



Stirling BESS Open House

Public Q&A Document

The following questions were asked by attendees of the Stirling BESS Open House that was held on November 6, 2023 at the Stirling Rawdon & District Recreation Centre in Stirling, Ontario. Liberty Power is developing this 75-200 MW battery project for submission to the upcoming IESO LT1 RFP in December, 2023.

The event was attended by approximately 80 members of the public, and an open question and answer period was held with the project team from Liberty Power. The majority of these questions were answered in the room, with some additional details now added to these responses.

If there are additional questions, please visit the project website at www.stirlingbess.com, or email ontariobess@algonquinpower.com.

1. Is Liberty being sponsored for this project?

Liberty Power is a wholly owned subsidiary of Algonquin Power & Utilities, a publicly listed power and utility company with assets around North America. Algonquin owns approximately 4 GW of generation assets, and delivers gas, water, and electricity to approximately 1.2 million utility customers.

2. How do you determine this particular site? Why? Was it your first choice?

We are currently pursuing three projects for submission to the upcoming Long-Term 1 (LT1) Request For Proposals (RFP) with the Independent Electricity System Operator (IESO). We chose these sites based on the proximity to high-voltage transmission lines of 115kV and above, suitable land to permit building of the project with appropriate setbacks from noise receptors, communities, and Hydro One infrastructure, as well as feedback from the IESO on the ability to integrate into the grid.

3. If the project does not make it through the approval process, are you still on the hook for the lease?

We have a lease with a local landowner that provides the option to proceed with the project. If the project does not proceed, we would not exercise that option.

4. Are you definitely proceeding with the project if you win the bid? Does the community still have a say?

If we submit the project, and the IESO chooses our project to proceed, we would have a contractual obligation to proceed with the project, otherwise we would face significant contractual and financial penalties. We are engaging with the community before bid submission to allow the community to have a say. That being said, if we are awarded a contract, we will continue the community consultation after this point, and allow the community to give feedback and guide development of the project where possible.

5. Where does the electricity come from?

The electricity to charge the batteries will come from the grid as a whole, and no specific source or generator.

6. How do you know it takes 4 hours to discharge the batteries?

The project is being designed to this specification, per the rules and requirements of the IESO in the RFP.

7. Does 200 MW even make an impact?

Absolutely – this is the equivalent of powering many thousands of homes and businesses when the project is discharging. And this project is one of many that the IESO is procuring, which, when taken as a whole, will have a meaningful impact in meeting the grid’s peak demand hours, as designed by the IESO.

8. If you don’t have any batteries currently in operation, how do you know it’s safe?

There are many utility-scale battery projects in operation, some in Ontario, and many around North America and the world. Although Liberty does not have any operational sites yet, we are developing several projects right now, and will construct our first projects before this project would be built. We are working with experienced consultants, battery manufacturers, engineers, construction companies who have built these projects before. The Liberty team has experience entering new industries, as we started as a hydro developer before successfully expanding into wind projects, solar projects, and most recently renewable natural gas (RNG). Additionally, we will be building these projects in adherence with all relevant safety standards and guidelines.

9. How does our community benefit if we don’t know that the power is actually going into our community?

The community will benefit during the construction phase from the jobs created to build the facility, and the economic activities in the community related to construction. Additionally, Liberty will look to make donations and investments in the community, to show our commitment to being a positive member of the community, as we do in all of our projects.

10. Where are your headquarters?

Oakville, Ontario

11. Would you build a battery near your house?

As above, we look to site projects based on the proximity to high-voltage transmission lines of 115kV and above, suitable land to permit building of the project with appropriate setbacks from noise receptors, communities, and Hydro One infrastructure, as well as feedback from the IESO on the ability to integrate into the grid. Locations near any houses are to be avoided, as they would not adhere to the noise restrictions that the project will be subject to.

12. Can it be connected to a wind/solar farm?

This project is being designed as a standalone BESS project, per the requirements of the IESO's RFP. It will therefore not be connected to a wind or solar project.

13. What's the benefit of coming to this municipality rather than going to a solar/wind municipality?

As above, we look to site projects based on the proximity to high-voltage transmission lines of 115kV and above, suitable land to permit building of the project with appropriate setbacks from noise receptors, communities, and Hydro One infrastructure, as well as feedback from the IESO on the ability to integrate into the grid. Locations near any houses are to be avoided, as they would not adhere to the noise restrictions that the project will be subject to. Additionally, the requirement of this RFP is to site standalone BESS projects, so being adjacent to, or being constructed as part of, a wind or solar project would not be acceptable.

14. How much profit are you making from this?

Liberty Power will be participating in a competitive RFP process with the IESO, and therefore the expected profits or returns from this project cannot be shared due to the IESO's anti-collusion rules. However, the purpose of the competitive RFP process ensures that the most cost-effective projects are selected, minimizing the effects on ratepayers' bills.

15. What happens if Liberty goes bankrupt?

Liberty Power has a long-standing history, operating power projects in Ontario for around 35 years, and is not expected to face financial challenges like this. Regardless, it would be hard to speculate what happens in this situation, but the project once constructed would be a valuable asset, so it is likely the project would be taken over by another company and operated to the end of its expected life.

16. How many people will be employed? When building and when operational?

The project is expected to generate significant employment during construction, though exact job numbers are not available as the final construction contracts have not been finalized. We will be happy to share this number once it is available. Jobs during operations will be minimal, as the facility will likely not require on-site personnel.

17. How much will you pay in property taxes?

This estimation is currently underway with our consultants, and we will be happy to share an update once available.

18. Was this funded by our government?

The IESO is a provincial government run organization, and is the entity that will be signing contracts for the projects, and providing payments to projects. Additionally, the project is expected to make use of

the Federal government's Income Tax Credit availability to renewable energy and battery energy generation projects.

19. Why are you coming to small towns?

We chose our sites based on the proximity to high-voltage transmission lines of 115kV and above, suitable land to permit building of the project with appropriate setbacks from noise receptors, communities, and Hydro One infrastructure, as well as feedback from the IESO on the ability to integrate into the grid. Locating projects in or near urban centers would not allow us to achieve the noise limit restrictions, and set back a sufficient distance from residences and other buildings.

20. Did you present to council? Will you be presenting to council again?

We presented before Stirling-Rawdon Council on September 5th, and will be doing so again on November 20th.

21. What are the requirements in the RFP contract?

There are a number of requirements in the RFP contract. This contract is available to the public, and can be found on the IESO's website, at the following address: www.ieso.ca/en/Sector-Participants/Resource-Acquisition-and-Contracts/Long-Term-RFP-and-Expedited-Process

22. How do I say no to this?

Open Houses like the one we hosted is just one way of providing feedback on the project. You are also free to reach out to your Municipality, councilors, and Mayor, to make your voice heard.

23. If everything is approved, how do you know the manufacturers will be reliable?

We will be working with reputable manufacturers, consultants, and construction companies, with histories of successfully developing, building, and operating

24. How will Algonquin's large amounts of debt and the sale of renewables group factor into this?

We don't expect Algonquin's financial situation to influence the development of this project. Liberty is proceeding with all projects currently in development while the sale process continues. We believe that the value to a buyer of the company is in the projects we are developing, so are continuing our efforts as normal.

25. How will emissions be reduced from this?

Emissions reductions will be seen from this and other projects by considering the grid-level emissions of all forms of generation. While the IESO develops its own strategy for system management and dispatch, it is understood that the battery projects they are seeking in this RFP will be used instead of peaking facilities such as existing gas plants. Given the lower emissions involved in a BESS projects (the average

emissions of all sources of generation on the grid), than a gas plant, operating BESS projects would result in a net reduction in emissions at a grid level.

26. Have you factored in all the materials in the mining process in calculating the emissions reduction?

As above, emission reductions from the project will be seen by looking at the Ontario electricity grid as a whole.

27. How many years have you been in business?

Liberty Power, formerly known as Algonquin Power, was founded in 1988, meaning we have been in business for 35 years.

28. Who's asking you to build these?

The IESO is running a competitive RFP, and has asked developers to propose BESS projects in Ontario.

29. How are you making money from this?

The IESO will be providing a flat payment based on the installed capacity of the facility. Additionally, Liberty will make money on the energy arbitrage – the difference in the cost to charge the batteries and the amount received from the market when discharging. Additional, smaller income is expected from ancillary services. Finally, the project is expected to qualify for the federal government's Investment Tax Credit.

30. Why doesn't the government do it themselves?

We would not like to speculate on the government's reasoning for their strategy, but generally the IESO does not build generation facilities, instead they contract out to experienced developers of projects and purchase the power from them. We welcome you to submit this question to the IESO through their public question email address, found on the RFP website, so they can answer directly.

31. Did you have to send out notifications about the project? Many people in the community were not aware.

We did – the IESO required us to send out notifications to landowners adjacent to our project, which we did. Additionally, we sent out 2,890 notifications to all landowners within a several kilometer radius through regular Canada Post mail, informed the municipality, council, and the Mayor, and posted the notification of the open house on the Belleville Intelligencer website. We regret if there were some people who did not receive this invitation, and would welcome them to reach out to us with any questions at ontariobess@algonquinpower.com

32. What donations will be made?

If awarded a contract with the IESO, Liberty would look to make financial contributions to the community in the form of a community benefits agreement, as it does at other projects. We will work with the community and municipality to direct these funds most effectively.

33. How can we trust that you will not harm our community?

If awarded a contract, we will work with the community, the municipality, and developing and build the project according to all required by-laws, regulations, and laws to ensure the safety and success of the project, and the benefit of the community.

34. Does the battery use water cooling or air cooling?

Some Battery Energy Storage System (BESS) vendors provide cooling via air and others have a combination of liquid/air cooled systems in place. Whichever the methodology, it will be designed purposely to maintain temperature for the specific climate it will be deployed in.

35. Are these batteries like car batteries?

The only similarity between the car batteries and the project's batteries are that they both store and provide energy. Car batteries are typically lead acid batteries, whereas BESS uses lithium-Ion technology. They have very different chemistry and properties.

36. What is the life span of the batteries?

There are many variables that determine the life span of the batteries such as usage, temperature, cycles, etc. But with augmentation and good system management, the system will function for the 20-year contract period required. The batteries will have a useful life of 22 years or more, but like your cellphone battery, may eventually lose their ability to efficiently hold a charge as they get older.

37. What is the response time?

Specific response time is to be determine. However, the system responds to commands in milliseconds/seconds.

38. What are the raw materials being used in this project?

The project is looking to use LFP lithium-Ion technology. In terms of the actual LFP battery materials themselves, they typically use lithium, iron, and phosphate.

39. Where are the materials coming from?

At this time, we have not selected a vendor which will determine where the materials are sourced. The batteries are often manufactured abroad, but the completed BESS will be certified for use in Canada.

40. How long does it take to regenerate?

The battery system is being designed with the capability of discharging/charging for up to 4 hours.

41. Is the power going into our community exclusively?

It is difficult to determine where electrons are going. The energy is being exported into the local transmission line running by the project.

42. How do you dispose of the batteries?

The batteries will have to be sent to a recycling facility at the time of decommissioning. Currently there are many businesses working on the recycling of lithium, and we are hopeful that by the end of this project's life we will be able to recycle most of the facility.

43. What is the amount of power lost in the conversion?

Round trip efficiency depends on the equipment and vendors. Generally, can be fall anywhere between 85% to 92% efficient.

44. Will there be tingle voltage?

The project plant will have the necessary grounding studies and design the facility to eliminate any step-touch potentials.

45. How do you control the temperature in the facility?

The facility will have a sophisticated array of sensors and controls mechanisms for ensuring proper BESS temperature. Any overheating that has occurred due to minor glitches would be detected by the array of sensors installed throughout the system and would be addressed within seconds.

46. If there is a blackout, how is the battery cooled?

This will be determined with more detailed design. Some methods that can be incorporated are back-up batteries or using stored energy in the BESS system itself. Another advantage of LFP chemistry is that they are stable in a wide temperature range.

47. Power outages in this area have been from power lines being damaged from weather, sometimes for weeks. How will the battery stay powered in the event of a power outage?

The BESS will be in standby until the power outage is resolved.

48. How much of the electricity to you send to New York (or US)?

The project doesn't determine where the energy is going.

49. Do you have zoning?

Will require further discussion with the Township.

- Section 3.7.1 of the Official Plan notes that “utilities such as natural gas, telephone, hydro and related utility corridors are permitted in all land use designations without amendments” & “section 3.9.1.2 e) also states “Notwithstanding the above, all electric power facilities including all works as defined in the Power Corporation Act shall be permitted in all land use designations without requiring an amendment to the Plan.”

50. How will my farmland be protected?

There are provincial policies which aim to prevent the conversion of prime agricultural land to nonagricultural uses, but there are exceptions for critical infrastructure such as grid connected electrical facilities.

51. Has there been an environmental impact study for this project?

We are in the very early stages of planning and at this point we have completed internal analysis of the project site and surrounding area. We have retained a third-party subject matter expert to help us with the required studies. This project will need to abide by the Hydro One Class Environmental Assessment (EA) for Minor Transmission Facilities and will need to be approved by the Ministry of Environment.

52. How do you protect groundwater/ leach into the ground?

The BESS are closed loop systems and are designed to meet the highest health and safety standards, including the containment of any escaped liquids. The batteries themselves are thoroughly tested and driven to the point of failure by every manufacturer to understand, mitigate, and avoid the risk of this occurrence.

We do not anticipate any impacts to groundwater quality or quantity. As there are no mechanical or moving parts to a BESS, no vibrations are anticipated during the operation of the facility. In addition, the BESS would be designed to meet the highest health and safety standards, including the containment measures to avoid escaped liquids that could negatively impact groundwater. Ongoing geotechnical and hydrological studies, as well as the final battery electrochemistry and design, will help us properly assess and characterize the environmental risks, if any, to surface water features, wells, or any underlying aquifers.

53. Where is the nearest hazmat?

The nearest fire station is located:

- 2529 Stirling-Marmora Road Stirling, Ontario K0K 3E0 -- approximately 3 km from the proposed site

54. What is the decommissioning plan?

This is a plan to retire the physical facilities of the Project, including decontamination, dismantlement, rehabilitation, landscaping and monitoring.

55. How will you compensate if there is an environmental contamination?

We don't anticipate any risks of contamination. Each battery module is a closed loop system and designed to prevent any escaped liquids and is sealed to avoid any leaks. The specialized exterior containers also serve to prevent any fluids from escaping the system.

56. How will my livestock be affected?

Potential impacts to any nearby cattle are not anticipated, for the same reasons that human health and safety impacts are not expected.

Stray voltage is not anticipated, and only occurs when relatively small amounts of electricity “stray” from the system into the ground. In most cases, this risk can be minimized, if not entirely avoided, by proper design, construction, and regular maintenance, testing, and monitoring of the facility. Before coming online, the Project requires approval from the Ontario Electrical Safety Authority to ensure it is safe for humans and animals alike.

57. What happens if you don't pass the environmental assessments?

The project is required to pass the Hydro One Class Environmental Assessment (EA) for Minor Transmission Facilities and will need to be approved by the Ministry of Environment.

58. Can the batteries be recycled when you're done with them?

Yes, the batteries can be recycled when the facility is eventually decommissioned. Historically, the cost of battery recycling was too high to realistically consider this option. However, there are now lots of people and businesses working on the recycling of lithium and we're expecting that by the end of this project's life we will be able to recycle most of the facility.