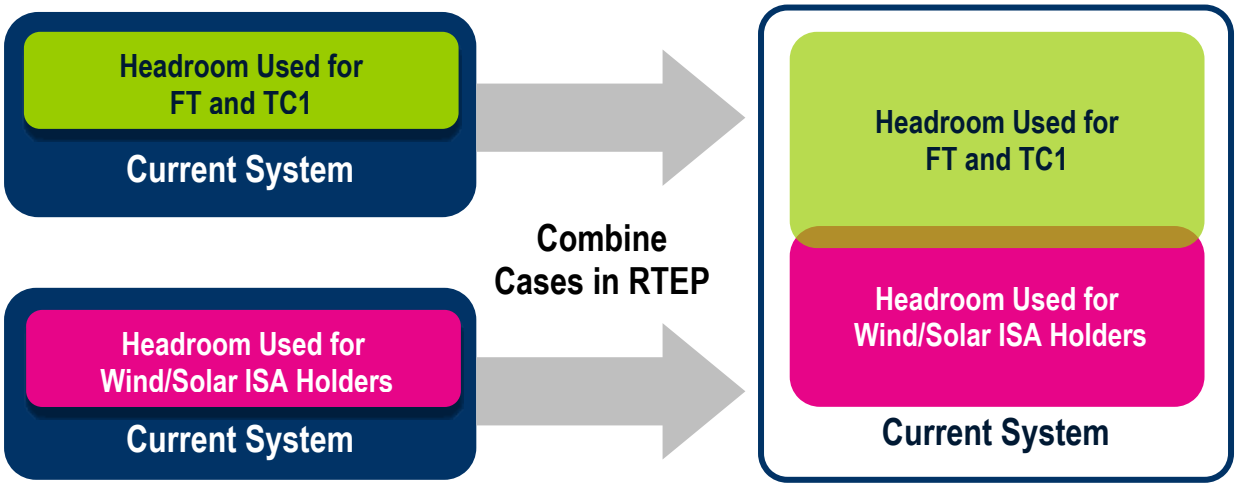
Transitional Costs to Load To Support CIRs for ELCC Resources Solution Packages

Transmission Costs to Load Under Packages D ~~& F~~

At the Feb. 23, 2022, special Planning Committee session on the topic of CIRs for ELCC Resources, PJM identified that the near-term transmission costs to load to immediately implement Package~~s~~ D ~~and F~~ would be approximately $7 M. The analysis performed to identify this transmission costs was in response to an allegation that existing intermittent resources were not deliverable. PJM demonstrated that existing resources are indeed deliverable, and that only approximately 5 MW of renewable generation with a signed Interconnection Service Agreement (ISA) that is not yet in service may not be deliverable under proposed, higher deliverability standards. $7 M is the estimated costs of transmission upgrades in the 2026 RTEP to increase CIRs for such approximately 5 MW of wind and solar resources with an ISA today under the proposed summer generator deliverability test for single contingencies. This analysis excluded any consideration of active queue resources that do not have an ISA.

At the May 19, 2022, special PC session, stakeholders asked PJM to quantify the longer-term costs to load that could result with the implementation of either Package D ~~or F~~. Longer-term costs to load result because Fast Track and Transition Cycle 1 queue studies will be run without the higher CIRs for wind and solar ISA holders that will be granted under Package~~s~~ D ~~and F~~. An overlapping of headroom could occur if/when Fast Track and Transition Cycle 1 queue projects become ISA holders and are combined with higher CIRs for preexisting ISA holders in the future RTEP.

Figure 1. Overlapping Headroom Allocation in Package~~s~~ D ~~& F~~ Results in $2 B Costs to Load



Example of long-term transmission cost:

- A 100 MW Maximum Facility Output (MFO) wind unit with ISA transitions from 13 to 38 MW CIRs and is included in 2023 RTEP
- A second 100 MW MFO wind unit in Transition Cycle 1 requests 13 MW CIRs at same location and it is studied under old RTEP assumptions along with the 13 MW CIRs from the first wind unit for a total of 26 MW CIRs at this location
- In Transition Cycle 2, the higher CIRs for the first wind unit are introduced, and there are now 51 MW CIRs at this location, 13 MW of which haven't been studied before and may ultimately require a baseline upgrade once the second wind unit signs an ISA.

PJM quantified these longer-term costs to load of not introducing the higher CIRs for wind and solar ISA holders until Transition Cycle 2 to be approximately $2 B.

- $4.7 B[1] network upgrades in the Transition Cycle 2 base case using the current generator deliverability test with existing CIRs
- $6.7 B network upgrades in the Transition Cycle 2 base case using the proposed generator deliverability test with higher CIRs for wind and solar ISA holders
- The net $2 B increase in network upgrades is driven by higher CIRs for wind and solar ISA holders that are not assignable to generators under Packages D and F so would become baseline upgrades.

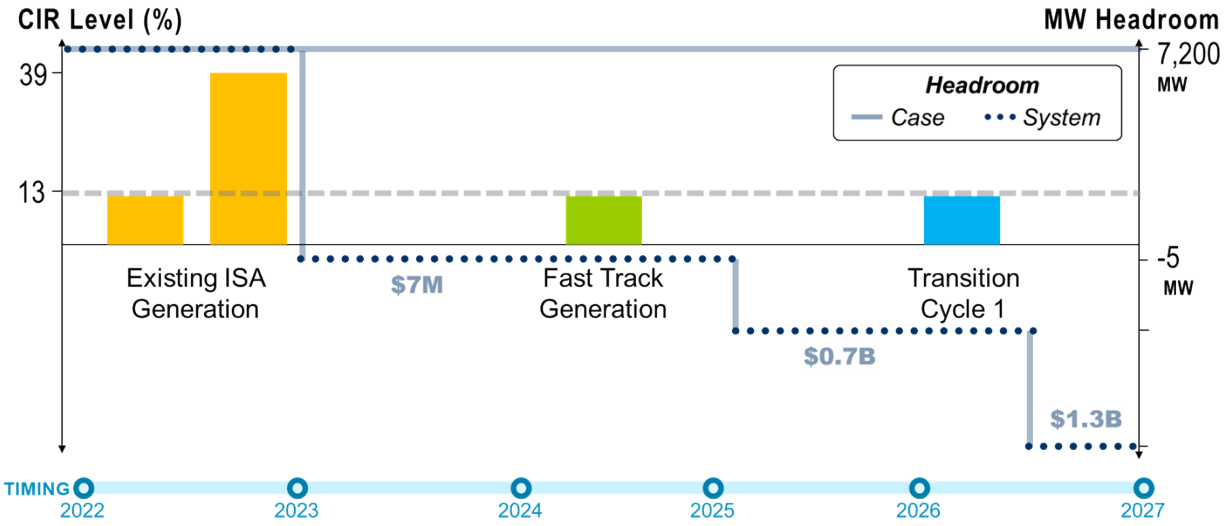
Note that the $2 B increase is impacted by the combination of several factors and assumptions:

- The selection of which queue projects in Fast Track and Transition Cycle 1 will move forward.
- The new summer generator deliverability test is approved.
- Higher CIRs are awarded to wind and solar resources that have ISAs.

Subsequently, PJM quantified this longer-term costs to load would be reduced from $2 B to $0.7 B by introducing the higher CIRs for wind and solar ISA holders in Transition Cycle 1 instead of Transition Cycle 2. Under this approach, this $1.3 B savings to load would be borne by Transition Cycle 1 resources as increased network upgrade requirements in their interconnection studies.

[1] The original estimate of $11 B has been revised to $4.7 B. The original estimate that PJM identified was based on overly conservative assumptions whereby all overloads, including terminal equipment limitations, required reconductor or rebuild of the circuit. The special PC June 24, 2022, presentation on study costs differences provides more background.

Figure 2. RTEP Headroom Change Over Time Under Packages D & F



1 | Status Quo/Near Term: 7,200 MW headroom in RTEP base case

2 | New Proposal/Near-Term: Wind and solar ISA holders use about 7,205 MW of headroom, and -5 MW headroom remains in RTEP base case after granting wind and solar ISA holders higher CIRs with $7 M to return headroom to 0 MW.

3 | Status Quo/Long Term: Headroom (has not been quantified) in RTEP base case after active queue projects sign ISAs and are included along with their network upgrades in the RTEP

4 | New Proposal/Long Term: Headroom (has not been quantified) in long-term RTEP base case after granting wind and solar ISA holder higher (approximately 7,200 MW) CIRs

- $2 B costs to load to return headroom to 0 MW if new proposal implemented in Transition Cycle 2
- $0.7 B costs to load to return headroom to 0 MW if new proposal implemented in Transition Cycle 1

Capacity Costs to Load Under Packages E, ~~& G~~, I and K

PJM estimates that there would be an approximately 1,300 MW reduction in UCAP value for wind and solar units with an ISA that would result by capping these resources at their current CIR level in the ELCC studies. (See May 19 special PC informational posting for CIR Impact on Wind & Solar UCAP Values for background on expected Class UCAP reductions as a result of this capping.)

PJM performed a 2022/2023 BRA sensitivity simulation with the removal of 1,300 MW of wind and solar UCAP across the RTO and determined that the incremental costs to load of replacing this UCAP would be on the order of $230 M for one year. If the transition period for these resources to obtain higher CIRs is five years, as would be the case under Packages E and G, then PJM estimates costs to load based on the 2022/2023 BRA sensitivity simulation to be on the order of $1.1 B for the transition period alone.

PJM subsequently performed an identical sensitivity simulation using the 2023/2024 BRA and determined that the incremental costs to load of replacing this UCAP would be on the order of $139 M for one year. This reduction in costs to load is due to the overall lower clearing prices in the 2023/2024 BRA. This reduction in costs to load would result in $0.7 B costs to load over a five-year transition period. It is important to note that this result is highly dependent on the assumptions, such as bid behavior and static year-to-year inputs, which were used in this assessment.

Comparison of Transitional Costs to Load Under Packages D, E, ~~F &~~ G, I and K

Considering both the transmission and capacity market costs over the estimated five-year transition period, Package~~s~~ D ~~and F~~ reflect~~s~~ a net $2 B costs to load if the higher CIRs for wind and solar ISA holders are introduced into Transition Cycle 2 and a net $0.7 B costs if they are introduced into Transition Cycle 1. The long-term benefits of the Package~~s~~ D ~~and F~~ were not quantified but are expected to be manifold due to the increased CIRs and access to wind and solar provided by the $2 B transmission.

These potential long-term transmission costs to load associated with Package~~s~~ D ~~and F~~ can be compared to the potential transitional capacity costs to load associated with Packages E, ~~and~~ G, I and K. Using the results from the 2022/2023 BRA, these capacity costs are expected to be $1.1 B, and using results from the 2023/2024 BRA, they are expected to be $0.7 B.

Table 1. Transitional Costs to Load for Solution Packages

	Transitional Costs ($B)		
Package	**Transmission**	**Capacity***	**Net**
D	$2.0	$0.0	$2.0
E	$0.0	$0.7	$0.7
~~F~~	~~$2.0~~	~~$0.0~~	~~$2.0~~
G	$0.0	$0.7	$0.7
~~H (New)~~	~~$0.7~~	~~$0.0~~	~~$0.7~~
I ~~(New)~~	$0.0	≤$0.7	≤$0.7
K	$0.0	≤$0.7	≤$0.7

* Based on latest RPM results

Appendix

Package	ISA Holders	Non-ISA Holders
D	Awarded higher CIRs without getting back in queue; the higher CIRs are introduced into TC2; transitional RPM headroom study	Need to get back into the queue for higher CIRs
E	Need to get back into the queue for higher CIRs	Need to get back into the queue for higher CIRs
~~F~~	~~Awarded higher CIRs without getting back in queue; the higher CIRs are introduced into TC2; transitional RPM headroom study~~	~~Limited-duration units can request higher CIRs at their existing queue position, but the rest of the queue projects need to get back into the queue for higher CIRs.~~
G	Need to get back into the queue for higher CIRs	FT resources can request higher CIRs and get bumped to TC1, but the rest of the queue projects need to get back into the queue for higher CIRs
~~dH (New)~~	~~Awarded higher CIRs without getting back in queue; the higher CIRs are introduced into TC1; transitional RPM headroom study~~	~~Need to get back into the queue for higher CIRs~~
I ~~(New)~~	Need to get back into the queue for higher CIRs; transitional RPM headroom study	Need to get back into the queue for higher CIRs
K	Same as Package I except PJM Board will submit separate Section 205 filing with FERC to remove Energy Resource energy	Need to get back into the queue for higher CIRs