Forward Effective Load Carrying Capability

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Who Are We and What We do?

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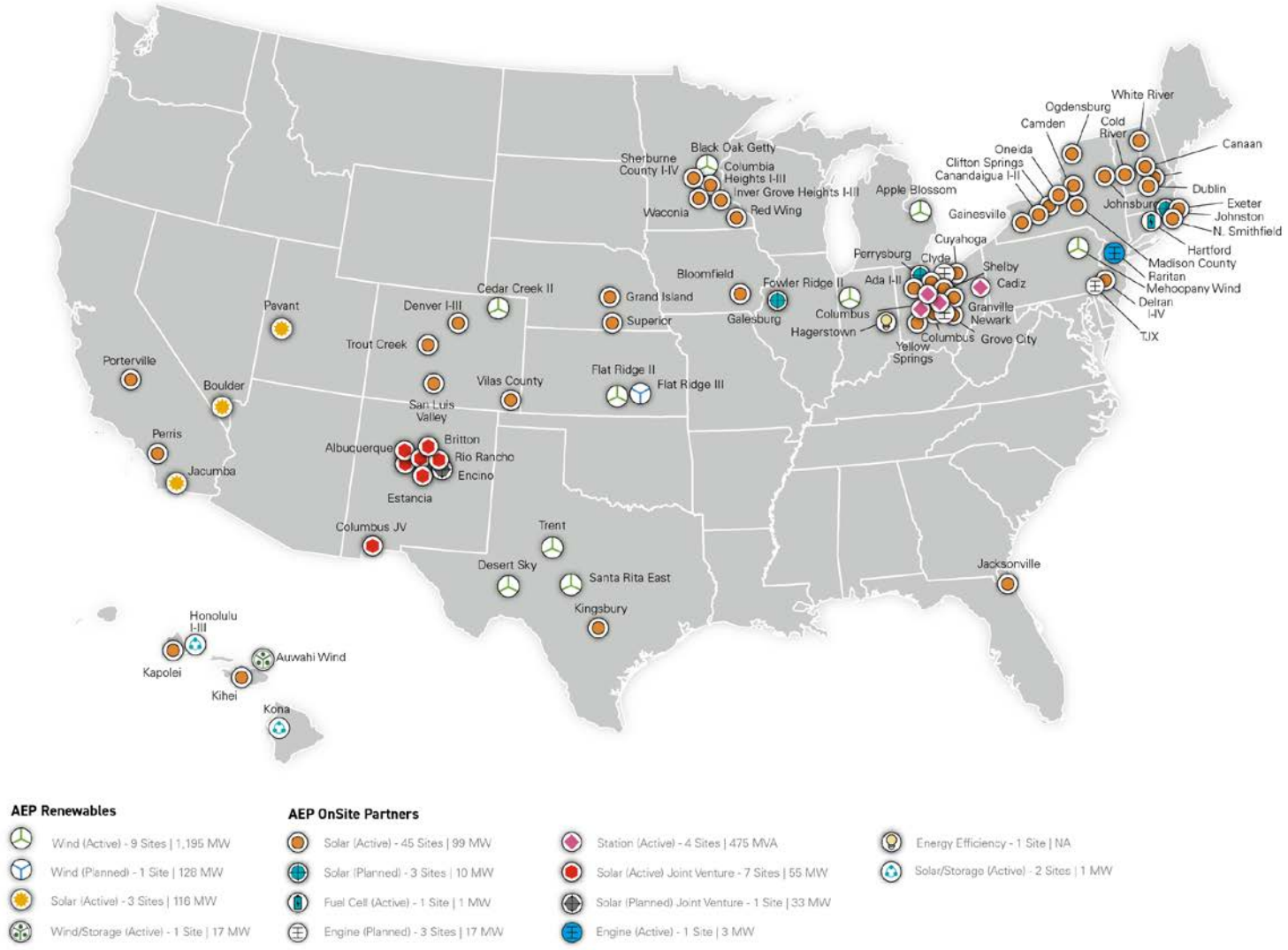

Our National Footprint

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Effective Load Carrying Capability (ELCC) implementation, in some regions, makes room for new resources by cannibalizing the capacity of similar, existing resources.

Is this fair or equitable?

Why should an existing resource that is otherwise operating perfectly and / or have its capability reduced simply to make operational room for new resources?

Solving Issues Common with ELCC

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From a customer's perspective,

ELCC is very difficult for long-term resource planning/contracts because the capacity value of your facility changes, even if you operated your facility perfectly.

A resource may need to procure additional interconnection capability (CIRs) that they had procured in the past, but was lost solely because of ELCC. We have seen periods in MISO where the ELCC value is reduced for years and then begins an upward trend.

Will I need to make transmission upgrades for capability that I already had in the past?

Solving Issues Common with ELCC

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Goal

The FELCC is utilized to send forward grid investment/operational signals for intermittent and storage resources, while maintaining the ability for interconnected assets, that operate well, to retain their capacity accreditations. Some refer to this being able to maintain your accreditation as a legacy/vintage concept.

How

This is accomplished by having a forward-looking, effective load-carrying capability become a static value for the resource at the time of their commercial operation date, or as it is able to offer into RPM. To be more specific, the FELCC during interconnection changes to a resource's initial Capacity Interconnection Right (CIR) and ICAP.

Benefit

This simple concept provides the benefit of not losing the investment value that customers/owners sought when constructing their resource(s). It will also send market signals that promote combinations of resources and longer duration resources that amplify reliability sooner.

Goal of a Forward Effective Load Carry Capability (FELCC)

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FELCC should utilize existing unit capability testing methods with as few changes as necessary.

The current 368-hour rule will be replaced with the equivalent hours associated with the FELCC and MW Block.

There should be transparency of the modeling process.

PJM's desire to modify modeling inputs should be part of a stakeholder review and feedback meeting(s). The modeling should be well documented. In addition, outcomes and all assumptions going into model should be published annually.

Characteristics of a Forward Effective Load Carry Capability (FELCC)

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ITEM	ELCC	FELCC
System-wide forward computation	Computes a system-wide value that represents the current effective load carrying capability for each type of resource.	A similar methodology for ELCC, however blocks of future capability are estimated for new resource types.
Distribution of system-wide computation to resources within PJM	Socializes the detrimental or incremental value from the ELCC computation to all existing and new resources of that type.	Not applicable.
Impact of applying ELCC value to existing resource	Most resources will have their capacity accreditations impacted, especially as many additional resources interconnect.	None. The FELCC value does not impact an interconnected unit, as its CIR has already been established.
Effective Load Carrying Capability	Changes for all resources.	The FELCC is only utilized for resources as they interconnect to determine an initial CIR value.
Impact to Capacity Interconnection Rights	When the ELCC value changes, your CIRs may change.	None.

The Differences

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TOPIC	HOW	BENEFIT
Expected accreditation values for future resources	PJM would compute blocks of incremental MW values and the expected accreditation value if the resources goes into commercial operation within that applicable range of grid capability.	Informs the investor of the initial and a maintainable accreditation for the life of the asset if the resource performs to PJM tariff and operational manual expectations.
Publishing of future values	PJM will post and update the expected FELCC values and the range of capability.	Resource builders will be able to anticipate values of FELCC at the time of their expected commercial operation
When can I be guaranteed a certain FELCC value?	PJM will track the date of interconnection request and the capability of the grid to handle the resources. The accreditation value is only locked in when the resource achieves commercial operation or is eligible to offer into RPM.	Resources will have incentive to not wallow in the queue.

So How Could It Work?

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RESOURCE TYPE	ICAP (MW) AMOUNT ASSOCIATED WITH EXPECTED FELCC	EXPECTED FELCC (%)	ASSOCIATED CAPABILITY HOURS
Battery (4 hour example)	1-10,000 10,001–20,500 20,501-30,500	95% 93% 91%	1400-1800 (June-August) 1400-1800 (June-August) 1500-1900 (June-August)
Tracking Solar	1-15,000 15,001-20,500 20,501-23,500	60% 58.5% 45%	1400-1800 (June-August) 1400-1800 (June-August) 1500-1900 (June-August)
Wind	1-10,000 10,001-20,000 20,001-30,000	15.5% 15% 14.5%	1400-1800 (June-August) 1400-1800 (June-August) 1500-1900 (June-August)
Battery (6-hour)/Traking Solar	1-10,000 10,001-20,000 20,001-30,000	100% 100% 96%	1400-1800 (June-August) 1400-1800 (June-August) 1500-1900 (June-August)

Public Display on PJM Website of FELCC Values

(all fictional values solely for illustration purposes)

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Are Interconnection process changes required?

Much like a PJM proposal, existing interconnection requests will maintain their status in the queue, but will be assigned a potential accreditation if constructed in a timely manner. Modifications to this concept may be considered.

I have an existing project in the queue. Will my existing interconnection queue 'accreditation' change due to the ELCC or FELCC?

Your accreditation will change regardless of an implementation of the PJM's desired ELCC or FELCC. However, upon commercial operation or posting of credit for RPM, your load carrying capability accreditation is locked in via the FELCC method and becomes your initial CIR/ICAP value.

What is the FELCC value goes up? What happens to my existing resource?

Any existing resource may request an interconnection modification for incremental CIRs that the grid may allow; just like today.

Questions And Answers

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I am in the current queue for interconnection. What if the FELCC value changes for a 'block' of ICAP for which I was a part of?

Once the FELCC values are computed, subsequent changes should not be a normal occurrence; however, the new value would override the value of FELCC at the time of you submittal for interconnection process. There may be some caveats that need to be discussed, but one should not expect material change.

What is the real benefit of the FELCC?

It sends appropriate investment/operations signals by showing how much of an incremental type of resources can be accommodated by the current grid. A resource owner need not worry that a FELCC value will harm its existing investment. It will also promotes longer-duration resources and hybrid combinations by showing the capacity accreditation values.

Questions And Answers

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So if I have a static CIR value, because my resource is now 'existing,' is my capacity value static?

No. Your unit must still perform over the relevant hours per PJM criteria. If you do not meet this standard, the amount of CIRs you have can be reduced over time, just as it can be today. Your UCAP value will continue to be utilized as the amount that is offered into RPM.

There are no performance adjustments or other modifications as a result of applying a system-wide ELCC to a resource-specific ELCC. This concept does not apply. Some said this is a "legacy" or "vintage" concept. ALL resources essentially have this today.

There is an argument that the ELCC encourages retirement of older resources as new resources are allowed to come into the marketplace at higher values. Is that true?

There is zero evidence to substantiate this claim. Resources will continue to retire after the equipment is in disrepair or market revenues can no longer support their operations. IF PJM wants to change values for resources just because they are older; they should do so for ALL resource types.

In fact, the opposite is true for FELCC, it will promote technology of longer duration and better reliability.

Questions And Answers

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Should we calculate ELCC values for all resource types?

PJM should be in a position to model ELCCs for any resource type, however, for resources that have no fuel or other operational constraints and can vary their operational output, one should expect an ELCC value close to 1.0, so we should be practical when suggesting evaluations be performed. It might be an interesting educational/academic concept to see how the model would compute these values.

What happens if the next model run of FELCC provides completely different results than the previous model run?

This should only occur if there was an error or if some unforeseen phenomena occurs. We suggest PJM have stakeholder meetings to discuss any changes in the model or inputs they would like to implement, prior to implementation. In addition, an annual report should be authored that describes the FELCC process, any trends and any possible concepts that may need to be considered in future model executions.

Questions And Answers

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Why not lock in the FELCC value at the time you get into the interconnection queue?

The amount of capacity of certain intermittent resource types that actually goes into commercial operation is much smaller percentage than the amount that exists in the queue. We did not want to contribute to this unfortunate outcome going forward by having resources lock-in values and then wait for funding or taking other delays rather than being built. We would support a queue reform process going forward.

Questions And Answers

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AEP Energy recognizes the value of accrediting resources properly to ensure the continuing reliability and evolution of the grid. Our package is a reasonable approach that ensures new technologies are incentivized and existing resources, that operate well, do not lose capacity accreditation simply because more resources are being built.

Summary

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Thank you.

Any Questions?

Flat Ridge Wind Farm