



LS Power Comments on ELCC CIRs for Variable Resources

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About LS Power

LS Power is a development, investment and operating company focused on the North American power and energy infrastructure sector

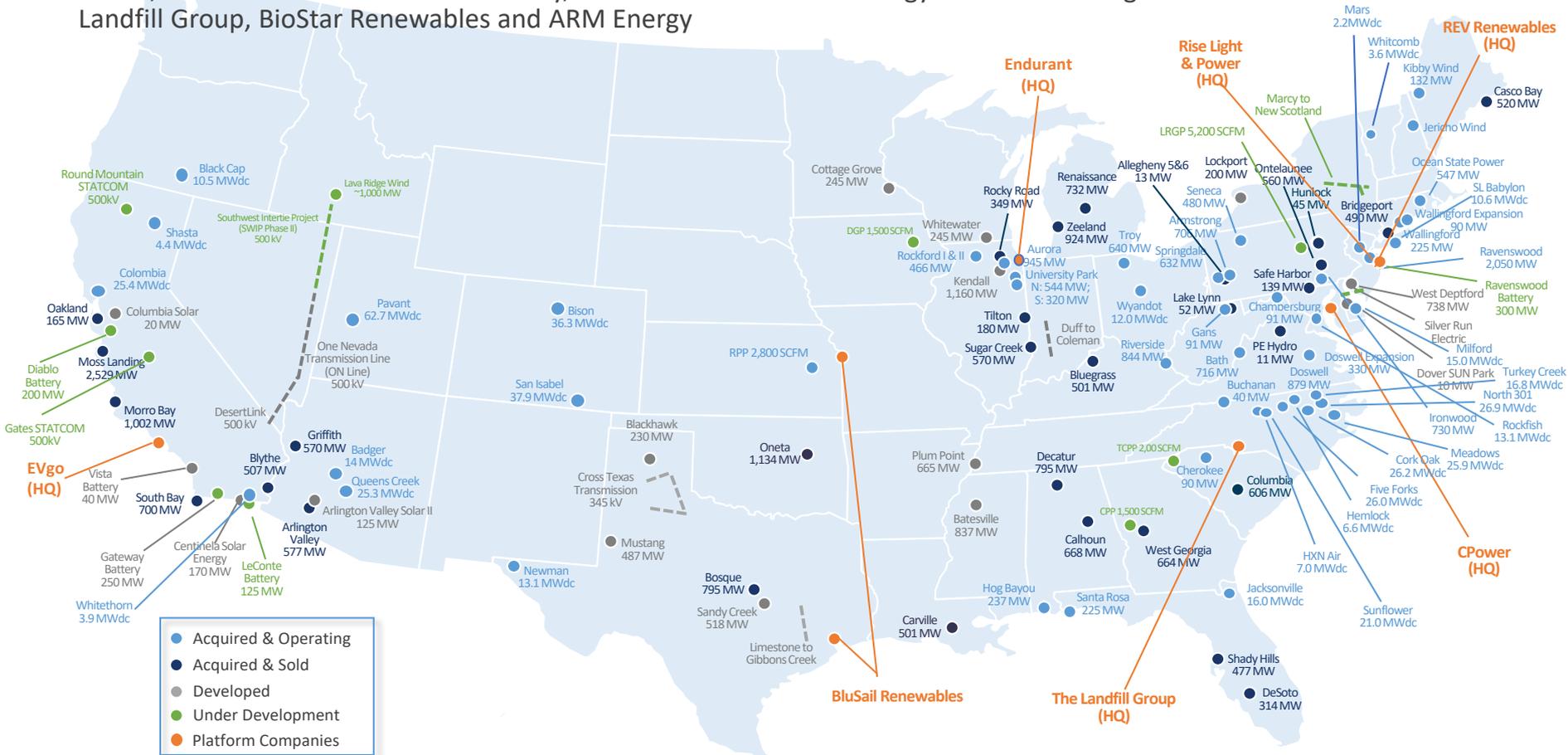
- Founded in 1990, LS Power has 280 employees across its principal and affiliate offices in New York, New Jersey, Missouri, Texas and California
- LS Power is at the leading edge of the industry's transition to low-carbon energy by commercializing new technologies and developing new markets.
 - **Utility-scale power projects across multiple fuel and technology types**, such as pumped storage hydro, wind, solar and natural gas-fired generation
 - **Battery energy storage**, market-leading utility-scale solutions that complement weather dependent renewables like wind and solar energy
 - **High voltage electric transmission infrastructure**, which is key to increasing grid reliability and efficiency, as well as carrying renewable energy from remote locations to population centers
 - **EVgo, the nation's largest public fast charging platform for electric vehicles** and first platform to be 100% powered by renewable energy
 - **CPower Energy Management**, the largest demand response provider in the country that is dedicated solely to the commercial and industrial sector
- Since inception, LS Power has developed, constructed, managed and acquired competitive power generation and transmission infrastructure, for which **we have raised over \$47 billion in debt and equity financing.**
 - **Developed over 11,000 MW of power generation** (both conventional and renewable) across the United States
 - **Acquired over 34,000 MW of power generation assets** (both conventional and renewable)
 - **Developed over 660 miles of high voltage transmission**, with ~400 miles of additional transmission under development

Utilize deep industry expertise as owner/operator

LS Power Project Portfolio

Extensive development/operating experience across multiple markets and technologies

- With over \$47 billion in equity and debt raised, LS Power has developed and acquired 120 Power Generation projects (renewable and conventional generation), 7 Transmission projects, and 5 Battery Energy Storage projects
- LS Power's Energy Transition Platforms includes CPower Energy Management, Endurant Energy, EVgo, Rise Light & Power, and REV Renewables. Additionally, LS Power has Waste to Energy initiatives through its Joint Ventures with the Landfill Group, BioStar Renewables and ARM Energy



ISSUE

- PJM continues to use a methodology that was implemented years ago, prior to the introduction of the ELCC that over-states the reliability contribution of Variable Resources
 - This magnitude of this error was not fully appreciated until PJM started to implement ELCC
- This over-accreditation forces load to buy excess MWs that provide no additional reliability to the system
- This over-accreditation overstates the amount of supply available in the BRA, which results in an under-payment of resources that are in fact reliable and capable of delivering all the MWs for which they were accredited
- The IMM has estimated that the impacts to the BRA clearing prices is ~\$200 million in the last BRA. The degradation of reliability was not considered

PJM and LS Agree on the End State Fix but not how to Transition

- PJM recognizes the issue and proposes to change the interconnection requirement methodology prospectively (the “End State”) to determine the peak deliverability and accreditation of Variable Resources, and
- PJM’s Transition Proposal is to utilize ~7,295 MW of currently unused transmission capacity (“headroom”) and to socialize another ~5 MWs of new transmission upgrades to increase the CIRs for existing Variable Resources which will then make the current accreditation correct
- PJM will also spend approximately \$180 million on new interconnection upgrades
- LS believes that PJM should no longer include in the BRA those MWs that are not deliverable UNTIL such the allocation of such headroom and upgrades has been formally approved (as deemed necessary) and implemented along with the associated assignment of financial responsibility
- Such end state does not necessarily resolve disagreements on the implementation of the status quo

PJM's Current Accreditation is Inconsistent with ISAs and the RAA

- The OATT, the Reliability Assurance Agreement and the ISAs must be viewed holistically
- They clearly state: “[t]o the extent that any portion of the Customer Facility...is not a Capacity Resource with Capacity Interconnection Rights, such portion of the Customer Facility shall be an Energy Resource”
 - That is, energy produced in excess of a resource's CIRs should not be included in the accreditation methodology (which it currently is through the use of averaging)
 - The energy in excess of CIRs as an Energy Resource is defined as “not Capacity” should be not be treated as is “output” under RAA Schedule 9.1 for accreditation
 - The salient issue is that PJM is interpreting its core documents to permit energy produced in excess of a resource's CIRs in the accreditation methodology on the basis that “output” is not defined in its core documents
 - LS believes that just because “output” is not explicitly defined, it must be given meaning consistent with the rest of the Tariff and ISA—Section 2.1a of ISAs, Schedule 9 and Schedule 10. This is basic Tariff interpretation.

Basic Example

- Thermal Resource A is awarded 100 MWs of CIRs. It can produce 110 MWs in the winter and 100 MWs in the Summer. Its accreditation is limited to 100MWs – the amount of CIRs it is awarded even if it produced (or could produce) 110 MW in every hour. (And it will be further derated in the conversion of its ICAP to UCAP based on its EFORd)
- Wind Resource B is awarded 13 MWs of CIRs. Currently all of its production, up to 100 MWs is included in its accreditation under ELCC, even though all output above 13 MWs is from an Energy Resource.
- PJM is proposing to “fix” this problem by allocating existing headroom and making some upgrades to enable Wind Resource B to deliver up to 38 (MAAC) or 54 MW (PJM West). This will be done prior to consideration of the requirements of any other resources in the queue.

Other Considerations

- The headroom (or related effective use of the transmission network) will essentially be taken away from the resources in the interconnection queue who could have potentially utilized the headroom to reduce their interconnection costs
 - The existing Variable Resources with ISAs are bumped to the front of the interconnection queue
- In addition, each executed ISA will need to be revised to reflect the increase in CIRs, with appropriate authorization as needed, e.g. a FERC filing
- In addition to the over-accreditation using the previous example, note the inequity if PJM allocates existing headroom (some of which Resource A may actually have helped create) solely to Resource B because of its fuel source.
 - PJM's proposal will in fact allocate ALL of this existing headroom to preferred resources instead of to all resources
 - This preferential treatment can be avoided if PJM instead follows its existing rules and requires the Variable Resource to pay for upgrades to make its output equal to its CIRs

LS Power Transition Proposal

- It is almost impossible to achieve the allocation of existing headroom/and or the build out of necessary upgrades in time to make the current accreditation correct for the June BRA
 - Therefore, the “virtual” MWs will continue to participate in the BRA causing the same impacts as discussed earlier
- Therefore, LS Power proposes that PJM immediately correct the over-accreditation of the Variable Resources to maintain the competitiveness of the June BRA and, given the timing concerns, likely the Dec, 2022 BRA as well
 - This means reducing each Variable Resource’s capacity offer by eliminating output in excess of its CIRs award from the calculation of its accreditation
- The accreditation can be restored -- e.g. increased, because the output would now be deliverable via the additional CIRs awarded -- if and when FERC accepts PJM’s proposed allocation/upgrade changes and PJM completes the allocation of transmission upgrades

PJM End State Proposal

PJM Proposal – End State

- “End State” is defined as the new methodology implemented for Variable Resources in the interconnection queue that do not have an executed Interconnection Service Agreement (ISA)
- PJM is proposing to change the deliverability methodology for Variable Resources (and other resource types that are not part of this discussion) as follows:
 - PJM now proposes to use the methodology as LS Power proposed in Package E where:
$$\text{CIRS} = \text{DELIVERABILITY}$$
- PJM will materially increase required level of CIRs (e.g. to 38% of MFO for wind in MAAC and to 52% in PJM West)
- New Variable Resources will pay for these upgrades, those with existing ISAs will receive the higher accreditation from existing headroom or upgrades without cost
- LS Power and PJM are in agreement with the “End State”