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Battery and BESS Supply Chain Risk Mitigation Strategies for Developers, Investors, Lenders, and Subsequent Owners

By Christopher T. Demet, S. Kris Agarwal, Eric Pogue, Archie Fallon, Dale Smith, Amanda Rosenberg, Rachel Hudson and Niko Letsos*

This article discusses certain supply chain risk mitigation strategies from the perspective of a battery energy storage systems project's various stakeholders.

There are risks inherent in battery energy storage systems (BESS) supply chains to which U.S.-based BESS project developers are subject. Those include access to critical components required for augmentation given limited sources of supply, price risk for augmentation components, and the possibility of new or altered tariffs affecting the supply chain. Such factors can impact a project's ability to timely augment within budget, which could in turn impact a project's ability to meet its contractual obligations with respect to guaranteed performance metrics (e.g., BESS availability, capacity, and round-trip efficiency) or the project's ability to generate enough cash to cover expected distributions or loan payments. This article discusses certain supply chain risk mitigation strategies from the perspective of a BESS project's various stakeholders.

MITIGANTS FOR PROJECT DEVELOPERS – INCREASING SUPPLY CHAIN RESILIENCY AND MANAGING RISKS VIA CONTRACT, SUPPLY AGREEMENTS, AND BESS PERFORMANCE MANAGEMENT

Project developers are often keenly aware of the risks present in the BESS supply chain and take steps beginning early in the project development cycle to mitigate such risks. Diversification of supply chains is one key strategy for such mitigation. Avoiding one-country-sourcing and having multiple supply options, to the extent possible, will provide redundancy such that a developer can quickly pivot if any one supplier encounters delivery constraints. Sourcing materials from multiple regions and suppliers, exploring substitute raw materials, and investing in recycling technologies are all part of the developer's risk mitigation tool kit. We expect these strategies to become even more important in the future.

Project developers can mitigate BESS augmentation supply chain risks within the actual design of the project itself. A project can adopt an overbuild

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strategy whereby the BESS is designed from the start to achieve more storage capacity than it needs to meet its contractual performance obligations, taking into consideration the expected degradation rate. Although an overbuild strategy will increase upfront costs for a project developer, it will mitigate the risk that future buildout is impacted by the unavailability of labor or equipment or other types of supply chain disruptions. Any BESS projects financed with debt or a tax equity investment may require cost certainty throughout the project's operating period such that the additional upfront cost associated with overbuilding is justified. An overbuild strategy may also allow the BESS to more efficiently utilize all tax credits attributable to the project. The investment tax credit for the project is claimed in the year that the project is placed in service. Originally sizing the BESS to be large enough to not require future augmentation means the full investment tax credit can be claimed in year one of operations. Additionally, for projects utilizing tax equity, the tax equity investors may not permit investment tax credits to be claimed on battery augmentation costs, as doing so could extend the recapture period and impact the tax equity investor's realized return timeline.

A developer can also contractually lock in future prices of certain BESS components in its supply contracts required for future augmentation, repair, or replacement. Such a strategy will only protect the project from price increases associated with constrained supply of such components, not unavailability of such components.

Whether to undertake such strategies will require a careful review of the projected supply chain dynamics, cost projections regarding augmentation, and expected degradation of the BESS, in each case during the relevant time periods (i.e., the project's useful life, the duration of any availability and capacity obligations under the BESS's offtake arrangements, and the respective lengths of distribution and repayment obligations to project lenders and investors).

Developers may be able to leverage their commercial partnerships to mitigate pricing risk associated with supply chain risks, and contractually move such risk away from the project. Valuable insight can be gained by working with construction and operation period contractors who have strategic partnerships with Tier 1 suppliers. In BESS supply agreements, the project can seek to push a portion of the risk of pricing fluctuations for augmentation to the supplier, along with tariff and duty compliance obligations, which can protect the project from increases in tariffs and duties. Developers may also look to hedging arrangements to protect against price fluctuations.

In addition to future BESS augmentation, supply chain issues can affect a developer's ability to maintain the normal course operating and maintenance condition of the system. Developers can mitigate the supply chain risks to

continuous operation and performance of the BESS by utilizing inventory management systems, establishing strong relationships with suppliers, incentivizing operations and maintenance employees, and partnering with reputable, experienced, and creditworthy service providers.

Further, the developer may negotiate for contractual guarantees from service providers of BESS availability, round-trip efficiency, capacity or other performance metrics, subject to liquidated damages in favor of the project for underperformance. Such a structure aligns the developer's and the service provider's motive with respect to BESS performance insofar as the service provider is financially incentivized to achieve the performance thresholds to avoid paying monetary damages. Performance guarantee thresholds and liquidated damages for failure to meet such levels should be aligned with any (i) contractual performance obligations and "failure to perform" penalties that may be due to BESS offtakers, and (ii) modelled revenue and cost projections for project financing or tax equity structuring.

MITIGANTS FOR TAX EQUITY AND CASH INVESTORS, PROJECT FINANCE LENDERS, AND SUBSEQUENT OWNERS – ASSESSING AND ALLOCATING BESS SUPPLY CHAIN RISKS

Investors, lenders, and potential acquirers of the BESS will conduct due diligence of the relevant supply chain risk exposure to quantify the risk of future unexpected cost increases in light of the operations and maintenance and, if applicable, augmentation costs assumed in its projections. The diligence process should consider any mitigants implemented to reduce or eliminate such risk and should include:

- Analysis of the BESS budget and cost estimates for repair and replacement of BESS components and, if applicable, battery capacity augmentation. Estimated augmentation, repair, and replacement timelines should take into account operating parameters, if any, included in the project's offtake, supply, and service agreements. Such timelines and cost estimates may also be reviewed by an independent engineer and/or technical consultant.
- Analysis of the project's obligations with respect to guaranteed performance metrics (e.g., BESS availability, capacity, round-trip efficiency), and any corresponding backstop guarantees provided to the project from suppliers (e.g., warranties) and operation and maintenance service providers.
- Analysis of contract provisions in agreements with suppliers and construction, operation and maintenance service providers relating to the payment of tariffs and duties, including with respect to changes in

applicable tariff or duty rates.

- Analysis of contract provisions in agreements with suppliers and construction, operation and maintenance service providers allowing for suspension of performance for force majeure events that could cause delay, cost increases, or other supply chain disruptions for BESS augmentation or component repair or replacement. Force majeure provisions that may benefit the project should be analyzed as well, such as events that would suspend a BESS's guaranteed performance obligations.

Investors, lenders, and potential acquirers may also mitigate the cost associated with supply chain risk pursuant to contractual protections from third parties in favor of the BESS or directly within the applicable investment, financing, or acquisition documents themselves. For example:

- If the developer does not have the benefit of guaranteed performance metrics from an operation and maintenance or other service provider, there may be a requirement that those be obtained, especially if the project has corresponding obligations to meet certain metrics under its offtake agreements, or to ensure assumed revenue or cost levels.
- Providing investors and lenders consent rights for the BESS to execute certain contracts (or amendments to existing BESS contracts), or requiring that certain contracts include specific provisions that are material to such investor's and lender's investment in the BESS. Investors and lenders may also require specific information and notice rights with respect to the BESS augmentation timeline and expected cost deviations.
- Requiring the BESS developer to solely incur all actual augmentation costs that are above a set percentage deviation from the projected augmentation costs (for the benefit of an investor) or to share in post-acquisition augmentation cost increases via a purchase price adjustment or similar mechanism (for the benefit of a subsequent owner).
- Requiring the project developer to be solely responsible for (to the extent not covered by third-party suppliers) any tariffs or duties attributable to BESS components (for the benefit of an investor) or to share in such costs post-acquisition via a purchase price adjustment or similar mechanism (for the benefit of a subsequent owner).

As with other factors that may increase project costs, decrease project revenues, or otherwise adversely impact a project's ability to generate sufficient cash to cover expected distributions and loan payments, investors and lenders

can mitigate the potential cost associated with a BESS project's supply chain risk by incorporating certain protections directly within the funding documentation. A good example of such mitigation is the increase in distribution amounts that are payable to a tax equity investor, typically triggered if the anticipated date on which the investor expects to receive a pre-set return amount is missed.