has been shared and put to use, 3) proactive collaborations and partnerships have formed, 4) research and development money has been awarded to projects that seek to accelerate development, and 5) energy storage technologies are being tested in New York. This evaluation revealed that NY-BEST activities summarized in Section 2 are leading to these outcomes.<sup>6</sup>

#### 3.1 How does the consortium work as a method of driving change?

Through the surveys and in-depth interviews, evaluators sought to determine the extent that NY-BEST facilitates change in their member organizations and in the market. As explained below, the consortium is influencing positive outcomes through its activities and is supporting market development by facilitating connections among its members and the industry in general.

##### Key Finding 1: Developers view NY-BEST's core services as impactful

Developers reported that many of NY-BEST's core offerings are proving helpful to their organizations, as shown in Table 3. In particular, members most often indicated receiving services that assist with facilitating connections (66% of respondents), gathering information (59%), securing funding (50%), and understanding and influencing policy (48%). One supporter of energy storage technologies noted that NY-BEST "made important introductions [and] kept us informed on all developments including competition and [the] market." Members that received help with securing funding emphasized two of NY-BEST's activities that are important in the funding process; five members mentioned NY-BEST's support with specific proposals and four members mentioned NY-BEST's help in networking with partners. Another

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<sup>6</sup> The evaluation did not gather sufficient data to verify whether progress was made on the following outcomes listed in the logic model: 1) "members improve strategies; successfully pitch ideas," and 2) "policy makers and public favor energy storage industry" (p. 6-1 to 6-2 of the NY-BEST Program Theory and Logic Model Report).

member that did not find NY-BEST’s support helpful mentioned that increased networking support would be helpful in the funding process. Developers would like NY-BEST’s assistance with securing buyers (43% of respondents), investors (34%), and sellers (21%), and with improving their business strategy and performance (32%). Members who desired assistance securing investors mentioned networking through emails, forums, and conferences as helpful support activities.

These results indicate that the consortium is seeing positive outcomes from many of its core information-sharing and networking activities, and that there is an opportunity to further support NY-BEST members by providing business services and facilitating additional networking opportunities.

**Table 3. Use and helpfulness of NY-BEST services among surveyed developers**

Services	Received, Helpful	Received, Not Helpful	Not received, would like NY-BEST help	Not applicable
Facilitate connections (n=29)	66%	3%	14%	17%
Gather information (n=29)	59%	3%	10%	28%
Secure funding (n=30)	50%	10%	17%	23%
Understand and influence policy (n=29)	48%	7%	17%	28%
Improve technical performance (n=29)	34%	3%	10%	52%
Improve strategic direction/business performance (n=28)	21%	4%	32%	43%
Secure demand (buyers) (n=30)	10%	7%	43%	40%
Secure supply (sellers) (n=29)	10%	3%	21%	66%
Secure investors (n=29)	3%	10%	34%	52%

**Key Finding 2: NY-BEST’s networking services are working to connect industry members**

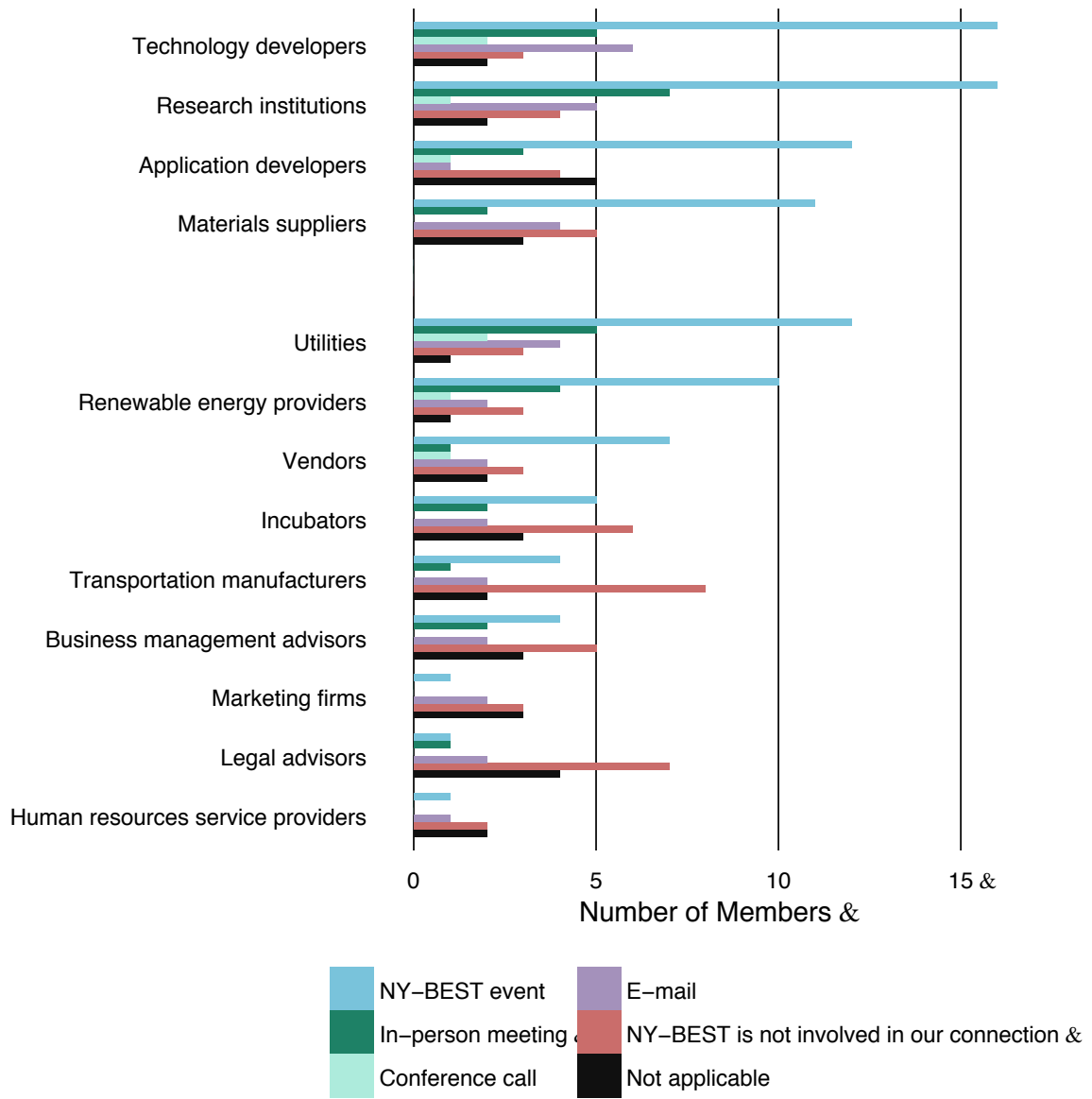
When asked how valuable various NY-BEST activities were for their group, survey respondents most often indicated that they received helpful assistance from NY-BEST in making connections with energy storage industry players (80% of 24 respondents who answered the question). Few mentioned making connections to technology developers, research institutions, utilities, application developers, renewable energy providers, or vendors without NY-BEST’s help, as shown in Figure 1. One developer noted that working with NY-BEST affected the direction the company took within the State because it “led to new clients,” while a supporter of energy storage explained that NY-BEST “provided opportunities to interact with other stakeholders, resulting in fine tuning of [their] business strategy.” The data indicate that the consortium is mostly connecting members with developers, research institutions, and utilities, and least with incubators, transportation manufacturers, business management professionals, and business advisors. In addition, many

members connected with transportation manufacturers and legal advisors without NY-BEST's help, which may indicate that these types of companies are outside of NY-BEST's network. These findings imply that NY-BEST is currently serving a critical role in helping its members network and collaborate with others involved with technology development and less so with those providing supporting services. As noted in Table 3, members would like NY-BEST's continued support in improving strategic direction and business performance. Helping facilitate more connections with supporting services may fill this need.

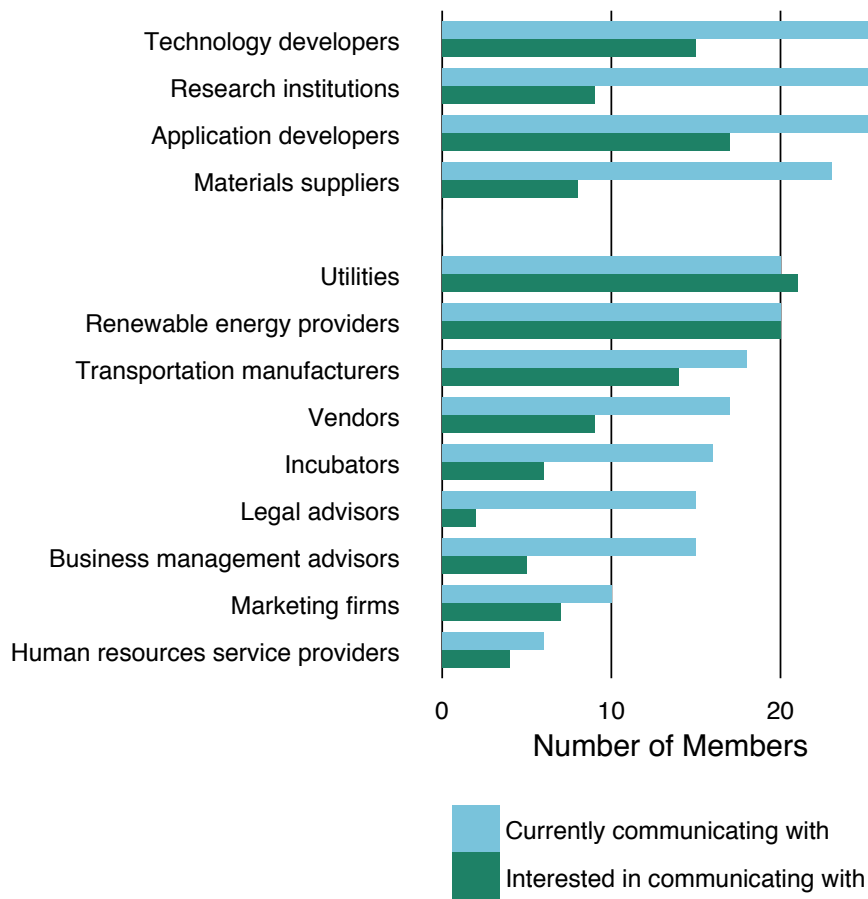
Most members surveyed mentioned connections made through NY-BEST events compared to other means. Experts interviewed agreed that NY-BEST conferences and events are good places to connect with others in the industry. Events provide a place for members to connect on their own and for NY-BEST staff to make strategic introductions. Five experts mentioned that someone from their company had attended or was planning to attend a NY-BEST event, and two specifically mentioned meeting valuable business partners at NY-BEST events. It is important to note that when analysts grouped together the in-person meetings, conference calls, and emails as targeted introductions (shown in columns three through five in Figure 1), almost as many respondents received assistance connecting through targeted introductions as through NY-BEST events. Overall, these data show that activities mapped in the logic model are indeed taking place and are working to make connections in the industry.

Many members made comments indicating they were interested in further connections with utilities, renewable energy providers, application developers, technology developers, and transportation manufacturers, as shown in Figure 2, all of which NY-BEST appears to be excelling in (as shown in Figure 1). This indicates NY-BEST is connecting the right types of organizations, but should increase these efforts to meet member demands. For example, one member suggested a way to improve connections at events would be to create an online "request to connect" process and create a "teaming interface" around specific opportunities or discussions. An expert (who was also a member) suggested creating an event directed toward connecting developers with "fully developed systems" to end users like utilities.

**Figure 1. Members connect with industry via NY-BEST channels**



**Figure 2. Communication with industry members by type**



### Key Finding 3: Change is driven by other outside factors

One aspect of the expert interviews focused on trends in the energy storage industry and what experts expected to happen to the industry in the future. Nearly all of the experts' predictions were positive, citing cost reduction of systems and an increased willingness to purchase systems due to policies, demonstrated success, and increased understanding of the technology by end users.

The most widely discussed trend was the growth of renewables, such as solar and wind energy. Experts agreed that these technologies would continue growing, and 11 out of 16 experts mentioned that incorporating energy storage into these systems would be a source of growth in the future. Other important trends discussed by multiple experts included:

- Grid resilience: An increased need for grid stabilization that will generate growth for energy storage systems
- Distributed grid: Storage is a valuable component for grids in which distributed energy resources like distributed generation or management systems are being considered
- Globalism: An increase in industry players from other countries, including researchers, manufacturers, and end users

## Conclusions

At a high level, experts and peer organizations recognize NY-BEST as a leader in energy storage that is able to drive change. The secondary data review and member survey findings indicate that NY-BEST is implementing the activities related to connecting members with industry, and that members value the assistance NY-BEST is providing. NY-BEST activities provided valuable information and made helpful industry connections for roughly 80% of members surveyed. NY-BEST was also successful in helping 67% of members surveyed understand and influence policy. Members indicated that the connections made with each other are helpful and they want to connect to more companies, particularly buyers, investors, renewable providers, application developers, and transportation developers, and are less interested in business support partners. If the 47 members who responded to the survey are not representative of the broader population of 137 members, NY-BEST may still be able to apply best practices learned from working with the success stories to strengthen their impact with other members.

## Recommendation

**Expand the pool of members and partners to include more developers and buyers, including those beyond NY State.** Experts interviewed for this study recommended that NY-BEST expand into different end uses (e.g., renewables) and a wider geographic area. This aligns with the direction of several peer organizations that are beginning to broaden their membership to developers and buyers from other states and countries, and also other complimentary industries like renewables. NY-BEST could work toward its long-term goal of becoming a global leader and further leverage its funding by helping members expand potential business and technology partnerships beyond New York State and the energy storage industry, while staying rooted in New York.

For example, NY-BEST may have an opportunity to leverage NYSERDA's PV market actor network to facilitate conversation around renewable energy needs for storage and to identify business opportunities for energy storage developers. In addition to facilitating personal connections or identify funding for demonstrations, NY-BEST might be in a position to provide a forum for a renewable energy storage needs assessment and industry standards work groups.

### 3.2 Is NY-BEST meeting the needs of members in the energy storage space?

The evaluators asked members and experts about their needs and perceived barriers in the energy storage industry, as well as how NY-BEST is helping to overcome these challenges. The following are key findings taken from the results of the member survey and expert interviews.



**Key Finding 4: NY-BEST is helping members overcome the most important barriers, though additional support may be needed**

There were many barriers mentioned by members and experts. As shown in Table 4, many of those barriers align with the NY-BEST logic model activities that address members’ needs.

**Table 4. Perceived barriers mapped to NY-BEST activities**

Logic Model Barriers	Barriers <sup>1</sup>	NY-BEST Logic Model Activity	Barrier Ranking (n) <sup>2,3</sup>
Economic	Lack of Company capital	Supporting access to funding	1 (47%)
	Access to markets	Supporting access to funding/Introductions/Events	2 (45%)
	Cash flows	Supporting access to funding	4 (43%)
	Scaling up production	Supporting access to funding/Business Support	6 (30%)
	Commercialization Funding	Supporting access to funding	N/A
Informational	Market demand information	Distributing information	3 (45%)
	Lack of competitors information	Distributing information	7 (30%)
	Lack of Understanding and Comfort with Energy Storage	Promoting policies / Distributing information	N/A
	Valuing the Monetization of Grid Storage	Promoting policies	N/A
Institutional	Interconnection requirements <sup>4</sup>	Promoting policies	5 (34%)
	Electric grid policy	Promoting policies	8 (30%)
	Codes and Standards	Promoting policies	N/A

<sup>1</sup> Technical barriers are not listed because members did not mention them. Experts indicated there were no industry-wide technical barriers.

<sup>2</sup> Rankings are based on the number of member survey responses where the significance rating of the barrier was 8 or higher on a 10-point scale.

<sup>3</sup> Non-ranked barriers are those from expert interviews. Rankings are only provided for member survey responses.

<sup>4</sup> Interconnection requirements refer to the policy and implementation barriers with connecting energy storage systems to the grid.

The following is a discussion of each of the barriers segmented into the logic model barrier segments: economic, informational, institutional, and technology barriers. Included are respondents’ opinions on how NY-BEST has helped the industry in overcoming these barriers and where NY-BEST could focus its efforts to continue industry improvement.

**Economic Barriers.** Lack of company capital was the most highly mentioned barrier cited by members, with almost half (47%) of the respondents considering it to be very important. Lack of access to markets (45%) and company cash flows (43%) were also important barriers for members. Ten experts, including all three technology developers, mentioned that developers are not finding reliable sources of capital and want to connect with more end users to secure sales and revenue. These experts explained that due to sporadic funding and competitive application processes government sources were not reliable. They also indicated that investment sources were unreliable due to a lack of industry understanding and an expectation of faster returns on investment. According to experts, the root of these barriers is likely due to high capital costs for production, lack of reliable revenue streams, and other non-economic barriers, such as value monetization and a lack of understanding from buyers.

Members reported that many NY-BEST activities are improving these issues. Many of the helpful NY-BEST resources and activities shown in Table 4 in the previous section align with these barriers. For example, conferences and industry connections allow members to gain better access to markets, and ongoing assistance with access to funding provides an opportunity to increase company capital.

Experts agreed that economic barriers were some of the most significant barriers to the energy storage industry. Most experts in academia and research mentioned that access to funding was a critical barrier that NY-BEST was addressing very well. Many experts mentioned applying for NYSERDA funding and felt that the process was more fair and better managed than most other funding processes at the state or national level. Specifically comparing NYSERDA to federal institutions, three experts felt that NYSERDA had a better grasp on finding realistic and promising energy storage projects and awarded funds to these projects more often.

**Informational Barriers.** The most important informational barrier mentioned by members was the need for market demand information (45%). Given that most of the survey respondents were technology developers, this likely means that developers are not aware of the needs of energy storage system buyers like utilities, auto manufacturers, and other end users. Experts on all sides of the industry agree that this is a significant barrier, especially in the grid storage industry. Five experts also mentioned that some stakeholders, primarily end users and policy makers, do not understand the purpose or value of energy storage. Members and experts reported that NY-BEST is addressing this barrier by encouraging stakeholders to meet and collaborate, and that these networking activities are very helpful (as shown in Table 3).

Expert interview respondents agreed that monetizing the value of energy storage is the most significant economic and informational barrier for the industry. Twelve experts mentioned this barrier, including all experts involved in development, industry, and policy. Five experts said there is too much focus on reducing the cost of storage systems and that these efforts are not as effective as focusing on its benefits. One expert summed this up with: “Waiting for costs to come down will take too long. The value is already far above the costs, but people just don’t realize it yet!”

Monetizing the benefits of storage (particularly in grid applications) would greatly increase the perceived overall value of energy storage systems. Multiple experts discussed the need for further support to address this barrier in terms of policymaking, research funding, and education. In addition, members mentioned the need for electric grid policy to help develop clearly defined markets or incentives to increase the value of storage and spur demand. This barrier presents the double challenge of developing a way to accurately monetize the benefits while also raising industry awareness and acceptance of those values. Two experts suggested that NY-BEST should focus their policy efforts in this area; other experts mentioned its importance in the industry but did not discuss NY-BEST's role.

**Institutional Barriers.** There were two related policy barriers that members reported as very significant: interconnection requirements and electric grid policy. This means either that members are concerned with policies that hinder the adoption of energy storage systems to the grid, or that there is a need for new policies to improve the adoption of energy storage in the grid. Experts agree that there are policy issues around the country that are slowing the adoption of energy storage in the grid. Eight experts mentioned a need for policies to establish markets or set standards to monetize the value of grid storage. Other experts focused on allowing storage to be used as grid assets, defining interconnection requirements, and setting up storage mandates or incentives. Most of the experts' comments were directed toward the entire storage community. The evaluation team suggests that NY-BEST should focus its policy efforts in these areas as well.

Codes and standards refer to a wide variety of standardization processes in the energy storage industry. Experts mentioned a need to standardize the process of selling, installing, and managing an energy storage system. Three experts thought this standardization process could start with certification and system testing at the BEST Testing and Commercialization Center. Two experts mentioned that a standardized contract agreement would simplify the selling process for developers and improve understanding of the systems' specifications and requirements. Two others mentioned that the installation and site development processes are very slow and costly, and standardized products or packages would improve the process. Another expert mentioned standardized software for interconnection. Other standards activities mentioned by members were to develop standards and approval for fire and building codes and emission regulations for the transportation industry. Most of the experts' comments were directed toward the entire storage community; the evaluators suggest that NY-BEST should focus on these standardization efforts as well.

**Technology.** Both members and experts reported few significant technological barriers. Experts noted that there are some technological barriers in the research stage, which include optimizing system performance, finding next-generation materials, and increasing system reliability, lifetime, and safety. These barriers primarily affect researchers and companies in early stages of development. They are specific to different technologies, and there are few technological barriers that span across a large portion of the industry. Experts also mentioned that most developers are beyond the research stage and are more focused on commercialization and ways of entering the market. The lack of technology barriers may be due to NY-

BEST's focus in this area. There is a large focus on research and development funding, and many experts and members are pleased with the funding process and the services received, as mentioned above.

### Conclusions

Overall, NY-BEST is addressing key market barriers and providing members with valuable assistance, indicating that members are satisfied with the activities and services NY-BEST provides. NY-BEST shared market intelligence and funding opportunity notices, and made connections through personal introductions and conferences that helped break down top barriers identified by members, such as a lack of company capital, access to markets, and market demand information. The barriers members identified reflect that most respondents were beyond the stage of producing an initial prototype and were at the stage of developing a commercial prototype, commercial production and first sales, or establishing a sales pipeline. Taking a longer-range view, experts suggested that NY-BEST continue to address industry-wide and policy-level barriers identified by experts, including the need for value monetization and industry standards that will simplify and speed up the sales, installation, and maintenance processes.

### Recommendation

**Create a “commercialization conference” devoted to connecting developers with buyers.** A conference specific to commercialization will help NY-BEST serve the unique needs of start-ups and mid-tier companies with the market sale needs of more mature developers. The event could target developers above a certain commercialization readiness level (and their supporters) and buyers interested in purchasing market ready systems. Members seem to make the most connections at events, thus this leverages a connection method that NY-BEST already performs well. Focusing on a commercialization conference may be useful for a few years until members' technologies move into other stages of development or market penetration.

## 3.3 What value do members derive from the consortium?

EMI Consulting asked both members and experts to provide general perceptions of the organization and input on the value members derive from NY-BEST. This section includes key findings drawn from the member survey and expert interview results.

### Key Finding 5: NY-BEST is seen as a leader and has a positive view from experts

Experts appear to be well aware of NY-BEST, with 13 out of 16 respondents reporting having heard of the organization; the three that had not heard of it were in academia and are not industry focused. As shown in Table 5, members primarily heard about NY-BEST through a colleague or business partner, or at an industry event or NY-BEST presentation. This implies that NY-BEST is successfully utilizing multiple marketing channels to raise industry awareness about the organization.

Discussions with experts also revealed an overall positive opinion of NY-BEST across the industry. Of the 16 experts interviewed, seven directly described NY-BEST as a leader and ten had a positive view of the

organization. These ten experts also discussed specific areas where NY-BEST is excelling, including at the level of State policy, access to research funding, testing center and prototyping help, conferences/webinars, and industry collaboration. One expert said, “In fact, because they’re so good, I feel like I don’t need to do much work in New York. I make sure that I’m aligned with what they are doing... They are a trusted resource and we look to them for leadership in New York.” This type of feedback demonstrates progress towards the long-term outcome of NY-BEST as a global leader in energy storage.

**Table 5. How member survey respondents heard about NY-BEST**

How did you hear about NY-BEST?	Count (n=61) <sup>1</sup>
Colleague or business partner	29
Industry event/NY-BEST presentation	14
Call or email from NY-BEST member	4
Internet search	4
NYSERDA/Project Manager	4
Colleague at another conference (ARPA-E, FLREDC)	2
Mailed material sent from NY-BEST	2
At beginning of NY-BEST	1
NYSERDA Contractor	1

<sup>1</sup>Respondents were allowed to choose more than one response.

**Key Finding 6: NY-BEST members value the resources that NY-BEST provides and use them often**

Respondents to the member survey were pleased with many of NY-BEST’s resources, events, and activities. Of the many highly valued activities, members are interested in learning more about research, funding, and market-related events in the industry. While the survey did not specifically poll for member satisfaction with the consortium or its activities, it did ask respondents to rate the value of certain activities and resources on a scale from one to 10, where one is not at all valuable and 10 is extremely valuable. Members found conferences, making industry connections, receiving funding notifications, receiving links to studies, and receiving the newsletter to be most valuable. Table 6 shows the number of respondents who felt the activity or resource was valuable and lists the average rating across all respondents. Although not directly comparable, 2014 NY-BEST Member Survey respondents rated the value of similar services in the top four: newsletter, technology updates, connections to other companies, and information on funding. Please note that some of the activities in Table 6 are related to the services listed in Table 3, but Table 6 polls from all members instead of just developers.

**Table 6. Activities most valued by members**

Activity or Resource (n)	Responses <sup>1</sup>	Average Rating (out of 10)
Conferences (n=38)	30	8.5
Facilitating connections with energy storage industry (n=38)	27	8.5
Notification of funding opportunities (n=40)	26	8.0
Links to research or market studies on website (n=39)	24	7.2
Newsletter (n=39)	22	7.3
Policy Updates (n=39)	20	7.1
Energy Storage Roadmap and Economic Impact Study (n=38)	19	7.0
Funding and grant application assistance (n=37)	17	6.5
Webinars (n=37)	16	6.8
Access to the Testing and Commercialization Center (n=38)	15	5.7
Annual Report (n=38)	13	5.9
Business support – Guidance and information (n=37)	11	6.0
Member profiles and spotlight articles (n=39)	11	5.9
Social media, blog, Twitter (n=34)	3	3.9

<sup>1</sup>Number of respondents that assigned a value rating of 8 or higher on a 10-point scale.

Figure 3 highlights how often members use various NY-BEST resources. These findings provide evidence that NY-BEST is achieving its short-term outcome, “valuable information is shared and put to use.” Members use many NY-BEST resources on a weekly, monthly, and quarterly basis. Of member respondents, 30% use the newsletter on a weekly basis, and many more use it monthly. Other often-used resources include the notification of funding opportunities, policy updates, member profiles, and spotlight articles. Less-used resources include social media and the supply chain search function. Social media is best used for time-bound information sharing and making calls to action. Members did not comment as to why they did not follow NY-BEST on social media or use the supply chain search function. However, NY-BEST program communications staff explained that the lower use of social media may be a result of two factors. First, many members are small organizations that may not engage with social media due to having a limited web presence and/or limited time to maintain a social media presence. Second, large member organizations likely have communications teams that track social media; the individuals responding to the survey would not likely be the people tracking social media for their organization. NY-BEST tweeted almost daily in January 2015. On LinkedIn NY-BEST shows 13 posts between January 2014 and January 2015. In future research it will be important to determine whether the lack of use is simply due to members not being aware of the resources, or if different information should be shared or shared more frequently.

## Insight

**NY-BEST should consider investigating ways to better leverage social media and the supply chain search function on the website.** Social media is best used for informing members of time-bound events and actions, such as upcoming funding application deadlines, lobbying events, and breaking news. Social media is also helpful for networking and group problem-solving. The following steps could be used to help assess whether and how to make changes to the use of social media and boost awareness of the supply chain search function on the website:

1. Look back over the past year to evaluate how social media has been used – and not used – by NY-BEST and its members. Determine if the frequency and type of content was best suited for social media, and how many and which members were signed up to follow NY-BEST.
2. At the annual conference, conduct a quick poll during a plenary or large-group session to ask members about how they use social media and what they would like NY-BEST to post and/or tweet about, and what information they prefer to receive from other channels.
3. Use results from the poll to create a social media plan for 2015 and assess members' responses each quarter.
4. To boost awareness and use of the supply chain search function, consider actively advertising it at the annual conference. Also consider hosting a live demonstration of the tool at the annual conference to raise awareness and gather feedback on how useful members perceive it to be.

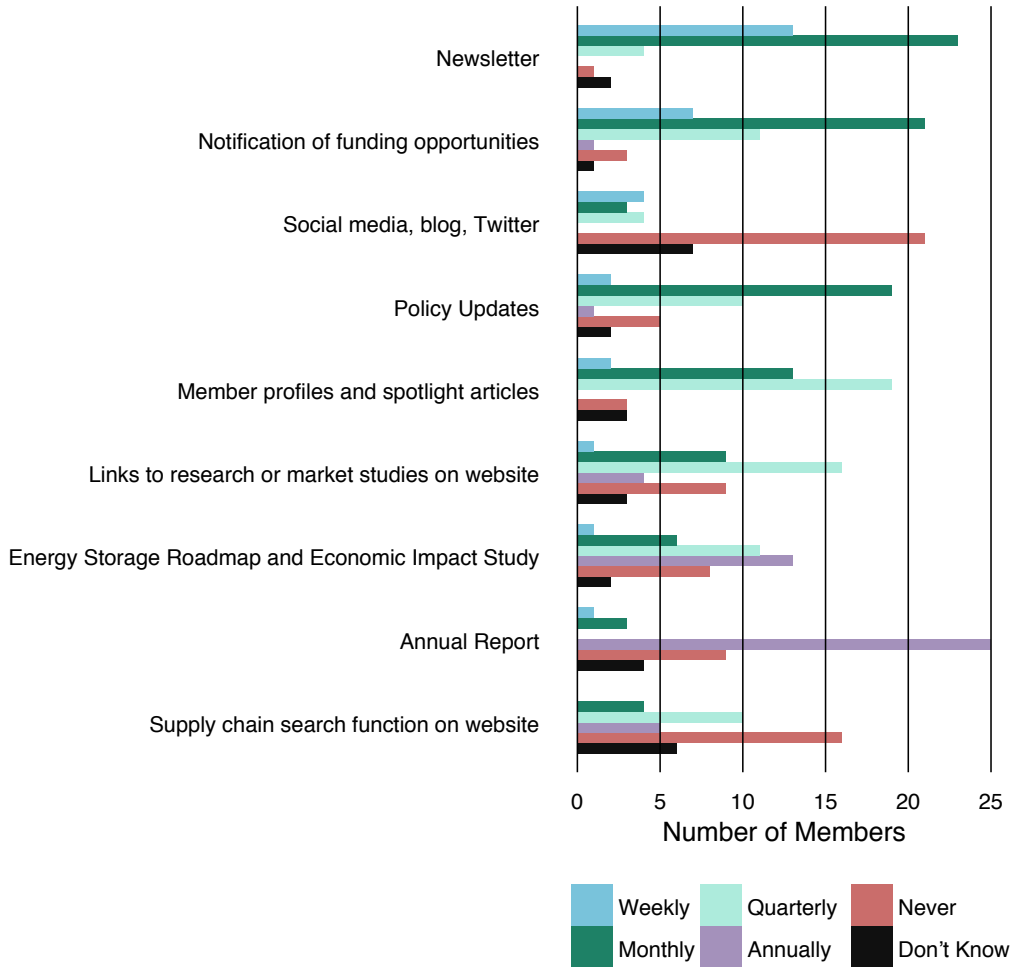
## Conclusions

Industry experts view NY-BEST as a leader in New York and also more broadly. As such, it will be important for NY-BEST to partner or align policies with other energy storage groups outside of the State to have a more global reach. NY-BEST members value and regularly use the vast majority of its services, relying most on newsletters and updates to stay abreast of industry news and funding opportunities on a monthly or quarterly basis. Although members do not currently use social media, it could be valuable for marketing and outreach. Likewise, members do not use the supply chain search function as much as other resources, yet it aligns with members' needs to network, especially with developers and end users.

## Recommendations

**Develop national and international plans to stay informed about, and potentially align with, national and international energy storage policy trends.** The plan would outline ways to share information with members about technical and political trends that may affect product development, help members identify additional funding sources, and identify national and international markets for members' products. The plan would also describe how other energy storage resources and groups could be leveraged to supplement what NY-BEST tracks.

**Figure 3. Frequency of use of NY-BEST activity or resource**



### 3.4 How does NY-BEST compare to similar programs?

EMI Consulting interviewed eight peer organizations that were found to be similar to NY-BEST based on eight organizational characteristics (see Appendix A for details on the peer selection process and peer organization profiles). Peer organizations were asked to provide information about the structure and practices of their organizations and to share successful strategies that might be helpful to NY-BEST. The following are key findings taken from the peer organization interview results.

#### Key Finding 7 – Peer data indicates the consortium model is effective for particular market conditions

Through discussions with peer organizations, the evaluation team was able to identify common market characteristics and barriers where a consortium model may be a good fit. This information may be helpful to NYSERDA when considering applying a consortium model to other program areas and markets in the future.



Many of NYSERDA's current commercialization efforts are organized around awarding funding to individual developers, creating workforce development and training resources, and offering marketing and outreach support. The consortium model, however, as applied by NY-BEST and the other peer organizations, focuses on building networks, connecting supply chains, and bringing natural competitors together to collaboratively address common challenges and barriers. Both the consortium and funding models are structured to address the following common commercialization barriers: 1) the technology is unproven and relatively unknown to the market, 2) high up-front costs are preventing the scaling necessary to reach sufficient levels of cost effectiveness, and 3) resources are needed to gain operational and business management efficiencies. However, the consortium model provides further capabilities that should be considered for markets where the following additional conditions are present: 1) there are common policy, standards development, and technology barriers that competitors are willing to work together to address, 2) supply chain actors are not adequately networked, and do not understand each other's needs, and 3) there is a sufficient level of base activity where interventions can establish a working industry cluster.

It should also be noted that some peers are operating consortiums in markets that are relatively mature, but are still finding the approach effective for opening markets as new and unproven technologies continue to be developed. One of these peers mentioned that the sustained value of the consortium model comes from the ability to bring competitors together to share resources and collaborate on developing key intellectual property and common R&D infrastructure needed to advance industry roadmap goals. These peers said they believed the consortium model helps competitors work toward positioning the collective good for international competitiveness. Also these peers said that the networking aspect of the consortium model continues to provide value in mature markets because new technologies still require connecting members to new supply chain actors, buyers, and other developers.

#### Key Finding 8 – NY-BEST's goals show breadth and align with peer organizations

NY-BEST's goals overlap and align well with goals mentioned by peer organizations. A challenge when making this comparison was that most peers are either focused on R&D/technology development or on public policy and advocacy. Only two out of eight peers offer the breadth of NY-BEST in its attention to both, as shown in Table 7. However, when compared across all organizations, most goals mentioned by peers were similar to NY-BEST's goals (note that the two organizations that cover both policy and technology are considered technology peers in this table for simplicity). The data show that although there is a lot of overlap, NY-BEST's focus seems more extensive compared to the peer organizations.

**Table 7. Peer organization goals compared to NY-BEST**

Goals	NY-BEST	Policy peers (out of 3)	Technology peers (out of 5)
Connecting industry members	Yes	3	5
Collaboration across competitors	Yes	3	5
Connections with suppliers	Yes	3	5
Bringing together major manufacturers	Yes	3	5
Accelerate development and deployment of technology	Yes		5
Gain access to new technologies and resources	Yes		4
Evaluate performance of policy	Yes		3
Commercialization partnerships leveraging intellectual and other capital	Yes		3
Building common infrastructure and intellectual property through competitor commitments	No		2
Business development	Yes		1
Creating a leading regional cluster	Yes		1
Creating markets that are fair	Yes	2	
Seen as the voice of the industry	Yes	2	

One goal that is unique to peer organizations is the goal of “creating common consortium level infrastructure and intellectual property through competitor commitments.” This was mentioned by two peers and is slightly different from NY-BEST’s goals. Where NY-BEST sets out to broker partnerships and build intellectual and other capital between partnered groups, these peers are pulling together large commitments from key industry members to help build common product development infrastructure and intellectual property as a consortium asset for common use by their members. One of these peers even defined a consortium by its focus on pulling together large monetary, intellectual, human, and infrastructural resources from competing developers to help build consortium level infrastructure. They stated, “...a consortium will bring in government funding, and industry members will bring in 70-90% of the funding... where members are providing 5, 10, 20 million dollars in membership fees and pull these resources to build common infrastructure... In a true consortium, the companies provide resources where intellectual property and standards are established.” NY-BEST may not need to take such an approach if testing facilities continue to be developed and are funded through outside grants and sources of state based funding. However, this could be something to consider for the future as an independent and self-sustaining method for building new infrastructure and value. This approach also provides the added value of fostering

strong commitments from key industry members to the organization given their large investments to the organization.

**Key Finding 9 – Most of NY-BEST’s activities align with those of peer organizations, while some activities differentiate NY-BEST from peers**

The most common activities mentioned by peer organizations are aligned with those of NY-BEST, as shown in Table 8. This indicates that NY-BEST’s core offerings are in line with the most common practices of other consortia. These were mostly related to communication and education (e.g. webinars, hosting conferences, organic networking, newsletters, workshops), and developing industry road maps.

**Table 8. NY-BEST activities/services that other peers mentioned providing**

Activities	NY-BEST	Peers (n = 8)
Webinars	Yes	6
Hosting Conferences	Yes	5
Organic networking	Yes	3
Industry roadmaps	Yes	3
Newsletter	Yes	3
Workshops	Yes	3

However, NY-BEST also differentiates itself by offering unique services that other organizations are not providing, as shown in Table 9. These include strategic introductions of members, helping guide the awarding of funding, maintaining a supply chain database, and hosting a testing lab. One peer mentioned, “The testing facility is really valuable, which NY-BEST can do because of their unique structure.” In regards to funding, two peers mentioned that they do provide members funding alerts, but no others mentioned providing guidance on the awarding of funding like NY-BEST did. This shows that NY-BEST provides unique value and is using new approaches to move the market.

**Table 9. NY-BEST activities/services that few or no peers mentioned providing**

Activities	NY-BEST	Peers (n= 8)
Matching/Introductions	Yes	0
Guidance on funding allocations	Yes	2
Supply chain resource database	Yes	0
Testing facility	Yes	0
Economic Development for State	Yes	0

Peers also mentioned engaging in activities that NY-BEST is not involved in, as shown in Table 10. These tended to be activities that were less commonly mentioned and do not appear to currently align with NY-BEST’s goals. These include workforce training, curriculum development, government contracts, master service agreements with labs and institutions, and sales training materials. Some activities that may be a good fit for NY-BEST at this time are member site visits/tours and publishing white papers which will help foster member networking and also address the informational barriers mentioned in previous sections.

**Table 10. Peer activities/services that NY-BEST is not providing**

Activities	NY-BEST	Peers (n= 8)
Curriculum development	No	3
Master Service Agreements with labs and institutions	No	3
Professional development	No	3
Workforce training and certification	No	3
Government and utility contracts	No	1
Industry and Policy Gap Reports	No	1
Member site visits/lab tours	No	1
Sales training materials	No	1
Subject matter input into utility work papers	No	1
White papers	No	1

### Insight

**Consider expanding on areas of strength and niche areas not well covered by others.** The findings indicate that NY-BEST offers several unique services that are highly valued by members and experts. It will be important to continue to expand on these strengths and niche areas to remain relevant given the many organizations operating in the energy storage space. The four unique offerings are: introductions/matching, funding, supply chain resource database, and the testing and commercialization lab. To strengthen these efforts, NY-BEST may focus on making introductions between investors and developers and between developers and users with specific needs, such as utilities. NY-BEST may also consider targeting funding for demonstration projects or funneling projects to the ETAC program to encourage commercialization.

### Key Finding 10 – NY-BEST is taking an inclusive approach to membership eligibility, similar to half of the peer organizations

Peer organizations have varying approaches to membership eligibility. Similar to four out of eight peers, NY-BEST is taking an inclusive approach, as shown in Table 11, where members not only include industry, but also academics, governments, laboratories, other consortia, and non-profit organizations. In

contrast, four other peers limit membership to industry members only, or are keeping overall member numbers low and exclusive to highly invested members.

Two organizations mentioned intentionally limiting the role of public sector and academic involvement in membership and decision making to ensure an industry focused agenda and private sector solutions. These same organizations also focused on having only highly committed, key private sector industry members who make large monetary contributions, and having non-industry groups and suppliers as partnering organizations rather than members.

**Table 11. Peer organizations membership eligibility**

Organization	Broad Membership	Narrow Membership
NY-BEST	X	
NAATBatt		X
CalStart		X
PVMC		X
SEMATech		X
CalCharge	X	
ESA	X	
WHPA	X	
CESA	X	

Note: Broad membership is defined as allowing for non-industry members such as academics, governments, laboratories, other consortia, and non-profit organizations. Narrow membership is defined as limiting membership to only industry, or keeping overall member numbers low and exclusive to highly invested member companies.

### Insight

**Consider forming an industry-only membership with non-industry partnerships.** The goals would be to ensure that the membership represents the industry and that private sector needs remain the focus. Given that NY-BEST is ultimately interested in ensuring energy storage products are put to use to reduce greenhouse gas emissions, focusing too much on academic interests might detract from pushing viable products to market. One peer organization further narrows their membership to developers only, and considers suppliers to be partners. Although there are benefits to being inclusive to an array of stakeholders such as academics, governmental groups, and non-profits, their needs can differ greatly from the market driven goals of technology developers and ultimately the consortium. Providing a separate partner status for non-developer organizations might provide a way for non-industry entities to be closely collaborative, while also offering some space to ensure the organization remains industry-led.

### Key Finding 11 – Most peers are currently self-sustaining

NYSERDA seed funding for NY-BEST is designed to be a five to eight year investment, after which NY-BEST is expected to become operationally self-sufficient supporting its core member services through non-NYS funding. In early 2015, NY-BEST established a committee of its board to continue moving the organization toward becoming operationally self-sustaining. It should be noted that some of the activities performed by NY-BEST are economic development in nature and would not naturally align themselves with the types of services an individual member would support. In these cases, it is envisioned that government or utility grant funding would continue to support those targeted economic development efforts. The peer organizations, while interested in supporting workforce development or job creation, seem to be less oriented towards economic development goals than NY-BEST. All peer organizations agreed that being self-sustaining is important for long-term success. Five peers said they were currently operating as a self-sustaining organization; two of these five started under a self-sustaining model, and two said they started their organizations with seed funding and transitioned over time. One peer specified that it took 2 years for their organization to transition successfully from relying on seed funding to being self-sufficient. Another organization expects to be self-sufficient based on membership dues within a year. There were three different models for how peers were able to sustain consistent funding:

1. Winning competitive contracts (government, utility, etc.) and charging membership dues (n = 1).
2. Large monetary (\$1+ million) and in-kind annual contributions from a smaller membership of key companies; free events and services (n = 2).
3. Dues (\$500+) from large, diverse membership; fees for events and services (n = 2).

NY-BEST's additional sources of revenue outside of NYSERDA funding are similar to the sources peers described in 1 and 3 above, e.g. NY-BEST collects an annual membership fee, charges for member services and events, secures grants and contracts from other organizations like utilities, and additionally earn revenue from members' use of the testing center. One technology-focused peer that primarily relied on a small group of large donors noted how, for specific projects, members of the supply chain that are focused on that particular issue contribute funds to the project. NY-BEST should note that policy-focused groups are implementing method 3 and charge for events and webinars. Methods 1 and 2 are more common to technology-focused groups that likely have larger budgetary needs. According to NY-BEST management, annual operational expenses are expected to average \$700,000 – 800,000 per year, which, assuming 200 members and no other sources of revenue, would average \$3,500 – \$4,000 in annual dues per member. Over time, NY-BEST may consider the potential benefits of expanding its efforts to secure competitive contracts and engage fewer key industry members to make more substantial contributions, potentially through a stratified membership dues structure.

### Insights

**When NY-BEST leadership meets in early 2015 to discuss plans to become self-sustaining, consider a tiered membership to secure larger contributions from a top tier of more highly invested members.**

Currently, NY-BEST relies on CAIR funding and charges membership dues from a large, diverse membership. In addition, it collects fees for events and services. Relying on membership dues and grants has only proved to be effective for policy-focused organizations that likely have lower overhead and costs. Several peers recommended that NY-BEST consider an approach similar to other groups focused on technology development that command larger contributions from select industry leaders to support high-cost activities. Increasing contributions from fewer key industry members using a more stratified tiered membership dues structure may be a more effective way to generate sufficient operations revenue.

**Encourage members to pursue and financially support entrepreneurial endeavors and line item activities.** Another effective approach taken by technology focused peer groups has been to encourage members to combine funds to invest in line item activities. These activities can be policy, standards, or technology related, but should provide ways that NY-BEST can advance its goals while incurring few costs and leveraging the desire for members to take the lead on individual efforts.

### Key Finding 12 – Most peers measure progress through informal methods

Most peer organizations relied on informal methods to gather feedback and measure progress. Only one organization mentioned regularly conducting a formal member survey; two others measure progress in the form of regularly scheduled one-on-one meetings with members. The rest relied on informal insights from their leadership circle, board of directors, advising committee, or discussions with members for input on how they are making progress towards goals. This suggests that NY-BEST is doing more than most peers in gathering formal member feedback, as NY-BEST surveys its members each year in a member satisfaction survey and will have 4 years of data by this spring. However, peers indicated that informal, frequent, one-on-one member communication is also a highly valuable way of gaining feedback and measuring progress.

The three metrics that were most commonly mentioned by peers as ways to either formally or informally track progress and gauge success were the number of members (n = 4), policies passed (n = 2), and products commercialized (n = 2). Other metrics that were mentioned once, but may be helpful for NY-BEST to consider are the following:

#### Financial

- Overall scale and size of budget
- Level of contribution from members

#### Membership and stakeholders

- Size and diversity of the coalition
- Stakeholders engaged
- Types of members
- Members satisfied
- New industries excited and interested

### Technology and policy

- Number of research projects
- Breadth of technology awareness
- Progress towards specific initiatives
- Products commercialized
- Intellectual property developed
- "How many technologies are implemented on a manufacturing scale"
- Jobs created by commercialization

### Market and economic development

- Markets opened up
- Number of members attending events
- Size of available markets
- "Technologies transferred to member companies and how many have been taken to the commercialization stage for deployment"

### Key Finding 13 – NY-BEST is already implementing the most successful strategies mentioned by peers

Peer organizations were asked to provide insight into the most successful strategies used to grow and advance their organization goals. NY-BEST appears to be already implementing these, which implies that NY-BEST is on the right track in terms of using some of the best practices of other similar organizations.

The following are the list of strategies mentioned by peers:

- Listening to industry members and letting industry drive direction
- Holding annual meeting and distributing a newsletter which adds to the credibility of the organization
- Focusing attention on collaboration between its members
- Giving tools to members that help them succeed
- Talking to members personally
- Focusing on the quality of events

### Key Finding 14 – Peer organizations will evolve with the industry

All peers that were asked about whether they had considered or planned an exit strategy for their organizations when the market does become mature said they would likely evolve with the changing needs of the industry rather than exit the market. Among the policy-focused organizations, one said they would likely transition from opening new markets to defending existing markets, and another said they would transition to implementing more public awareness and promotional campaigns, for which they did not currently have a need.



Of the technology-focused groups, one peer said that their main goal is to increase sales for their member organizations, thus their mission is self-perpetuating. Another peer said that there would always be a need for an industry organization regardless the maturity of the market, so they believe their organization will always be relevant. All technology-focused groups explained that even if there are thriving markets, their purpose is to support better technologies and help industry bring new solutions to market. A few mentioned that mature markets create new opportunities to reach out and expand scope to include more complementary industries.

## Conclusions

The findings from the peer organization benchmarking revealed that NY-BEST is covering more ground than most other similar organizations. This includes having a broad membership with many non-industry representatives, and goals that span across both technology and policy; most peer organizations specialize in one or the other. Members benefited from NY-BEST's ability to provide both technology development assistance and policy-level support. Taking a broad approach to energy storage may be a differentiator for NY-BEST. It is possible that NY-BEST may be better positioned than its peers to tackle key issues because it has the potential to unify members around a common cause. NY-BEST shows no signs of falling short on delivering the activities it set out to do. However, peers warned that the potential threats to a broad approach include spreading resources too thin and difficulties in becoming self-sustaining, difficulties in doing it all well, and distractions from core private sector needs. NY-BEST will likely need to consider how to leverage its broad network while focusing on its members' greatest needs.

Through this process evaluation we documented evidence that many of NY-BEST's activities are leading to the desired outcomes described in the logic model. As mentioned above, most members who responded to the survey made use of NY-BEST's newsletters and other forms of written industry updates, conferences, and assistance providing targeted introductions; members rated these offerings as helpful. While members benefited from the policy updates, this evaluation was not scoped to document the impact of NY-BEST's efforts to influence policies that support energy storage on policy makers or the public. We also did not evaluate the extent to which NY-BEST's provision of business support influenced members' strategies to develop or apply energy storage technologies. Members indicated not using or wanting NY-BEST business support, which may indicate that members are not in need of the service. Alternatively, if NY-BEST has identified a clear need of which members are not aware, NY-BEST may need to explain the need and market its services differently.

## Recommendations

**Partner with other storage consortia (ESA, CESA, maybe others) to effectively push policy, education, and industry standards.** Most peer organizations are specializing in either technology development or policy advocacy. This allows organizations to focus and manage budget and scope. While NY-BEST remains broad in its purpose, it can potentially leverage the depth of other consortia and trade organizations. Should NY-BEST face the need to narrow its focus, it should likely focus on technology and

commercialization, which is an area of strength and differentiation for NY-BEST. Working on advancing policy continues to be important as there are many barriers related to policy, education, and standards, including value monetization, grid interconnection, certification standards, inefficient installations, slow adoption of systems, and general industry knowledge. Experts mentioned these as primary barriers to industry growth, and members are noticing their impacts on market demand. Since peer organizations indicated they are willing to work together to leverage complementary strengths, NY-BEST may advance policy initiatives most efficiently by leveraging partnerships with peer organizations to work together at a national level and align their NY State-specific policy initiatives with national efforts.

## 4 Considerations for Using a Consortium Approach to Drive Market Transformation

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This section provides guidance for NYSERDA when considering whether a consortium approach would enhance or better spur market transformation than solely providing support for individual projects. As mentioned under Key Finding 7, NYSERDA often employs competitive project-level funding to drive markets past barriers to technology development and commercialization, such as raising awareness about and proving the effectiveness of a technology, reducing high upfront costs, and optimizing management and operations. In addition to addressing these barriers, the consortium approach can be helpful when the following barriers or market conditions apply:

1. There are common policy, standards development, and technology barriers that competitors are willing to work together to address.
2. Supply chain actors are not adequately networked and do not understand each other's needs.

There is a sufficient level of base activity where interventions can establish a working industry cluster. In terms of organizational best practices, a consortium will need to evolve along with the market it attempts to transform. When planning for self-sufficiency, the model must match the goals of the organization. For example, a consortium with a highly targeted membership would likely need to gather funds from a large donor or highly stratified membership dues structure. The consortium should also develop a transition plan – as opposed to an exit strategy – to help the organization continue to advance the market as the market transforms and evolves. The organization may need to shift incrementally at first in order to align with market trends. However, as the original market transformation goals are met, the organization may need to shift more radically in its purpose, membership constituency, and activities. Table 12 shows examples of actionable consortium approaches that could address common market transformation barriers, the requirements for pursuing the approaches, and possible measurable results. This is intended as a framework for discussion; other context-specific conditions and requirements will likely apply when discussing other NYSERDA market transformation initiatives.

In terms of organizational best practices, a consortium will need to evolve along with the market it attempts to transform. When planning for self-sufficiency, the model must match the goals of the organization. For example, a consortium with a highly targeted membership would likely need to gather funds from large donor or a highly stratified membership dues structure. The consortium should also develop a transition plan – as opposed to an exit strategy – to help the organization continue to advance the market as the market transforms and evolves. The organization may need to shift incrementally at first in order to align with market trends. However, as the original market transformation goals are met, the organization may need to shift more radically in its purpose, membership constituency, and activities.

**Table 12. Consortium approaches to common barriers**

<b>Barrier or Market Conditions</b>	<b>Requirements</b>	<b>Consortium Approaches</b>	<b>Measurable Results</b>
Competitors have common policy, standards development, or technology barriers	Competitors must be willing to work together on overcoming barriers	<p>Members form consortium workgroups</p> <p>Members are networked to collaborate and build partnerships</p> <p>Consortium partners with peer organizations to support consistent set of policy priorities</p>	<p>Sustained collaboration among competitors</p> <p>Intellectual property developed</p> <p>Industry standards developed</p> <p>Policy changes realized</p>
Supply chain actors are not adequately networked and do not understand each other's needs	Supply chain actors such as manufacturers, vendors, end users, and customers exist	Developer members are networked with supply chain members/partners	<p>Networking events well-attended</p> <p>Connections made</p> <p>Commercialization expedited</p>
<p>Regional industry is facing competition from outside and needs to strengthen its position</p> <p>Costs to develop pre-competitive technologies are prohibitive for any individual company</p>	Competitors must be willing to work jointly to strengthen the regional industry.	<p>Member resources are aggregated to build common regional research infrastructure</p> <p>Member resources are aggregated to develop joint IP under the consortium banner</p>	<p>Joint infrastructure built</p> <p>Joint intellectual property developed</p>

## Appendix A: Survey and Interview Analysis

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### A.1 Member Survey Demographics

A demographic summary of member characteristics, including industry sector, industry specific area, and technology focus are shown below in Tables 13 - 15. Given the low response rates to the surveys and differences in response options, it is not appropriate to directly compare the NY-BEST 2014 Member Survey with this evaluation survey's results. However, it is notable that a similar number of members indicated an affiliation with industry (n=23 in the NY-BEST Member Survey versus n=26 in this evaluation's survey) and academia/non-profit (n=5 versus n=7, respectively). More members indicated an affiliation with consulting in the NY-BEST 2014 Member Survey (n=10) than the evaluation member survey (n=3).

**Table 13. Member survey respondents by industry sector**

Industry sector	Count (n=96) <sup>1</sup>
Technology Development	27
Industry	26
Manufacturing	17
Systems Integrator	11
Academia or non-profit	7
Site Development	5
Law or Consulting	3

<sup>1</sup> Respondents were allowed to choose multiple responses for this question.

**Table 14. Member survey respondents by stage of product commercialization**

Product Commercialization Stage	Count (n=26) <sup>1</sup>
Commercial prototype	7
Established sales pipeline	6
Commercial production/first sales	4
Initial prototype	3
Not applicable	6

<sup>1</sup> Only includes those who selected "industry" in Table 14.

**Table 15. Member survey respondents by technology focus and role**

Technology focus	Develops	Purchases	Supports
Lithium ion	14	7	22
Energy storage control/management system	13	5	15
Capacitor/Ultracapacitor	8	3	15
Fuel cell	10	2	13
Lead acid	1	4	15
Flow battery	3	1	9
Mechanical energy storage	1	0	5
Thermal energy storage	4	0	5
Other battery:	7	1	4
Other technology:	2	0	0
Total	63	23	103

## A.2. Member Survey Analysis

Members were asked about barriers experienced in the energy storage industry. A summary of those responses and response rates are shown in Table 16. Members were also asked how they were connecting with other industry actors with NY-BEST’s help. Results of those responses are shown in Table 17.

**Table 16. Summary of barriers mentioned by member**

Barrier	Count	Summary
Value Monetization	12	The value of storage systems is not currently monetized. There is too much focus on system cost rather than benefits.
Commercialization Funding	12	Funding is needed in large quantities by companies in late-stage development. There is a gap in funding between government (grants) and industry (contracts).
Cost and Lifetime	11	High prices and low lifetimes lead to low cost benefit analyses for ESS. Many costs are associated with the system (installation, connection) rather than the device
Demonstration	10	There is need for reliable demonstration projects, especially for conservative utilities that are concerned with reliability.
Scale up	10	Scaling up manufacturing is a slow and expensive process; it is often hardest part of commercialization.
Interconnection	8	There is significant difficulty and confusion in connecting storage systems to grid.
Safety	8	There are issues with safety and reliability of new products, especially for large units with high energy density.
R&D funding	8	Sustained R&D funding is critical for next generation (beyond Li-ion) storage. Economic research is also needed.

Barrier	Count	Summary
Codes and Standards	7	Standards in interconnection, contracts, and product certification can improve knowledge and speed up adoption of energy storage.

**Table 17. Number of members connecting with industry via NY-BEST's help by channel**

Industry Connections	NY-BEST event	In-person meeting	Conference call	E-mail	NY-BEST is not involved
Technology developers (n=32)	16	5	2	6	3
Research institutions (n=33)	16	7	1	5	4
Utilities (n=26)	12	5	2	4	3
Application developers (n=21)	12	3	1	1	4
Materials suppliers (n=22)	11	2	0	4	5
Renewable energy providers (n=20)	10	4	1	2	3
Vendors (n=14)	7	1	1	2	3
Incubators (n=15)	5	2	0	2	6
Transportation manufacturers (n=15)	4	1	0	2	8
Business management advisors (n=13)	4	2	0	2	5
Marketing firms (n=6)	1	0	0	2	3
Legal advisors (n=11)	1	1	0	2	7
Human resources service providers (n=4)	1	0	0	1	2

### A.3 Expert Interview Demographics

A demographic summary of expert characteristics by expert type is shown in Table 18. In addition, it should be noted that eight of the sixteen total experts represented companies that were NY-BEST members. The other eight experts were representatives from non-member companies in the energy storage industry.

**Table 18. Expert interview participants by expert type**

Expert Type	Count
Academic Experts	5
Industry Experts	6
Policy Experts	2
R&D Experts	3
<b>Total</b>	<b>16</b>

### A.4 Peer Organization Selection Process

Peer organizations were selected by rating the organizations’ likeness to NY-BEST in eight categories of organizational characteristics listed below. A rating was given on a scale of 0 to 3 for each category, where zero was “not similar” and three was “very similar.” Organizations were selected if the average of the scores across the categories was 2 or greater:

1. Technology/industry focus
1. Age
2. Organizational structure
3. Funding sources
4. Member types
5. Membership roles
6. Activities/services
7. Goals

### A.5 Peer Organization Interview Characteristics

A demographic summary of peer characteristics by peer type is shown in Table 19 and peer organization profiles in Table 20.

**Table 19. Peer organizations by type and focus**

Type	Count	Focus	Peers Organizations
Policy	3	Advocacy	2 (ESA, CESA)
		Policy advising	1 (WHPA)
Technology	3	Technology	2 (PVMC, SEMATECH)
		Technology with some policy advising	1 (CalCharge)
Both	2	Technology and policy advocacy	2 (CalStart, NAATBatt)



**Table 20. Peer organization profiles**

Org No.	Peer Organization	Website	Technology	Age	Goals /Activities/Services
0	NY-BEST (New York Battery and Energy Storage Technology Consortium)	<a href="http://www.ny-best.org">http://www.ny-best.org</a>	Battery energy storage technology for grid scale storage, transportation, and other applications.	5 years	<p>Goals: Position New York State as a global leader in energy storage technology.</p> <p>Activities/Services: Funding, testing, targeted introductions, business support, news/market information, conferences/webinars, promotion of policies.</p>
1	CalCharge	<a href="http://www.calcharge.org">http://www.calcharge.org</a>	Battery and electrochemical energy storage technology for grid scale storage, transportation, and consumer electronics.	2 years	<p>Goals: Position California cluster as a global leader of the industry. Reduce the time it takes stakeholders to (1) find each other to evaluate performance of policy, (2) gain access to the resources and expertise they need to advance intellectual property development, or (3) get the right people together to address shared challenges.</p> <p>Activities/Services: Technology assessment and acceleration (access to research and testing facilities), professional development (university courses, webinars), pre-commercialization support (apply for collaborative technology development grants), ecosystem facilitation (conferences, seminars, web and social media platforms, and the publication of white papers and market analysis).</p>

Org No.	Peer Organization	Website	Technology	Age	Goals /Activities/Services
2	CalStart	<a href="http://www.calstart.org/Homepage.aspx">http://www.calstart.org/Homepage.aspx</a>	Efficient vehicles, clean fuels, integrated mobility	20 years	<p>Goals: Support a growing high-tech, clean transportation industry that cleans the air, creates jobs, cuts imported oil and reduces global warming emissions. Increase partnership and collaboration through technical projects and influence policy initiatives that advance technology.</p> <p>Activities/Services: Industry networking, up-to-date information on policy and funding, industry news and trends, consultations, strategic brokering of partnerships, funding and program partnership opportunities, access to industry and policy networks, legislative and regulatory updates, bulletins on industry news, program committees and working groups, webinars, discounts for conferences and workshops, publications and educational materials, industry information report.</p>
3	NAATBatt (National Alliance for Advanced Technology Batteries)	<a href="http://naatbatt.org/contact/contact-information/">http://naatbatt.org/contact/contact-information/</a>	Advanced electrochemical energy storage technology for the grid and vehicles	6 years	<p>Goals: Promote commercial interests of our members by supporting developments in the science of and markets for advanced electrochemical energy storage technology in the United States and worldwide consistent with the goals of enhancing energy efficiency, reducing petroleum dependence and enabling carbon-free electricity generation. Serve as a business development tool and resource for strategic and industry information for members. Bring together major manufacturers.</p> <p>Activities/Services: Market intelligence, technology forums, relationship building among companies, commercialization acceleration, education for industry and end users on advanced storage, standards development, US and global policy advocacy.</p>

Org No.	Peer Organization	Website	Technology	Age	Goals /Activities/Services
4	WHPA (Western HVAC Performance Alliance)	<a href="http://www.performancealliance.org">http://www.performancealliance.org</a>	Heating, ventilation, and air-conditioning (HVAC) systems	5 years	<p>Goals: Assist California utilities, policymakers and other stakeholders to assess, prioritize, build consensus and continuously improve the California Energy Efficiency Strategic Plan (CEESP). Improve quality of work and reduce energy consumption associated with heating, ventilation, air conditioning, and refrigeration.</p> <p>Activities/Services: Make policy recommendations to State of California and utilities on HVAC standards and practices, work product development, website with industry resources.</p>
5	PVMC (Photovoltaic Manufacturers Consortium)	<a href="http://www.uspvmc.org">http://www.uspvmc.org</a>	Photovoltaic (PV) systems manufacturing	3 years	<p>Objectives: Chartered by US DOE SunShot Initiative to increase performance and speed the implementation of PV technologies and reduce the cost of PV by 75 % over the next decade. Support United States competitiveness. Bring together major manufacturers to establish capability and proprietary ability for manufacturers to compete and survive, and develop jobs, and bring cost reductions and market activities.</p> <p>Activities/Services: Member funded collaborative projects, shared cost and risk, faster and better solutions to common pre-competitive infrastructure needs and requirements.</p>

Org No.	Peer Organization	Website	Technology	Age	Goals /Activities/Services
6	SEMATECH	<a href="http://public.sematech.org">http://public.sematech.org</a>	Semiconductor	25 years	<p>Objectives: Accelerate members' success by addressing high-risk/high-reward challenges in semiconductor manufacturing technology. Support United States' ability to compete in global market. Bring together major manufacturers to establish capability and proprietary ability for manufacturers to compete and survive, and develop jobs, and bring cost reductions and market activities.</p> <p>Activities/Services: Member-driven roadmap planning/decisions, early learning on development of materials and technology, R&amp;D in an industrial setting, networking with members and partners of top IC makers.</p>
7	ESA (Energy Storage Association)	<a href="http://energystorage.org">http://energystorage.org</a>	Energy storage in the electric power sector (pumped hydro, compressed air, thermal storage, advanced battery and fly-wheel)	20 years Founded over 20 years ago as Utility Power Group by eight utility executives	<p>Objectives: Promote the adoption of competitive and reliable energy storage systems for electric service and promote fair regulatory environments. Engage with federal, state regulators as the de-fact voice for energy storage around policy issues. Represent the needs of the broader industry not only current membership.</p> <p>Activities/Services: Policy advocacy, event discounts, working groups (market analytics, program, technology, policy, legal), networking, RFP announcements, annual conference.</p>
8	CESA (California Energy Storage Alliance)	<a href="http://www.storagealliance.org">http://www.storagealliance.org</a>	Energy storage in the electric power sector	5 years Founded in February 2009	<p>Objectives: Make grid storage a key focus area for California's regulators and policymakers. Create markets that are complete and fair to energy storage where energy storage can compete in markets for capacity and ancillary services on the electric grid.</p> <p>Activities/Services: Policy advocacy, market development, market and regulatory intelligence, expert access, networking, marketing, &amp; relationship building, industry leadership, monetary savings.</p>

## Appendix B: Data Collection Instruments

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### B.1 Member Survey

EMI Consulting developed a member survey instrument with input from NYSERDA. The full survey instrument is listed below.

The member survey was designed to be a medium length survey (10 – 20 minutes) and administered online through Qualtrics to collect information about how members perceive barriers to energy storage technologies, services desired to overcome barriers, and the NY-BEST Consortium offerings. Members who applied for funding through the NYSERDA NY-BEST R&D solicitations were asked additional questions that covered their experience. These questions collected information about the experience with the receipt of PON funding and technology development, as well as the experience when funding was not received. Individual member responses were kept confidential and were aggregated for reporting.

#### Section A: Introduction and Firmographics

- A1. Thank you for taking the time to complete this survey about NY-BEST. In some questions, we will ask for your personal opinion. In other questions we will ask you to represent the experience of the group of people you work with directly within your organization on battery or other types of energy storage technology.

Your feedback will be used to evaluate NY-BEST's activities and operations. The survey should take roughly 15-20 minutes. Your responses are completely confidential to the extent permitted by law and the results of this survey will only be shared with NY-BEST in aggregate.

Should you have any questions or problems while completing this survey, please contact:

Kara Crohn, Project Director, EMI Consulting  
kcrohn@emiconsulting.com  
951.742.5619

If you have questions about this study, you may also contact:

Jennifer Phelps, NYSERDA Evaluation Department  
Jennifer.Phelps@nyserda.ny.gov  
518.862.1090 x3569

- A2. In what year did you personally become a NY-BEST member?

1. 2010
2. 2011
3. 2012
4. 2013
5. 2014
- 8. -know

A2a. In what year did your group become a NY-BEST member?

(Throughout the survey, you can mouse over “your group” to see its definition.)

1. 2010
2. 2011
3. 2012
4. 2013
5. 2014
- 8. Don't know

A3. How did you hear about NY-BEST (Check all that apply)

1. Colleague or business partner
2. Mailed material sent from NY-BEST
3. Call or email from NY-BEST member
4. Industry event/NY-BEST presentation
5. Internet search
6. Other \_\_\_\_\_
- 8. Don't Know

A3a. How did your group hear about NY-BEST (Check all that apply)

1. Colleague or business partner
2. Material sent from NY-BEST
3. Call or email from NY-BEST member
4. Industry event/NY-BEST presentation
5. Internet search
6. Other \_\_\_\_\_
- 8. Don't Know

A4. What sectors does your organization represent? (Check all that apply)

1. Industry
2. Technology Development
3. Systems Integrator
4. Academia or non-profit
5. Law or Consulting
6. Manufacturing
7. Site Development
8. Other \_\_\_\_\_

A4a. [IF A4 = 1. INDUSTRY, ASK] Please choose the stage of commercialization that best describes your group's most commercially ready product.

1. Proof of concept
2. Initial prototype
3. Commercial prototype
4. Commercial production/first sales
5. Established sales pipeline
6. Other \_\_\_\_\_

Not applicable

A5. Please select the energy storage technologies or systems that your group develops, supports, or purchases. Select all that apply:

[Matrix response options: Develops, Supports, Purchases]

1. Lithium ion
2. Lead acid
3. Flow battery
4. Fuel cell
5. Other battery \_\_\_\_\_
6. Capacitor/Supercapacitor
7. Thermal energy storage
8. Mechanical energy storage
9. Energy storage control/management system
10. Energy storage management system
11. Other technology \_\_\_\_\_

**[Define as IMPLEMENTER if Supports or Purchases are chosen in response to A5 and Develops is never chosen.**

**Define as DEVELOPER if Develops is chosen at least once in response to A5.]**

A5a. Are you aware of other groups within your organization working with battery storage technology?  
[IF YES, ask A5b. If NO, skip to A6.]

A5b. Please select the energy storage technologies that other groups within your organization work with:

1. Lithium ion
2. Lead acid
3. Flow battery
4. Fuel cell
5. Other battery \_\_\_\_\_
6. Capacitor/Supercapacitor
7. Thermal energy storage
8. Mechanical energy storage
9. Energy storage control/management system
10. Energy storage management system
11. Other technology \_\_\_\_\_
- 8. Don't know

## Section F: Overall Program Operations

F1. Which of the following events have you or someone else from your group attended? Select all that apply [Matrix response options: columns for "you" and "someone else from your group"]

1. Capture the Energy: NY-BEST Conference and Annual Meeting
2. NY-BEST Technology Conference
3. NY-BEST Manufacturing and Supply Chain Expo and Conference
4. NY-BEST Market and Policy Conference
5. NY-BEST Investment Conference
6. Test and Commercialization Center Opening
7. A Test and Commercialization Center Tour
8. NY-BEST Webinar

F2. About how often, on average, does your group use the following NY-BEST resources to find information about energy storage?

[scale: weekly, monthly, quarterly, annually, never, don't know]

1. Newsletter
2. Policy Updates
3. Notification of funding opportunities
4. Annual Report
5. Social media, blog, Twitter
6. Member profiles and spotlight articles
7. Energy Storage Roadmap and Economic Impact Study
8. Links to research or market studies on website
9. Supply chain search function on website

F3. What other resources does your group use to find information about energy storage?

1. [ENTER RESPONSE]

### Implementers

**[Define as IMPLEMENTER if Supports or Purchases are chosen in response to A5 and Develops is never chosen.]**

### Section G - Implementers: Challenges your company faces

G2. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following economic challenges in preventing your group from achieving its goals?

1. Company capital
2. Cash flows
3. Supply costs/availability
4. Demand price/availability
5. Market volatility
6. Access to markets
7. Investing variability
8. Financing/budgeting knowledge
9. Other \_\_\_\_\_
- 8. Don't know

G3. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following informational challenges in preventing your group from achieving its goals?

1. Insufficient research/theory information
2. Lack of supply chain information
3. Lack of funding information
4. Lack of policy information
5. Insufficient performance information
6. Lack of competitors information



7. Insufficient market demand information
8. Lack of business support information (legal, marketing, networking, other's misconceptions)
9. Other \_\_\_\_\_
- 8. Don't know

G4. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following policies in preventing your group from achieving its goals?

1. Electric grid policy
2. Interconnection requirements
3. Transportation policy
4. Fire-codes
5. Building codes
6. Permitting
7. Other \_\_\_\_\_
- 8. Don't know

G4b. Please provide examples of how these policies pose significant challenges to your group's progress/goals.

1. [IF G4=1 Electric Grid policy >5] [ENTER RESPONSE]
2. [IF G4=2 Interconnection requirements >5] [ENTER RESPONSE]
3. [IF G4=3 Transportation policy >5] [ENTER RESPONSE]
4. [IF G4=4 Fire codes] >5] [ENTER RESPONSE]
5. [IF G4=5 Building Codes >5] [ENTER RESPONSE]
6. [IF G4=6 Permitting >5] [ENTER RESPONSE]
7. [IF G4=7 Other, >5] [ENTER RESPONSE]

H1. How has NY-BEST affected the direction of your organization's operations, if at all?

1. In New York State? [ENTER RESPONSE]
2. Outside of New York State? [ENTER RESPONSE]
3. To new industries? [ENTER RESPONSE]
4. To new markets? [ENTER RESPONSE]
5. To new technologies? [ENTER RESPONSE]

### Section B - Implementers: Industry Interaction

B1. Which of the following organizations or groups is your group communicating with or interested in communicating with regarding energy storage? (Check all that apply)

Matrix response: Two check boxes – Currently? And Interested in?

1. Research institutions
2. Technology developers
3. Application developers
4. Materials suppliers
5. Transportation manufacturers
6. Utilities

7. Renewable energy providers
8. Vendors
9. Customers
  
10. Incubators
11. Business management advisors
12. Legal advisors
13. Marketing firms
14. Human resources service providers
15. Other business partners \_\_\_\_

B2. **[Ask for all checked “Currently” responses in B1]** In what way has NY-BEST helped your group connect with these organizations and groups?

[Matrix response options: In-person meeting, NY-BEST event, Conference call, Email, NY-BEST not involved in our connection]

B3. [Ask for all B1 responses] Without NY-BEST’s help, how would your group connect with the following organizations and groups?

1. Cold call or email
2. Ask another organization for an introduction
3. We would not have connected
4. Other \_\_\_\_

B5. How could NY-BEST better help your group connect with others in the energy storage industry?

[ENTER RESPONSE]

G8. NY-BEST seeks to stimulate industry growth and help organizations overcome barriers to growth. With this purpose in mind, please look at the types of possible NY-BEST member organizations and select the types of information your group would be willing to share.

[Check box for response options (in columns):

1. Technological information
2. Economic information
3. Barriers to commercialization
4. Contact information for partners
5. Funding advice

[Response option rows: All selected answers from B1 response options]

#### Section D - Implementers: Value of NY-BEST Membership

D1. On a scale of 1 to 10 where 1 = not at all valuable and 10 = extremely valuable, how valuable are the following NY-BEST activities for your group?

[scale: 1 = not at all valuable, 10 = extremely valuable, Not Applicable, DK]

Information Provided

1. Newsletter
2. Policy Updates
3. Notification of funding opportunities
4. Annual Report
5. Social media, blog, Twitter
6. Member profiles and spotlight articles
7. Energy Storage Roadmap and Economic Impact Study
8. Links to research or market studies on website
9. Notification of funding opportunities

Services

10. Facilitating connections with energy storage industry players
11. Business support – Guidance and information
12. Access to the Testing and Commercialization Center
13. Funding and grant application assistance

Events

14. Conferences
15. Webinars

Other

16. Other \_\_\_\_\_

D2. **[IF ANY IN D1 < 6]** Please explain what NY-BEST could do to improve the value of its services.

[ENTER RESPONSES]

Section X - Implementers: Closing

X1. On a scale from 1 to 10 where 1 = not at all likely, 10 = highly likely, how likely are you to recommend NY-BEST to a colleague?

[scale: 1 = not at all likely, 10 = highly likely, NA, DK]

X1a. Is there anything else we should consider as we evaluate NY-BEST?

[ENTER RESPONSE]

X2. Thank you for completing the survey!

If you have any questions about this research, please feel free to contact Kara Crohn, this evaluation's director, at EMI Consulting at [kcrohn@emiconsulting](mailto:kcrohn@emiconsulting) or 951.742.5619 or Jennifer Phelps, Evaluation Liaison at NYSERDA at [jennifer.phelps@nyserdera.ny.gov](mailto:jennifer.phelps@nyserdera.ny.gov) or 518.862.1090x3569.

## Developers

**[Define as DEVELOPER if Develops is chosen at least once in response to A5.]**

### Section GD - Developers: Challenges your company faces

A6a. At what stage of development or commercialization is your group's technology? We have included the Technical Readiness Level that NY-BEST uses in describing the stage of projects, for reference. Select all that apply

1. Conceptual Research -TRL 1-2
2. Feasibility Research -TRL 3
3. Technology Development (Lab environment) - TRL 4
4. Technology Development (Relevant environment) - TRL 5
5. Technology Demonstration - TRL 6
6. System Commissioning (Prototype stage) - TRL 7
7. System Commissioning (Full system) - TRL 8
8. System Operations - TRL 9
9. I am not developing this technology
10. Other \_\_\_\_\_

A6b. **[IF A6a = 9]** How does your group work with this technology?  
[ENTER RESPONSE]

A6c. **[IF A6a <> 9]** What development or commercialization steps is your group currently working to achieve?  
[ENTER RESPONSE]

G1. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following technical challenges in preventing your group from achieving its goals?

1. Access to R&D testing
2. Access to testing and validation facilities
3. Access to prototyping facilities
4. Access to independent safety testing
5. Access to technical resources and partners
6. Access to skilled workforce
7. Scaling up production
8. Obtaining materials
9. Timing
10. Material storage
11. Distribution
12. Other \_\_\_\_\_
- 8. Don't know

G2. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following economic challenges in preventing your group from achieving its goals?

1. Company capital
2. Cash flows
3. Supply costs/availability
4. Demand price/availability
5. Market volatility
6. Access to markets
7. Investing variability
8. Financing/budgeting knowledge
9. Other \_\_\_\_\_
- 8. Don't know

G3. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following informational challenges in preventing your group from achieving its goals?

1. Research/theory information
2. Supply chain information
3. Funding information
4. Policy information
5. Performance information
6. Competitors information
7. Market demand information
8. Business support information (legal, marketing, networking, other's misconceptions)
9. Other \_\_\_\_\_
- 8. Don't know

G4. On a scale from 1 to 10 where 1 = not at all significant and 10 = extremely significant, how significant are the following in preventing your group from achieving its goals?

1. Electric grid policy
2. Interconnection requirements
3. Transportation policy
4. Fire-codes
5. Building codes
6. Permitting
7. Other \_\_\_\_\_
- 8. Don't know

G4b. Please provide examples of how these policies pose significant challenges to your group's progress/goals.

1. [IF G4=1 Electric Grid policy >5] [ENTER RESPONSE]
2. [IF G4=2 Interconnection requirements >5] [ENTER RESPONSE]
3. [IF G4=3 Transportation policy >5] [ENTER RESPONSE]
4. [IF G4=4 Fire codes] >5] [ENTER RESPONSE]
5. [IF G4=5 Building Codes >5] [ENTER RESPONSE]
6. [IF G4=6 Permitting >5] [ENTER RESPONSE]
7. [IF G4=7 Other, >5] [ENTER RESPONSE]

G5. On a scale from 1 to 10, please rate how important the following actions are to the development of your group.

1. Secure funding
2. Improve technical performance
3. Improve strategic direction/business performance
4. Secure supply (sellers)
5. Secure demand (buyers)
6. Secure investors
7. Understand and influence policy
8. Facilitate connections
9. Gather information
10. Address other market factors

G6. For those types of assistance your group received from NY-BEST, please rate the helpfulness of the assistance. Please mark "Not Applicable" for any types of assistance your group did not receive.

[MATRIX RESPONSE: Yes, Helpful; Yes, Not Helpful; No, but would like NY-BEST help; N/A]

1. Secure funding
2. Improve technical performance
3. Improve strategic direction/business performance
4. Secure supply (sellers)
5. Secure demand (buyers)
6. Secure investors
7. Understand and influence policy
8. Facilitate connections
9. Gather information
10. Address other market factors \_\_\_\_\_

G6a. Please provide examples of helpful assistance NY-BEST has offered or could offer

1. [IF G6=1] Secure funding [ENTER RESPONSE]
2. [IF G6=2] Improve technical performance [ENTER RESPONSE]
3. [IF G6=3] Improve strategic direction/business performance [ENTER RESPONSE]
4. [IF G6=4] Secure supply [ENTER RESPONSE]
5. [IF G6=5] Secure demand [ENTER RESPONSE]
6. [IF G6=6] Secure investors [ENTER RESPONSE]
7. [IF G6=7] Understand and influence policy [ENTER RESPONSE]
8. [IF G6=8] Facilitate connections [ENTER RESPONSE]
9. [IF G6=9] Gather information [ENTER RESPONSE]
10. [IF G6=10] Address other market factors [ENTER RESPONSE]

H1. How has NY-BEST affected the direction of your organization's operations, if at all?

1. In New York State? [ENTER RESPONSE]
2. Outside of New York State? [ENTER RESPONSE]
3. To new industries? [ENTER RESPONSE]
4. To new markets? [ENTER RESPONSE]
5. To new technologies? [ENTER RESPONSE]

Section BD - Developers: Industry Interaction

B1. Which of the following organizations or groups does your group communicate with or is interested in communicating with regarding energy storage? (Check all that apply)

Matrix response: Two check boxes – Currently? And Interested in?

1. Research institutions
2. Technology developers
3. Application developers
4. Materials suppliers
  
5. Transportation manufacturers
6. Utilities
7. Renewable energy providers
8. Vendors
9. Customers
  
10. Incubators
11. Business management advisors
12. Legal advisors
13. Marketing firms
14. Human resources service providers
15. Other business partners \_\_\_\_

B2. **[Ask for all checked “Currently” responses in B1]** In what way has NY-BEST helped your group connect with these organizations and groups?

[Matrix response options: In-person meeting, NY-BEST event, Conference call, Email, NY-BEST not involved in our connection]

B3. [Ask for all B1 responses] Without NY-BEST’s help, how would your group connect with the following organizations and groups?

1. Cold call or email
2. Ask another organization for an introduction
3. We would not have connected
4. Other \_\_\_\_

B5. How could NY-BEST better help your group connect with others in the energy storage industry?

[ENTER RESPONSE]

G8. NY-BEST seeks to stimulate industry growth and help organizations overcome barriers to growth. With this purpose in mind, please look at the types of possible NY-BEST member organizations and select the types of information your group would be willing to share.

[Check box for response options (in columns):

1. Technological information
2. Economic information
3. Barriers to commercialization
4. Contact information for partners
5. Funding advice

[Response option rows: All selected answers from B1]

### Section DD - Developers: Value of NY-BEST Membership

D1. On a scale of 1 to 10 where 1 = not at all valuable and 10 = extremely valuable, how valuable are the following NY-BEST activities for your group?

[scale: 1 = not at all valuable, 10 = extremely valuable, Not Applicable, DK]

#### Information Provided

1. Newsletter
2. Policy Updates
3. Notification of funding opportunities
4. Annual Report
5. Social media, blog, Twitter
6. Member profiles and spotlight articles
7. Energy Storage Roadmap and Economic Impact Study
8. Links to research or market studies on website
9. Notification of funding opportunities

#### Services

10. Facilitating connections with energy storage industry players
11. Business support – Guidance and information
12. Access to the Testing and Commercialization Center
13. Funding and grant application assistance

#### Events

14. Conferences
15. Webinars

#### Other

16. Other \_\_\_\_\_

D2. **[IF ANY IN D1 < 6]** Please explain what NY-BEST could do better.

[ENTER RESPONSES]



Section ED - Developers: Funding Experience with NYSERDA

E1. For the following stages of a project, how many times has your group applied for funding from NYSERDA and other sources?

[Matrix responses: two columns for NYSERDA and Other Source, with drop-down options (0, 1, 2, 3, 4, 5, >5) ]

1. Research
2. Product development
3. Commercialization
4. Other stage: \_\_\_\_\_

E1a. [IF “Other Source” in E1]>0] For the following stages of a project, Please name the other sources of funding your group applied for.

[Open-ended response options]

1. [IF E1 Research Stage “Other Source” >0, SHOW Research stage]
2. [IF E1 Product Development “Other Source” >0, SHOW Product development]
3. [IF E1 Commercialization “Other Source” >0, SHOW Commercialization]
4. [IF E1 Other Stage “Other Source” >0, SHOW Other Stage]

E6b. [IF “Other Source” in E1]>0] Where did your group learn about these funding source options?

1. [IF E1 Research Stage “Other Source” >0, SHOW Research stage]
2. [IF E1 Product Development “Other Source” >0, SHOW Product development]
3. [IF E1 Commercialization “Other Source” >0, SHOW Commercialization]
4. [IF E1 Other Stage “Other Source” >0, SHOW Other Stage]
5. Don’t know

E2. [For what technology(ies) or strategy(ies) did your group seek funding?  
[ENTER UP TO 3 WRITE-IN RESPONSES NEXT TO PROJECT STAGE]

1. [IF E1 Research Stage “NYSERDA” or “Other Source” >0, SHOW Research stage]  
\_\_\_\_\_
2. [IF E1 Research Stage “NYSERDA” or “Other Source” >0, SHOW Product development]  
\_\_\_\_\_
3. [IF E1 Research Stage “NYSERDA” or “Other Source” >0, SHOW Commercialization]  
\_\_\_\_\_
4. [IF E1 Research Stage “NYSERDA” or “Other Source” >0, SHOW Other]  
\_\_\_\_\_

E3. How much funding was your group awarded for the technology(ies)?  
[Matrix responses: two columns for NYSERDA and Other Source, with drop-down options (0; \$1-\$9,999; \$10,000-\$29,999; \$30,000-\$49,999, \$50,000-\$69,999, \$70,000-\$89,999, >\$90,000)  
[ENTER RESPONSES NEXT TO PROJECT STAGE]

1. [IF RESPONSE TO E2 RESEARCH STAGE, SHOW Research stage: [NAME OF TECHNOLOGY]
2. [IF RESPONSE TO E2 Research Stage, SHOW Product development: [NAME OF TECHNOLOGY]
3. [IF RESPONSE TO E2 Research Stage, SHOW Commercialization: [NAME OF TECHNOLOGY]

[IF E2 Research Stage, SHOW Other: [NAME OF TECHNOLOGY]

- E4a. **[IF E3=2]** Did your group request a debrief on your group's application?
1. Yes
  2. No
  3. Don't know
- E4b. **[IF E4a=1]** Consider how your group might change your application for funding in the future. On a scale from 1-10 where 1 is not at all helpful and 10 is very helpful, how helpful were the following aspects of the debrief?
1. Technology challenges
  2. Stage of development and fit with PON
  3. Market focus or lack of market clarity and direction/path to market
  4. Financial concerns
  5. Team expertise
  6. Other \_\_\_\_\_
- E4c. **[IF any E4b < 6]** Please explain how the debrief was not helpful.
1. [ENTER RESPONSE]
- E4d. **[IF any E4b > 5]** Please explain how the debrief was helpful.
1. [ENTER RESPONSE]
- E5a. **[IF E3=2]** Will your group reapply for funding?
1. Yes, my group already reapplied
  2. Yes, my group will reapply
  3. No, my group does not plan to reapply
  - 8. Don't know
- E5b. **[IF E5a= 1]** What did your group do differently on your group's reapplication?
1. [ENTER RESPONSE]
  - 8. Don't know
- E5b. **[IF E5a= 2]** What will your group do differently on your group's reapplication?
1. [ENTER RESPONSE]
  - 8. Don't know
- E5c. **[IF E5a= 3]** Why is your group not reapplying?
1. [ENTER RESPONSE]
  - 8. Don't know
- E6. What, if anything, could NYSERDA do to improve the funding process?
- [ENTER RESPONSE]

## Section XD - Developers: Closing

X1. On a scale from 1 to 10 where 1 = not at all likely, 10 = highly likely, how likely are you to recommend NY-BEST to a colleague?

[scale: 1 = not at all likely, 10 = highly likely, NA, DK]

X1a. Is there anything else we should consider as we evaluate NY-BEST?

[ENTER RESPONSE]

X2. Thank you for completing the survey!

If you have any questions about this research, please feel free to contact Kara Crohn, this evaluation's director, at EMI Consulting at [kcrohn@emiconsulting](mailto:kcrohn@emiconsulting) or 951.742.5619 or Jennifer Phelps, Evaluation Liaison at NYSERDA at [jennifer.phelps@nyserda.ny.gov](mailto:jennifer.phelps@nyserda.ny.gov) or 518.862.1090x3569.

## B.2 Expert Interviews

EMI Consulting developed an expert interview instrument with input from NYSERDA. The full survey instrument is listed below.

The expert interview was designed to be a medium length interview (30 – 60 minutes) to collect information about how experts perceive the current state of energy storage technologies, the path to development, barriers to energy storage technologies, and services needed to overcome barriers. Experts were asked about NY-BEST to assess familiarity and level of influence. The team asked program staff to identify experts that are considered particularly relevant to the technologies of interest.

These semi-structured interviews allowed for collection of comparable data across interviewees while allowing flexibility during the interview to follow up by probing particular responses.

## Section INTRO: Introduction

INTRO1. Thank you for agreeing to talk with me today.

As I mentioned on the phone the other day, NYSERDA and NY-BEST are interested in gathering feedback from experts in the field about the state of energy storage. We will summarize what you share today with other experts' opinions and guidance, but it is possible that NYSERDA or NY-BEST may be able to tell which expert made particular comments. Because of this, I cannot promise to maintain full confidentiality. Do you have any questions before we get started?

I would like to record our meeting, for note taking purposes. Do you mind if I record our conversation?

[IF NECESSARY: The recording will stay with EMI Consulting and will only be used to ensure the accuracy of our notes.]

[IF YES, BEGIN RECORDING.] Great, I will start the recording now.

First, I would like to learn a little more about what you do. Can you explain your role to me? In terms of energy storage, in what areas do you have expertise?

[Probe: technologies, stages of commercialization, market areas]

[Confirm with them the topics that we will discuss in depth, as these topics will guide the majority of the interview.]

[RECORD LIST OF TOPICS TO DISCUSS IN FUTURE QUESTIONS]

INTRO2. What do you see as the top issues in the energy storage industry right now? Which of the issues you just described is most important? Why?

[Keep notes for section F.]

#### Section D: Barriers

I would now like to ask you about the state of the technologies that you focus on and also significant barriers in the development and commercialization of energy storage technologies.

Focusing on [TOPIC]:

[REPEAT QUESTIONS D1-D3 FOR TOPICS THAT EXPERT WORKS WITH]

D1. Can you describe where [TOPIC] is in terms of development? [Is it already commercialized, is it still in bench testing?]

Probe: What is the next step?

Probe: Who are the primary players? What partners do you work with?

D2. I would like to hear your thoughts about the most significant barriers for [TOPIC] to move to the next stage of development? Specifically...

D2a. What technical challenges do you foresee? How can they be overcome?

D2b. What economic challenges do you foresee? How can they be overcome?

D2c. What informational challenges do you foresee? How can they be overcome?

D2d. What institutional challenges do you foresee? How can they be overcome?

D2e. Of the challenges you just mentioned, which do you see as the most significant barrier for [TOPIC] to move to the next stage of development?

D3. [IF NECESSARY] What additional services or factors are important to overcome these barriers within [TOPIC]?

**Probe:** Funding? Access? Knowledge? Skills? Political will?

**Probe:** Who is addressing them? Are there gaps? Can NY-BEST help?

**Probe:** Particular collaborations?

D4. We are hoping to reach leaders and experts, like yourself, in energy storage for our research. Are there specific individuals or groups who you would consider to be leaders in this area?

**Probe:** Any others? Specific to helping NY-BEST?

### Section F: Future

I'd now like to move away from your specific area of expertise, and talk about the energy storage industry in general.

F1. In your opinion, what do you think is next for energy storage? (Big picture)

**Probe: Follow interviewee's train of thought to explore the answer in more depth.**

**Example questions:**

New innovations, opportunities, challenges, strengths/weaknesses, threats

Why is this important?

How might this happen?

Who needs to be involved?

What do these individuals/organizations need to do in order to see this change come to fruition?

What will the consequence be if this does not happen?

### Section A: NY-BEST

A1. Are you familiar with NY-BEST [New York Battery and Energy Storage Technology Consortium]?

[IF NO] The New York Battery and Energy Storage Technology Consortium (NY-BEST) was organized to **help position New York State as a global leader** in the energy storage industry. They primarily **focus on storage applications in** electric grid, transportation, and power electronics. It has about 130 members that are a diverse group of energy-storage related companies.

A2. [SKIP If expert is NOT familiar] What are your experiences with NY-BEST?

**Probe:** Are you an active member of NY-BEST? How often do you participate in NY-BEST-related conversations or events?

**Probe:** What type of guidance or assistance, if any, have you provided to NY-BEST? And vice-versa?

A3. [If expert is familiar] In your opinion, how does NY-BEST fit in the energy storage industry?

[If expert is NOT familiar] In your opinion, how would an organization like NY-BEST fit in the energy storage industry?

Probe: What advice to you have for NY-BEST? How can it further promote energy storage in New York State?

Probe: In your opinion, what does NY-BEST need to do to be seen as a leader? With what organizations should it collaborate?

**Probe:** How do other groups or individuals that promote battery storage technology try to influence the market? What do they do? To what extent have these approaches been successful?

## Section X: Closing

X1. Is there anything that we did not discuss today that you think is important to share?

X2. Those are all of the questions we have for you today. Thank you very much for your time.

## B.3 Peer Organization Interviews

EMI Consulting developed a peer organization topic guide with input from NYSERDA. The full survey instrument is listed below.

The peer organization interview was designed to be a medium length interview (30 – 60 minutes) to collect information about how the peer organization operates, how it has changed over time, how the organization assesses its progress, what kind of performance the organization is achieving, what other organizations it considers “peers,” and what organizations it looks to for operational guidance.

The interviews were designed to be free flowing but guided by a topic guide to allow flexibility for the interviewer to gather feedback from many different types of respondents.

### Interview

Thank you for agreeing to participate in our peer review research for NYSERDA and NY-BEST. Do you still have about half hour to an hour to talk? [IF YES, CONTINUE. IF NO, DECIDE WHETHER TO PROCEED OR RESCHEDULE] Great! Thank you.

During our interview today, I would appreciate learning about a few things:

- How your organization operates

- How you would define successful consortia focused on market transformation
- How you design a good exit strategy or transition plan
- What lessons you have learned thus far that might be helpful for NY-BEST.

To ensure the accuracy of our notes, we would like to record the conversation. The recording will stay with EMI Consulting. Is it okay if I record this call? [IF YES, BEGIN RECORDING.]

Great! I will summarize what you share with me today along with feedback from other organizations participating in this study, but it is possible that NYSERDA or NY-BEST may be able to tell which organization made particular comments. As such, I cannot promise to maintain full confidentiality. Do you have any questions before we get started?

I have a set of questions to guide our conversation today, but please feel free to discuss what you think is important to understand about how your organization works and lessons learned, too.

### Section A: Organizational Goals and Structure

First, let's talk about your organization's goals and how it is structured.

A1. What are the goals of [NAME OF CONSORTIUM/TRADE ORGANIZATION]?

Probes:

Types of goals (a) type of leadership role it has/wants in its industry, (b) path to be self-sustaining organization, (c) emphasis on particular social, political, or technological issue, e.g., GHG reduction, job development/enhancement, market transformation.

How organization has changed over time. Have goals also changed?

Geographic focus of goals

A2. What types of organizations or individuals participate in [NAME OF CONSORTIUM/TRADE ORGANIZATION]?

A3. How is [NAME OF CONSORTIUM/TRADE ORGANIZATION] structured?

Probes:

Types of leadership roles, staff roles, membership roles, voting/member input mechanisms, etc.

A4. What types of activities, services and/or benefits does [organization] offer to members? [Probe for activities we are aware of through background research]

A5. How did the organization get started?

Probes:

Year founded

Funding sources used to start operation

Funding sources used to continue operation

Amount of membership dues past, present, future

Portion of funding from dues past, present, future

- A5.a. Are the funding sources sustainable?  
Is the organization self-sustaining (for example, is it fully funded through membership dues and other self generated forms of revenue)?
- Probes:  
If yes:  
How long did it take to become self-sustaining?  
What steps did the organization take to become self-sustaining?
- If no:  
Is becoming self sustaining a goal?  
If yes: When do you expect the organization to become self-sustaining?  
What steps is the organization taking [or planning to take] to become self-sustaining?
- A6. What other organizations would [NAME OF CONSORTIUM/TRADE ORGANIZATION] consider to be a peer?  
Do you recommend that we talk to any of these peers?

### Section B: Member Activities and Communication

- B1. How does [NAME OF CONSORTIUM/TRADE ORGANIZATION] offer support for members to grow or improve their businesses?
- Probes:  
Funding mechanisms,  
Business or technical advising,  
R&D support and testing,  
Marketing guidance
- B2. How, if at all, does [NAME OF CONSORTIUM/TRADE ORGANIZATION] help its members network with each other and others in the industry?
- Probe:  
Activities, e.g., targeted introductions, workshops, industry partnerships  
Most successful means of networking its members/participants and why
- B3. How does [NAME OF CONSORTIUM/TRADE ORGANIZATION] influence policy or working groups/task forces?
- B4. How does [NAME OF CONSORTIUM/TRADE ORGANIZATION] communicate with...
- B6a. Members?  
B6b. Stakeholders?  
B6c. Policy makers?
- B5. Which activities and services offered to your members do you consider most valuable or highest priority? In other words, if you had to make a choice, which activities would be first on your list?



### Section C: Criteria of Successful Consortia

- C2. What have been the most successful and/or innovative strategies for [NAME OF CONSORTIUM/TRADE ORGANIZATION] to achieve its goals? Are there any specific examples?
- Probe:  
Why was the [NAME OF STRATEGY] successful?
- C4. What has [NAME OF CONSORTIUM/TRADE ORGANIZATION] done in the past to improve member satisfaction?
- Probe:  
How successful was the effort?  
How did you know it was successful?
- C5. What are the biggest challenges to meeting the [NAME OF CONSORTIUM/TRADE ORGANIZATION]'s goals?
- C6. What metrics does [NAME OF CONSORTIUM/TRADE ORGANIZATION] use to track its success?
- C6a. What does [NAME OF CONSORTIUM/TRADE ORGANIZATION] *not* track perhaps because it was tracked in the past and was found unhelpful?
- C7. How does [NAME OF CONSORTIUM/TRADE ORGANIZATION] solicit feedback, if at all, from its members?
- C8. What, if any, other organizations does [NAME OF CONSORTIUM/TRADE ORGANIZATION] look to for operational guidance?

### Section D: Exit/Transition/Evolution Strategy and Lessons Learned

- D1. What is the organization's plan for transitioning out of the market or changing the scope to evolve with market changes?
- [IF FURTHER EXPLANATION IS REQUIRED:] For example, say your organization is approaching its goal to do [NAME ONE OF THE ORGANIZATION'S GOALS]. What will the organization do next? How will the organization change, evolve or, perhaps even shut down, at that point?
- D2. What lessons can other programs, particularly those with a similar consortium element, learn from your efforts?
- Is there anything we have not discussed that you think would be particularly helpful for NY-BEST?
- Thank you. Those are all the questions I have today.  
[THANK AND TERMINATE]

## B.4 Data Analysis

EMI performed data analyses using the following methods:

**Member Survey:** To analyze the member survey data, analysts created summary statistics and cross-tabulations to identify any group differences among the responses and coded open-ended responses using emergent themes.

**Expert Interviews:** Analysts entered the expert interviews into qualitative data analysis software (NVivo) and coded the interviews using a combination of pre-determined and emergent codes. Analysts tallied and categorized the codes to summarize the types of responses given.

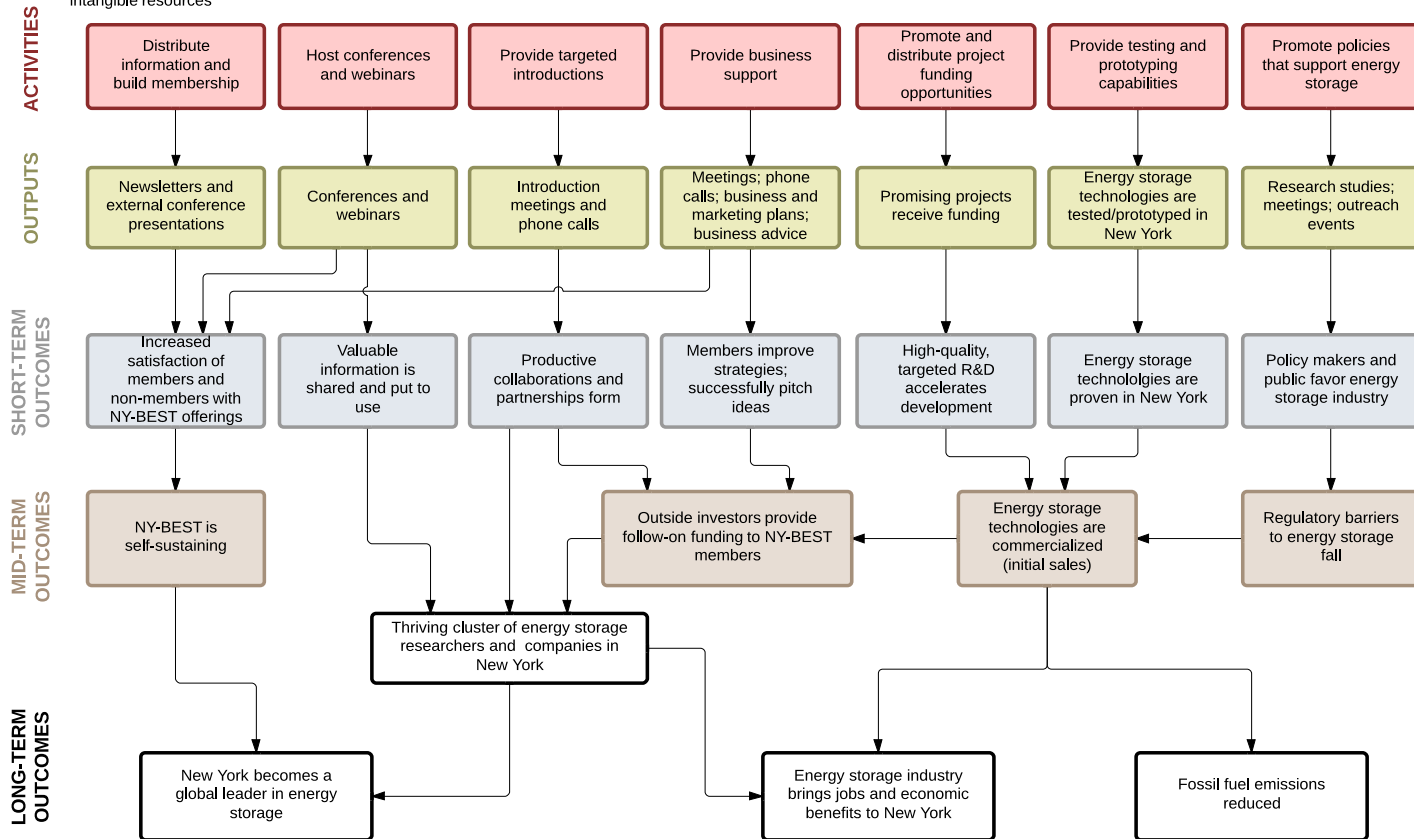
**Peer Review Interviews:** For the peer review interviews, analysts coded the interview notes using the “Comments” field in Microsoft Word.

Analysts tallied, categorized, and summarized the coded data. Analysts then synthesized the information under the relevant research questions.

## Appendix C: Logic Model

### NY-BEST Consortium

**Resources/Inputs:** CAIR/NYSERDA funding, other public funding, NYSEDA staff, NY-BEST operations staff, private sector investors, energy storage researchers, universities, trade associations, and intangible resources



**External Influences:** Economic conditions, other energy models, utility support, global energy storage development