Section 5: PJM Effective Load Carrying Capability Analysis

5.3 Resource Performance

Variable Resources

The development of the hourly output for variable resources entails producing an Hourly Output Shape (HOS) based on the historical weather years used in the construction of the HLSc. As detailed below, tThe HOS for an ELCC Class of variable resources (e.g., wind) comprises actual and backcasted output from existing members of the class and backcasted output from planned members of the class.

If there are N HLS (and associated HLSc) based on N historical weather years, then there will be N HOS for each ELCC class belonging to the variable resources category. The derivation of HOS based on a historical weather year H for a future delivery year F prior to 2025/2026 is described as follows:

1. Calculate hourly actual metered output in MW from all units that were classified as existing in year H and are expected to still be in service in year F.

2. Calculate hourly total backcasted output in MW from all units that were classified as planned in year H and are expected to be in service in year F.

3. Calculate the hourly total output in MW (by including actual and backcasted outputs from the two steps above) and hourly total MFO for future delivery year F.

4. For each hour, divide the hourly total output by the hourly total MFO. The result constitutes the Hourly Output Shape (HOS) based on historical weather year H for future delivery year F.

Starting with the 2025/2026 delivery year, each unit's hourly actual metered output in step 1 above is adjusted to reflect the unit's actual curtailments during year H and is capped at: (i) the unit's CIR MW value for year F during hours in the months of June through October and the following May of the delivery year, and (ii) the unit's winter deliverability MW value for year F during hours in the months of November through the following April of the delivery year. The same capping procedure is applied to the hourly backcasted output in step 2 above.

Limited Duration Resources and Combination Resources

The hourly output of Limited Duration Resources and Combination Resources is derived by using a simulated dispatch procedure that takes into account the rest of system conditions (load, other resources' output) simulated in the ELCC model. The simulated dispatch procedure also incorporates the charging or charging-equivalent process whereby Limited Duration Resources and Combination Resources replenish their storage components. Limited Duration Resources and Combination Resource components that have the same impact on LOLE as the same quantity of perfect resource are modeled as perfect resources (the "perfect resource" concept refers to a hypothetical resource with no outages and always available producing output at its Effective Nameplate Capacity). The procedure to derive the

simulated dispatch for Limited Duration Resources and Combination Resources applied to each hour prior to 2025/2026 is the following:

1. Calculate the Margin Threshold as total available resources prior to dispatching Limited Duration Resources and Combination Resources minus load.

2. Calculate the Nameplate Threshold as the total estimated available Effective Nameplate Capacity of Limited Duration Resources and Combination Resources minus the targeted Primary Reserves assumed to be provided by Limited Duration Resources and Combination Resources.

3. Calculate the Dispatch Threshold as the absolute value of the Margin Threshold minus the Nameplate Threshold.

4. If the Margin Threshold is greater than zero, charging for resources that require charging can proceed. However, the charging can only occur to the extent that the additional load in the system does not cause the Margin Threshold to be less than zero. The charging step recognizes differences between classes within the Limited Duration Resources and Combination Resources category regarding the charging or charging-equivalent process. This entails using hourly streamflow data to replenish the storage component of resources within the Hydropower With Non-Pumped Storage class, charging the storage component in closed-loop solar-storage resources only to the extent that the solar component can support that charging, and reflecting charging constraints on standalone storage resources and storage components in open-loop solar-storage resources.

5. If the Margin Threshold is less than zero, the Limited Duration Resources and Combination Resources are assigned a targeted dispatch. If the Dispatch Threshold is less than zero, Limited Duration Resources and Combination Resources are assigned to supply load commensurate with the full Margin Threshold. Demand Resources receive no assignment. If the Dispatch Threshold is greater than or equal to zero, Limited Duration Resources and Combination Resources are assigned to supply load commensurate with the Nameplate Threshold. Demand Resources receive an assignment equal to the Margin Threshold minus Nameplate Threshold (i.e., the portion of the margin that was not assigned to Limited Duration Resources and Combination Resources).

6. The previous step determines the load assignment for the entire Limited Duration Resources and Combination Resources category. The load assignment for each ELCC Class within the category is determined based on a ratio which is calculated as that class's estimated available Effective Nameplate Capacity divided by the total estimated available Effective Nameplate Capacity of Limited Duration Resources and Combination Resources.

7. If a load assignment cannot be partially or fully supplied by an ELCC Class because of power or energy limitations, Demand Resources will receive the unsupplied portion of the assignment. If all Demand Resources are exhausted, the other ELCC Classes will receive the assignment based on an availability-derived order, from most-available class to less-available class.

8. For ELCC Classes that require specific modeling of the individual units in the Simulated Dispatch (e.g., Hydropower With Non-Pumped Storage), the load assignment received by the class will be further allocated to the individual units in the class based on the same logic described in vi and vii (the two immediately preceding steps).

Starting with the 2025/2026 delivery year, the above procedure also applies, with the following addition for Combination Resources: the hourly output of a Combination Resource is capped at (i) the resource's CIR MW value during hours in the months of June through October and the following May of the delivery year, (ii) the resource's winter deliverability MW value during hours in the months of November through the following April of the delivery year.