Emerging Strawman for a 7-year Guaranteed Floor on ClassELCC% Values

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PJM Supports an ELCC Transition Plan

- All resources in the Capacity market face risk of uncertainty in the future resource mix:
  - What will competing offers be.
  - What operating profits does a resource expect in the energy and ancillary services markets.
- Nonetheless, ELCC newly quantifies a distinct type of uncertainty related to the resource mix, namely “volume risk” in the amount of resource adequacy a resource can offer.
  - In light of hourly output limitations, ELCC correctly quantifies the dependence of resource adequacy quantities on the resource mix.
- ELCC represents a sea change relative to the status quo that could potentially be disruptive to the financing of competitive plants in the Capacity market.
- It is important to maintain competitive outcomes in the Capacity market, and so an orderly transition plan is warranted.

Stakeholders (and PJM) Prefer a Guaranteed Floor vs. Fixed ELCC

Strawman for a floor concept as transition plan:

1. All new resources that reach (or have already reached) the end of the Queue process between now and 2026 would get a table listing guaranteed (conservative) floor values for X delivery years. Any particular table would only be applicable to a given cohort—subsequent cohorts would get a slightly different table.
   - The relevant milestone at the end of the Queue process is the earlier of the following; the execution of an Interconnection Service Agreement (or Wholesale Market Participation Agreement), or fulfilling of the credit requirement for the BRA. In order to maintain the table of floor values prior to the execution of the ISA/WMPA, posted credit cannot be withdrawn at any point. If the site must be restudied, the table of floor values would also need to be reset.
2. The table of guaranteed floor values would span X delivery years starting with the first delivery year of operations (or, for existing resources, the first delivery year in which the ELCC policy applies).
3. Floor values could be calculated using a conservative adjustment to the deployment forecast (see below). All resources would therefore be expected to compete using the most recent ClassELCC% value calculated immediately prior to the start of the delivery year, not the floor value.
4. The guarantee would be "backed up" by subsequent cohorts of the same class of resources (see below).
5. As a transition plan, this policy would be revisited with stakeholders as part of the 2026 Quadrennial Review. All prior guaranteed would be honored for the remainder of their term, which could stretch as late as 2036.

Floor Example w/ **Hypothetical Results**: New Resource

- A new resource is in the Queue with an expected in-service date of March, 2023.
- When the resource signs an ISA in February 2021, it would receive the table of guaranteed floor values that would apply to all resources in its class that reach the end of the Queue process in that calendar year, as shown.
- With a 10-year forward term, the resource would receive 7 delivery years with guaranteed ELCC floor values (3 of the 10 years span the time from the BRA to the first delivery year of operations).
- The guaranteed floor values would be honored for the entire term regardless of the outcome of stakeholder discussions at the 2026 quadrennial review.

Delivery Year	ClassELCC% Floor
2023/24	64.1%
2024/25	61.7%
2025/26	59.0%
2026/27	56.0%
2027/28	52.6%
2028/29	48.7%
2029/30	44.4%

Floor Example w/ **Hypothetical Results**: Existing Resource

- An existing resource was built in 2017.
- In this hypothetical example, the first delivery year that the ELCC policy applies is delivery year 2023/24.
- On or before the start of the calendar year after the ELCC policy is finalized, a table would be published with guaranteed floor values that would apply to all resources in a given class that reach the end of the Queue process in that calendar year.
- This is the table of guaranteed floor values that would apply to existing resources (as well as new resources that already reached the end of the Queue process prior to finalizing the ELCC policy).
- The guaranteed floor values would be honored for the entire term regardless of the outcome of stakeholder discussions at the 2026 quadrennial review.

Delivery Year	ClassELCC% Floor
2023/24	64.1%
2024/25	61.7%
2025/26	59.0%
2026/27	56.0%
2027/28	52.6%
2028/29	48.7%
2029/30	44.4%

Floor Example w/ **Hypothetical Results**: New Resource in 2026

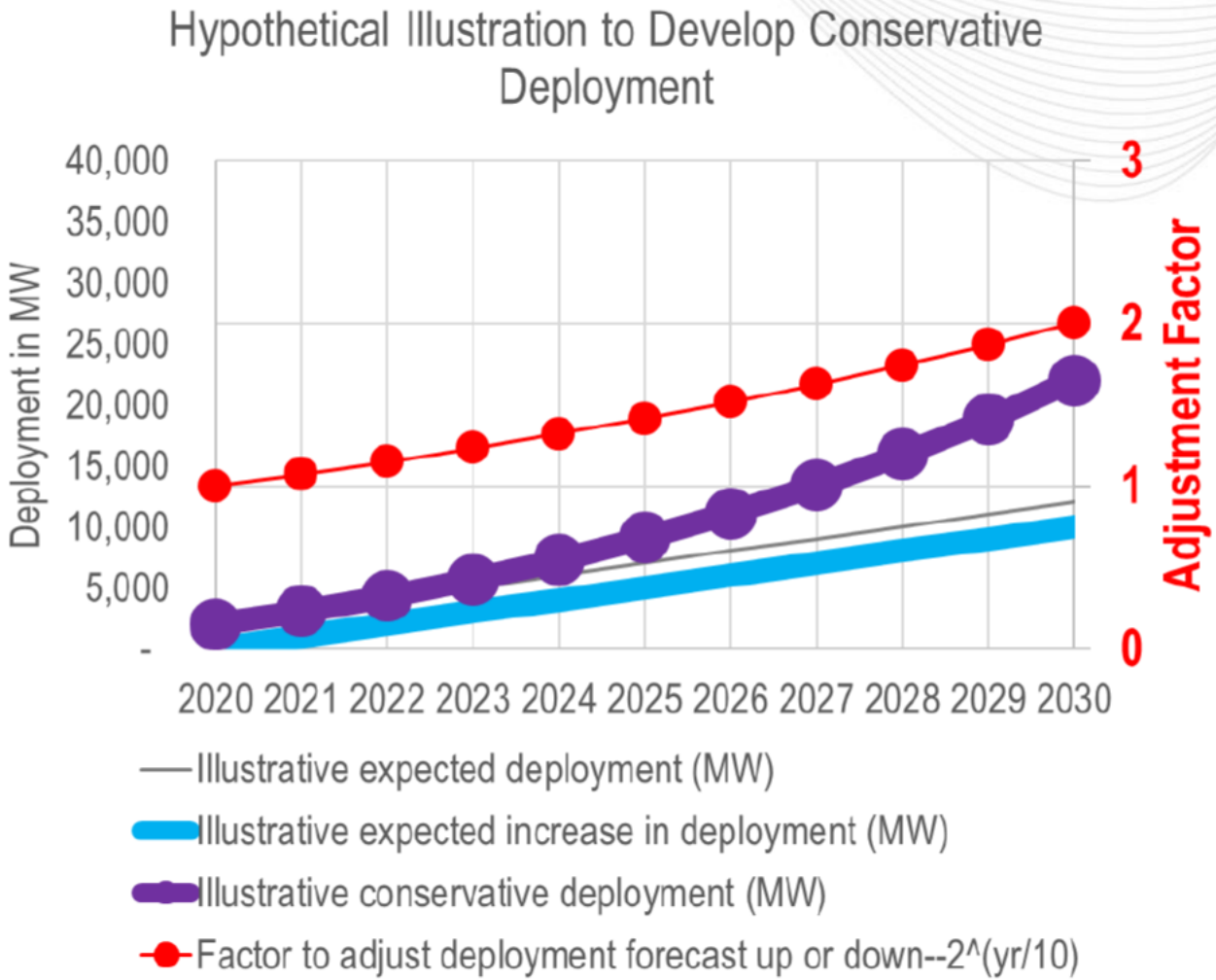
- A new resource is in the Queue with an expected in-service date of March, 2029.
- When the resource signs an ISA in February 2026, it would receive the table of guaranteed floor values that would apply to all resources in its class that reach the end of the Queue process in that calendar year, as shown.
- The guaranteed floor values would be honored for the entire term regardless of the outcome of stakeholder discussions at the 2026 quadrennial review.

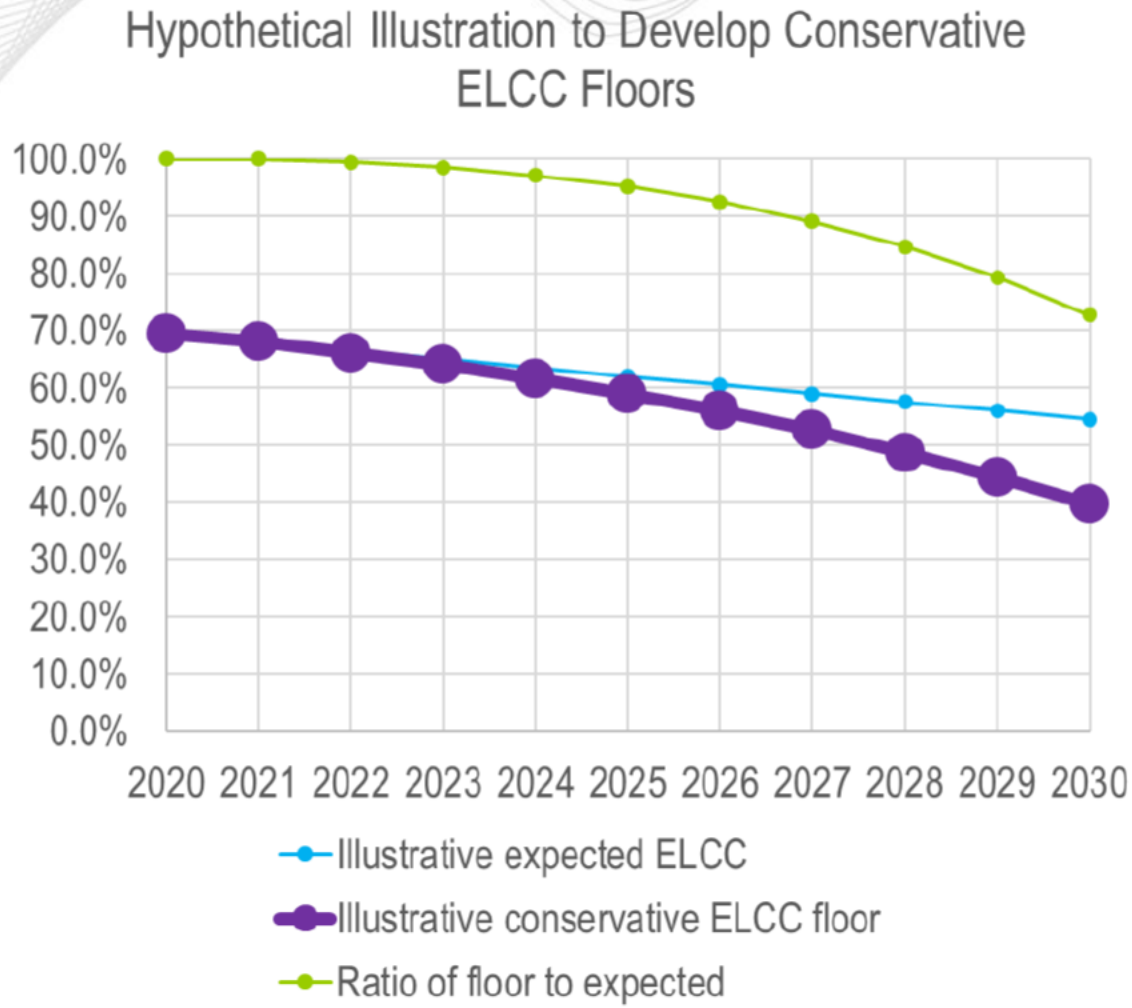
Delivery Year	ClassELCC% Floor
2029/30	45%
2030/31	42%
2031/32	39%
2032/33	36%
2033/34	33%
2034/35	30%
2035/36	27%

Floor Values Would Be Calculated Using a Conservative Adjustment to the Deployment Forecast

- In order to calculate floors for a target class, PJM suggests adjusting the deployment forecast for each class up or down **by a factor of 2 per decade**.
  - For example, if the solar deployment forecast predicts in increase of 10 GW in the next 10 years, the conservative forecast would assume an increase of 20 GW of deployment in 10 years.
- Because of interaction among classes, both the target class and the other classes need adjusted (either up or down) in order to develop a conservative value.
  - For example, to calculate a conservative value for solar, which is complementary with storage, the solar deployment forecast needs to be adjusted upward, while the storage deployment forecast needs to be adjusted downward.

1-Class Hypothetical Illustration of Floor values for Calculating Conservative Adjustments to the Deployment Forecast





Note on Above Illustration

- The above illustration is for a simple ELCC policy with only a single class, in which the ClassELCC% declines by 1.5 %pts per 1,000 MW of deployment, and deployment increases by 1,000 MW per year.
- This is for illustration only--none of these assumptions precisely reflect the real PJM ELCC model.
- To account for interactions among classes when calculating the conservative value for any one class, this strawman would adjust all classes up or down (as is most conservative).

1st draft ELCC results for solar for comparison

	Solar deployment (MW)	4-hr Storage deployment (MW)	Open and closed loop solar-storage deployment	Solar ClassELCC %
Scenario 1	7,000	0.4	0.6	64%
Scenario 2	11,000	0.9	1	58%
Scenario 3	16,000	1.5	1.6	49%
Scenario 4	22,000	2	2	40%
Scenario 5	31,000	3	3	33%
Scenario 6	40,000	5	4	27%

Note: in these scenarios, wind and other classes also change in deployment

https://www.pjm.com/-/media/committees-groups/task-forces/ccstf/2020/20200710/20200710-item-05-first-draft-prelim-ELCC-results.ashx

The guaranteed floor would be “backed up” by subsequent cohorts of the same class of resources

- In the expected outcome, floor values would not “bind”, and all resources would compete using the same value of ClassELCC%.
- In the event that a conservative floor is insufficiently conservative, some resources could compete using their guaranteed floor values, while others do not.
- In this case, the floor values are honored by lowering the reliability accreditation for subsequent cohorts of the same class.
  - That is, by lower the most recent ClassELCC% results for the class, as well lowering the guaranteed values listed in tables for new incoming cohorts.
  - This borrows a feature of the “vintage” of fixed ELCC approach.
- In this way, neither other resource classes nor load are directly affected by the guarantee.

Example of honoring a guarantee that “binds”

- ELCC model identifies that 20,000 MW nameplate of solar provides 10,000 MW UCAP of reliability.
- Ordinarily, all solar would therefore compete using a 50% ClassELCC%.
- However, 5,000 MW nameplate of solar has a guaranteed floor at 60%. Therefore, 3,000 MW of the solar reliability pool must be made available to those guaranteed resources.
- The remaining 15,000 MW nameplate of solar without a binding guarantee therefore share 7,000 MW of reliability, for a ClassELCC% of 47%.
- Subsequent tables of guaranteed floors would similarly need to take into account binding floor values.

TBD

- Uprates and other unit modifications
- Resources with delayed in service date vs. expected when reaching end of Queue process