Regional Transmission Expansion Planning

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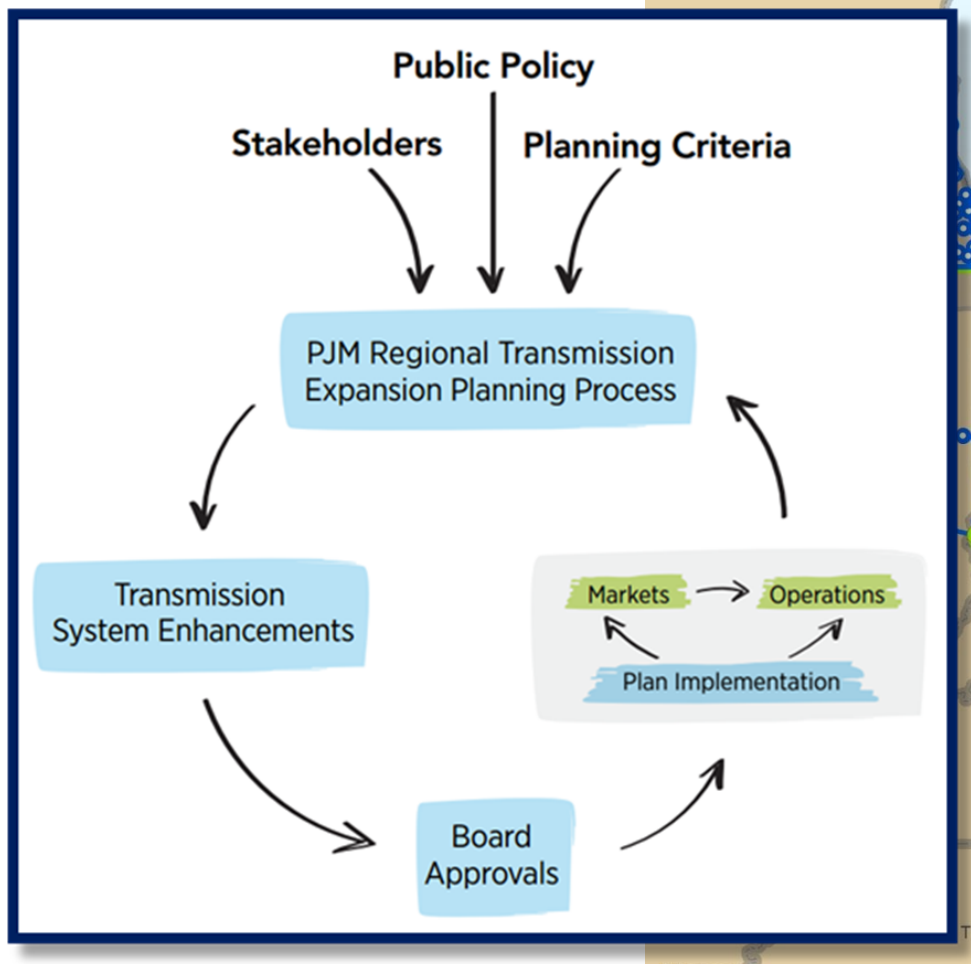
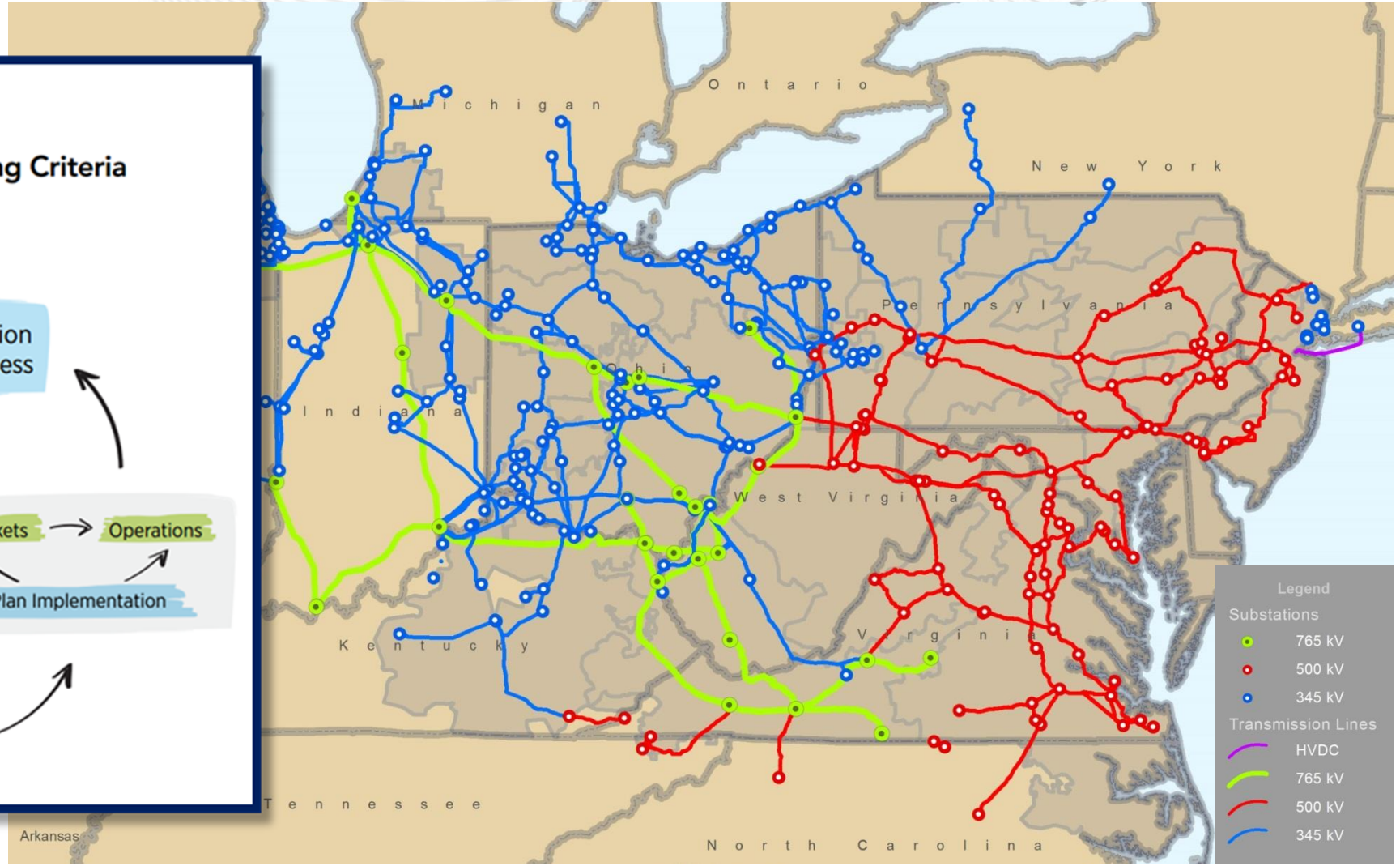
Presented to ISAC

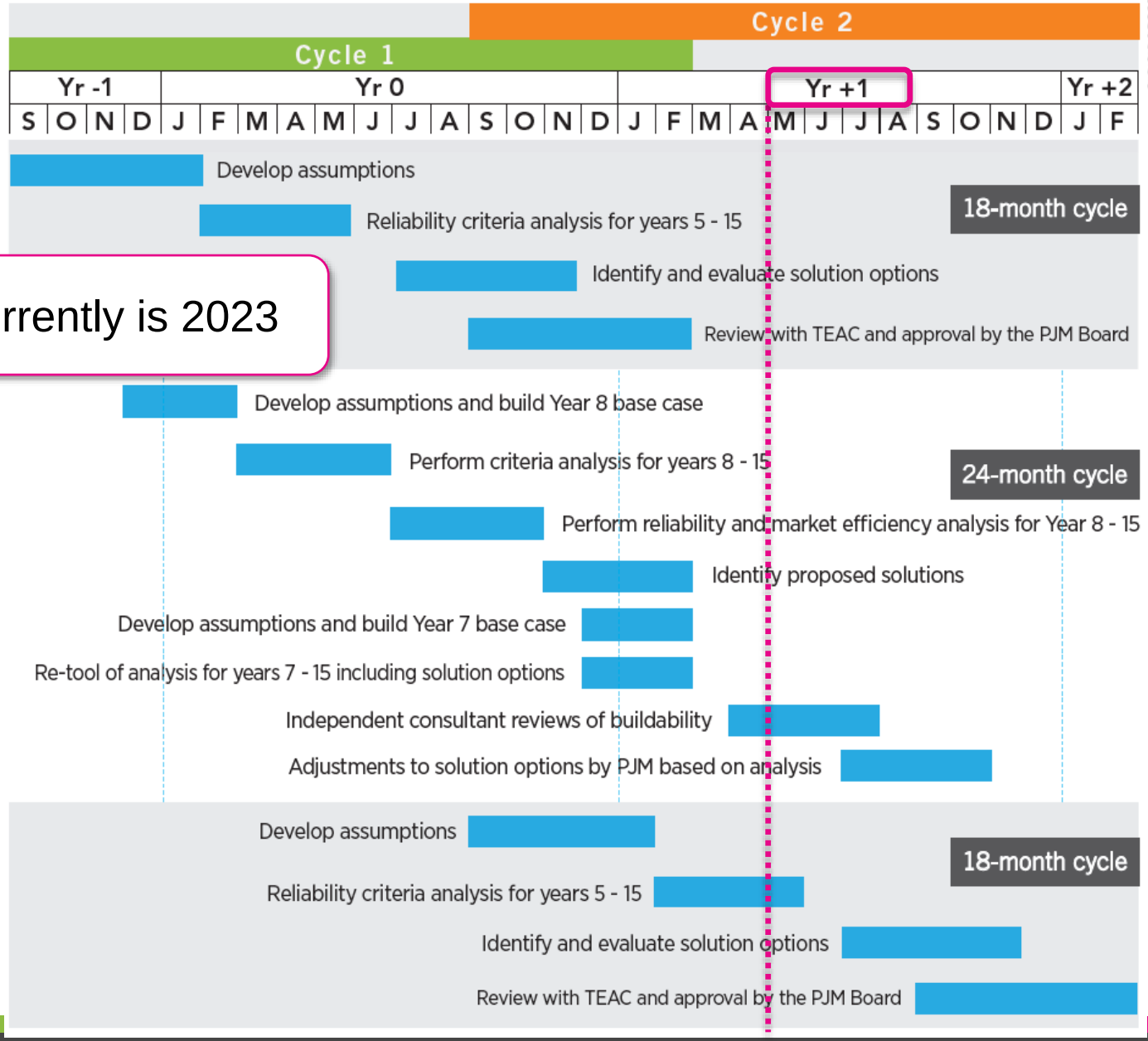
April 24, 2023

PJM Regional Planning





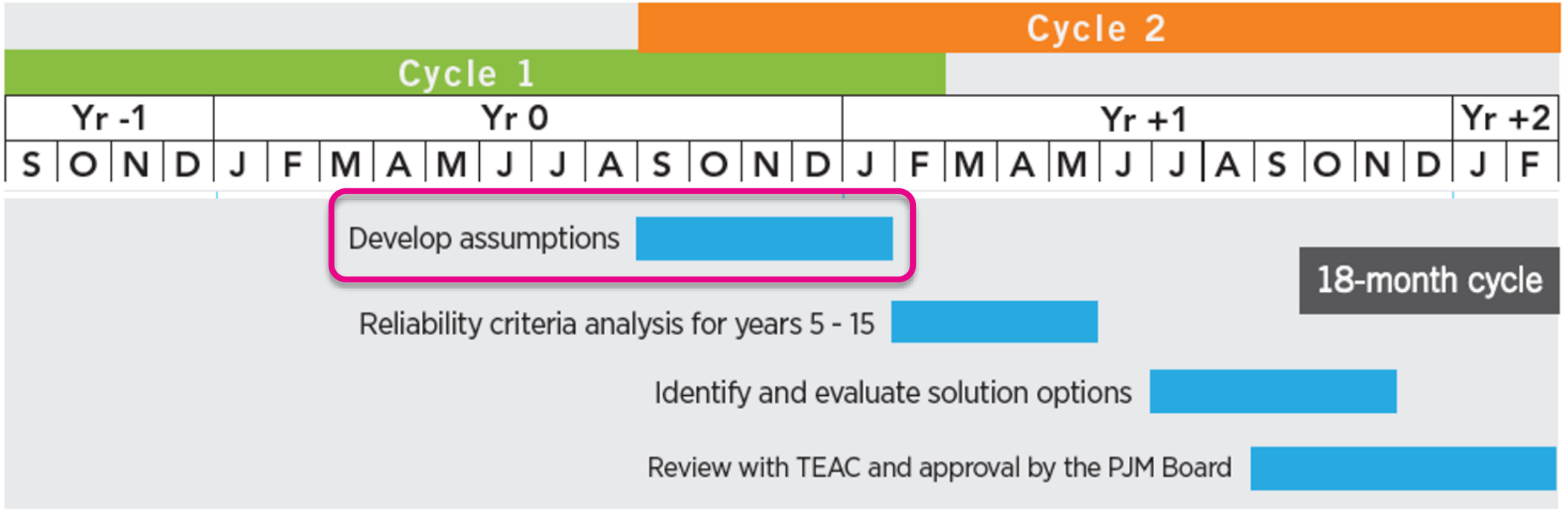
RTEP Timeline



Year + 1 currently is 2023

Note: In January 2023, PJM announced that due to the need to resolve the reliability issues posted in the currently open 2022 RTEP Window 3, the long-term window would be delayed.

RTEP Timeline - Assumptions



Development of **Assumptions** is a multi-month process that begins in **September** and is finalized in January of the following year.	To allow sufficient time for PJM to consider proposed assumptions, PJM recommends that ISAC provide input at the beginning of the assumptions development phase. This will allow PJM time to consider the modeling and time to solicit feedback from other stakeholders.

Annually:

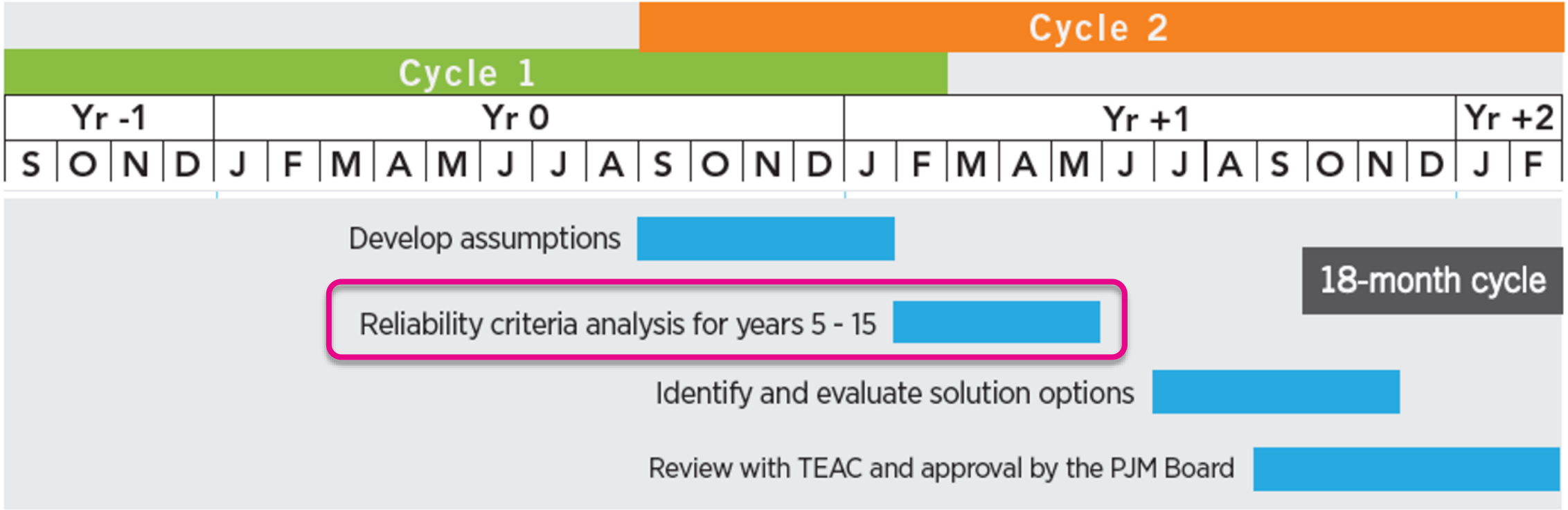
- PJM develops new base case models for purpose of performing the annual RTEP baseline analysis, which forms the basis for the base case used for interconnection planning studies once the violations are resolved.

- PJM reviews the planning assumptions that will be used for PJM's planning analyses. The assumptions are based on a consistent set of fundamental assumptions regarding load, generation and transmission that are built into power flow models. Details of the fundamental assumptions are discussed in Manual 14B, Section 1.3.

TEAC meeting January 10, 2023 – 2023 Reliability Assumptions

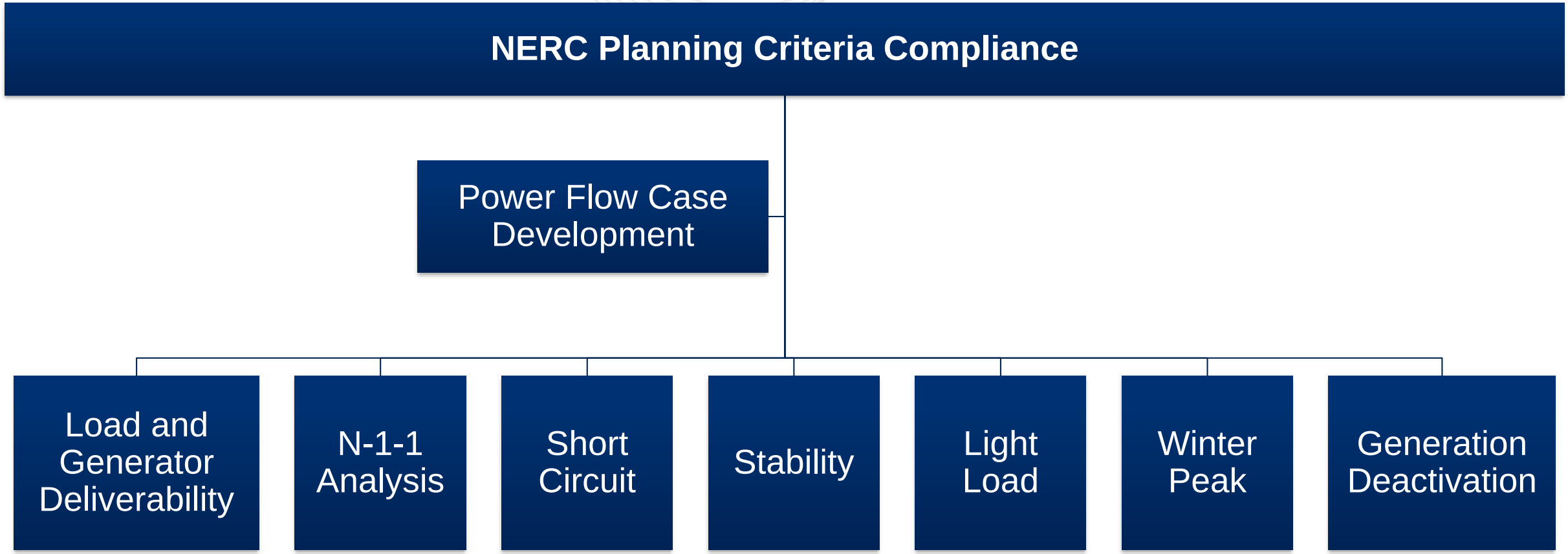
https://www.pjm.com/-/media/committees-groups/committees/teac/2023/20230110/item-07---2023-rtep-assumption.ashx

RTEP Timeline – Reliability Analysis

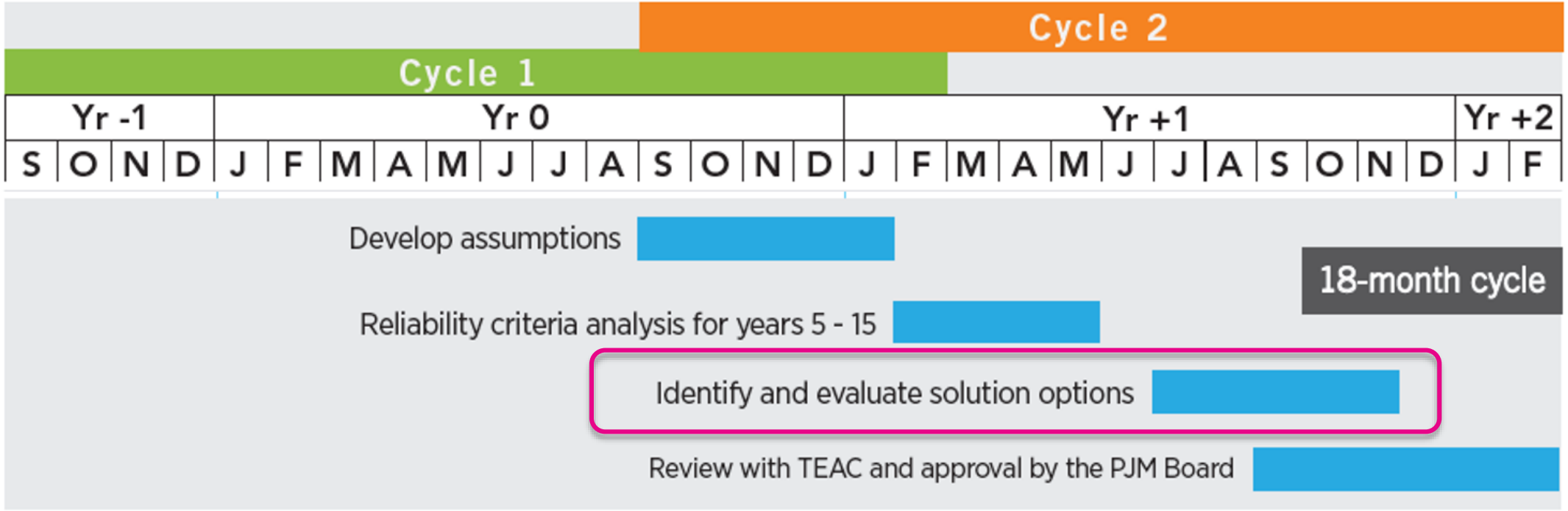


PJM performs comprehensive reliability analysis to ensure the grid satisfies all reliability criteria, including NERC mandatory standards, PJM TO FERC Form 715 criteria and PJM criteria.

Transmission System Reliability Analysis



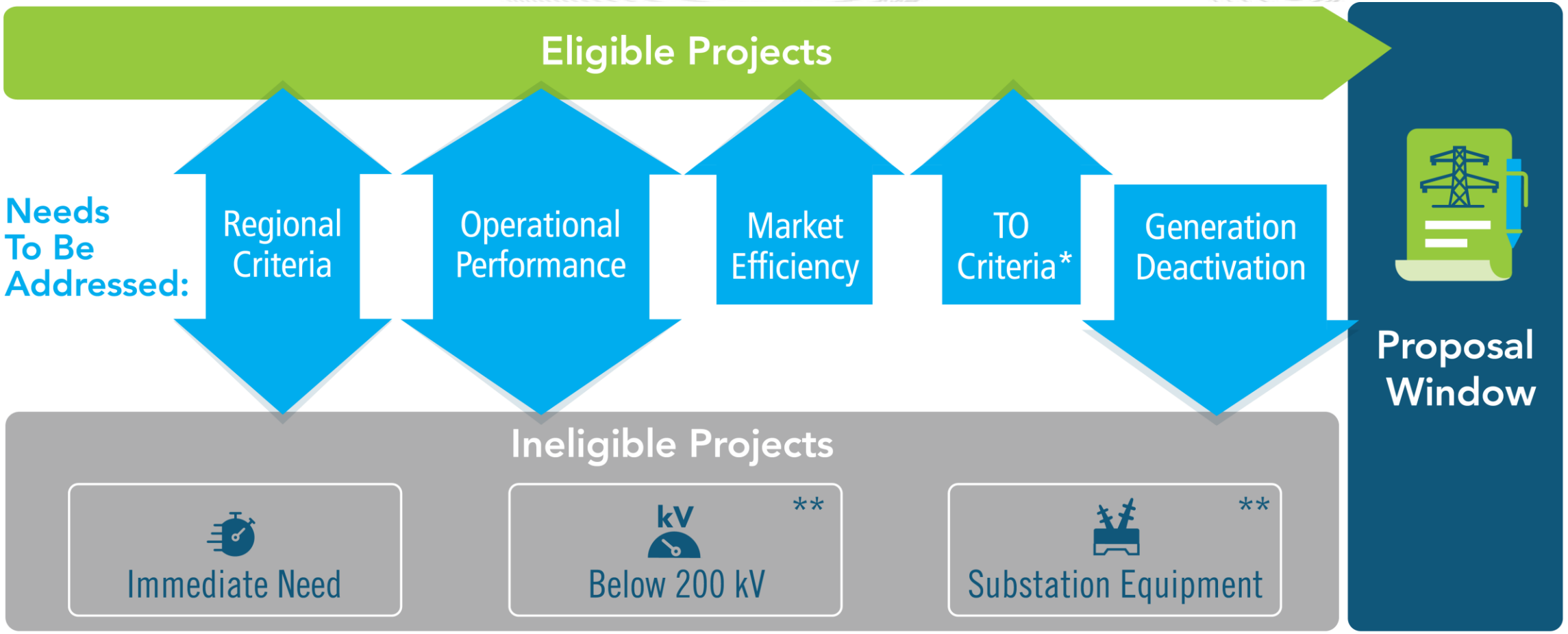
RTEP Timeline – Solution Identification



PJM identifies transmission solutions to address the reliability violations that were found as a result of the comprehensive reliability analysis.

In accordance with the RTEP protocol in the OA, Schedule 6, PJM will either convene a **competitive transmission window** to seek proposals or will work with the affected TO(s) to develop solutions to the violations that are exempt from a competitive window.

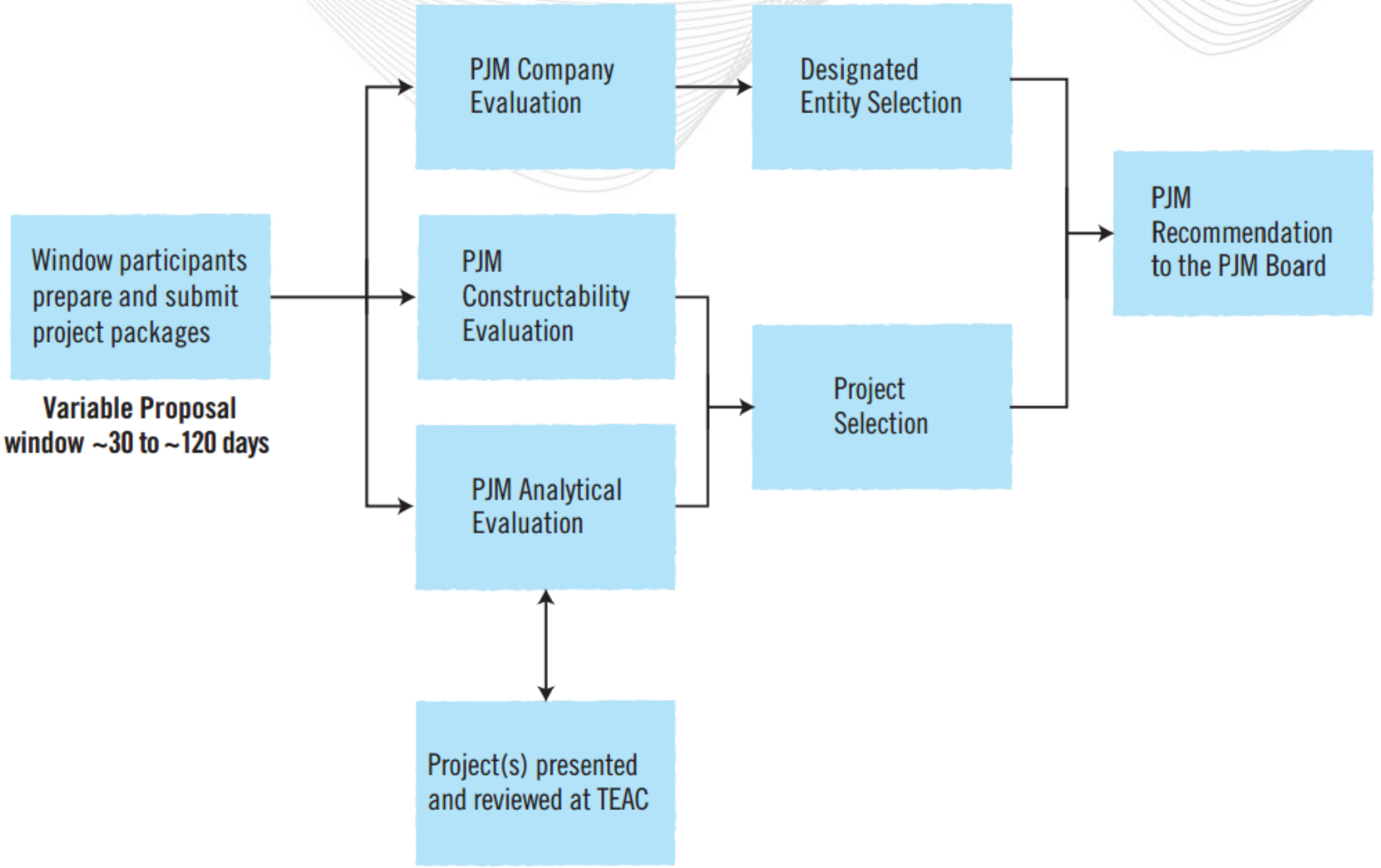
RTEP Window Eligibility



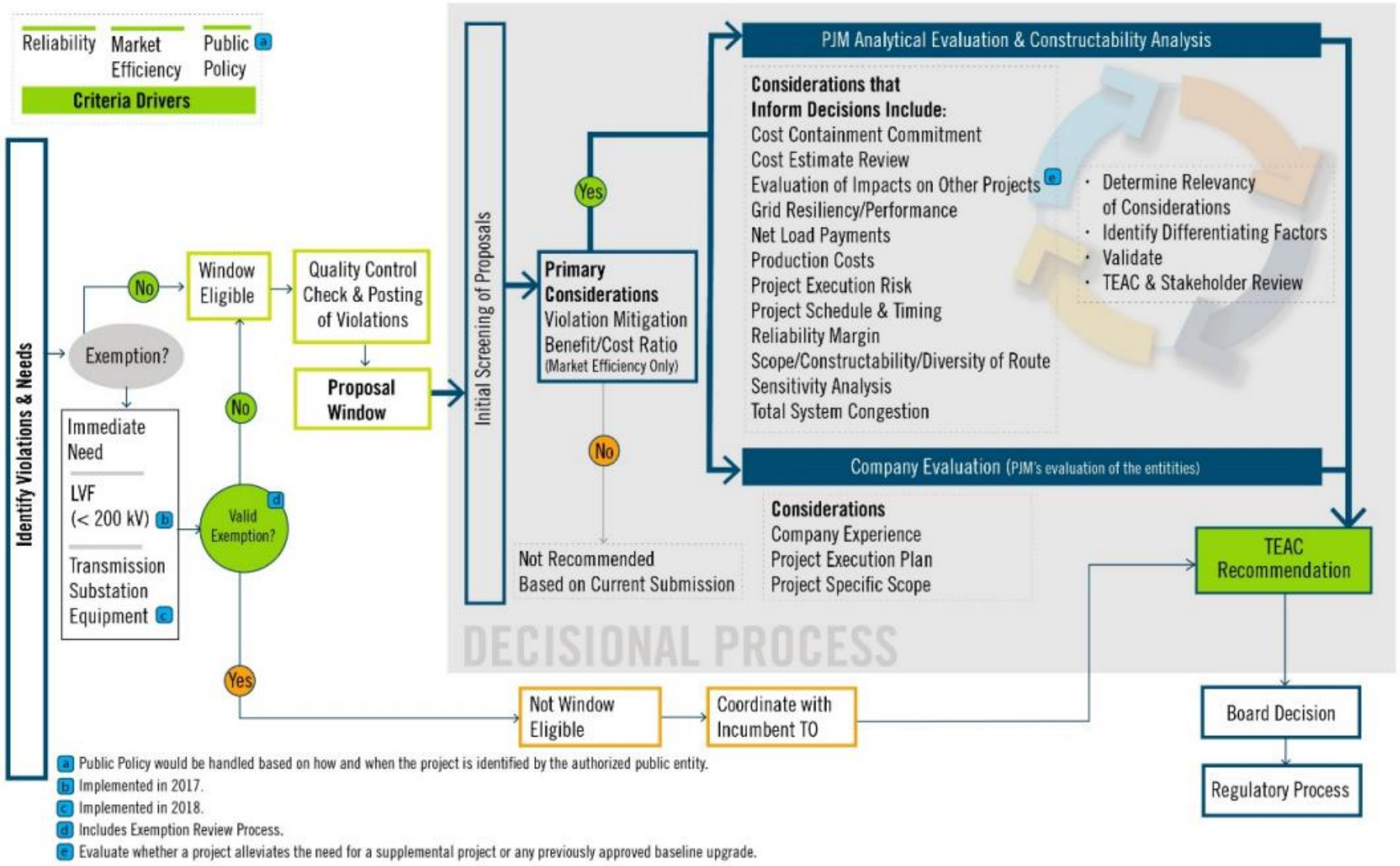
Note: **TO Criteria is eligible for proposal windows as of Jan. 1, 2020.*

***Projects below 200 kV and substation equipment projects could become eligible for competition if multiple needs share common geography/contingency or if the project has multi-zonal cost allocation.*

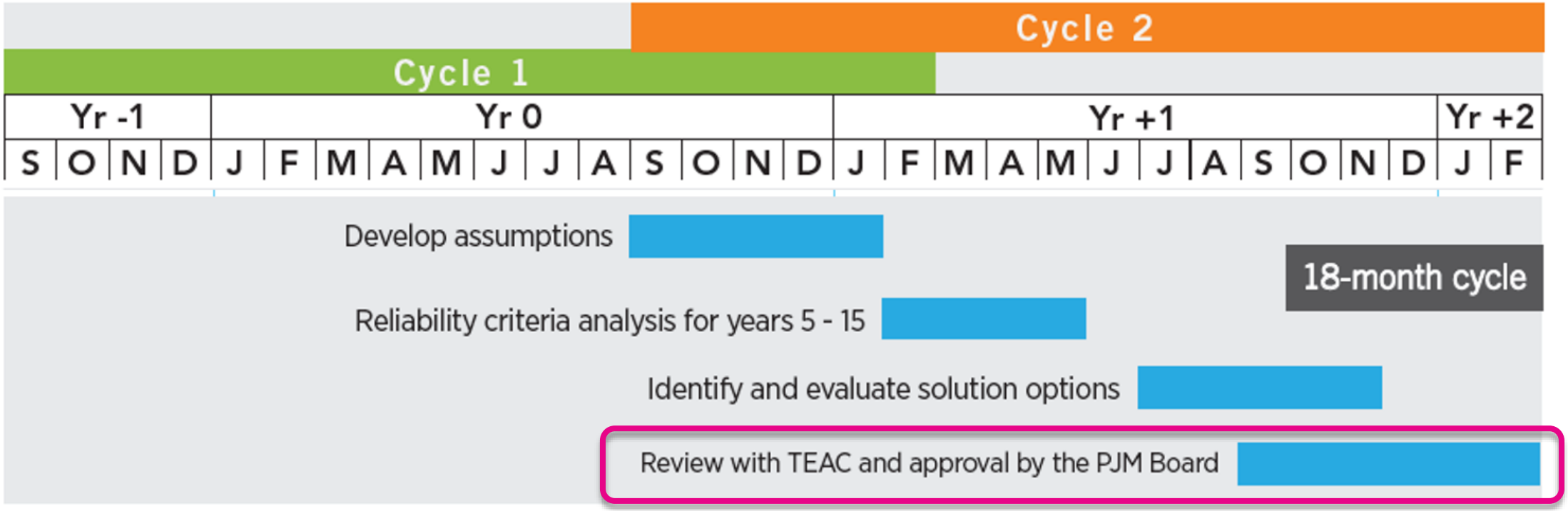
RTEP Process Window Proposal Evaluation



Decisional Process



RTEP Timeline – TEAC Review and Board Approval



PJM presents the recommended solution(s) to the TEAC for stakeholder review and input and then seeks Board approval for inclusion in the RTEP.

Maximum Single Source Contingency Analysis

As described in Manual 14B, PJM performs reliability analysis consistent with the NERC TPL-001 Standard, which defines the single contingencies that must be tested.

Category	Initial Condition	Event [1]	Fault Type [2]	BES Level [3]	Interruption of Firm Transmission Service Allowed [4]	Non-Consequential Load Loss Allowed
P0 No Contingency	Normal System	None	N/A	EHV, HV	No	No
P1 Single Contingency	Normal System	Loss of one of the following: 1. Generator 2. Transmission Circuit 3. Transformer [5] 4. Shunt Device [6]	3Ø	EHV, HV	No[9]	No[12]
		5. Single Pole of a DC line	SLG			
P2 Single Contingency	Normal System	1. Opening of a line section w/o a fault [7]	N/A	EHV, HV	No[9]	No[12]
		2. Bus Section Fault	SLG	EHV	No[9]	No
				HV	Yes	Yes
		3. Internal Breaker Fault [8] (non-Bus-tie Breaker)	SLG	EHV	No[9]	No
				HV	Yes	Yes
		4. Internal Breaker Fault (Bus-tie Breaker) [8]	SLG	EHV, HV	Yes	Yes

Maximum Single Source Contingency Analysis

- PJM does not currently have an established maximum size project that can submit an interconnection request.
- PJM will study all interconnection requests and identify the needed transmission to satisfy the reliability criteria in order for the project to interconnect reliably.
- Currently the largest connected generator that is in service is approximately 1,600 MW and may soon be around 1,800 MW.
- As the transmission grid evolves and projects increase in size, PJM may determine in the future to consider new criteria for projects that exceed a certain threshold.

Contact

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ISAC Update

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