



Market Efficiency Update

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Market Simulation

Transmission Expansion Advisory Committee

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2020/21 Long Term Window

Long-Term Market Efficiency Window (120 days)

2020/21 Long-Term Window started January 11, 2021 and will close May 11, 2021

Window process and registration presented at the [Special TEAC – Market Efficiency](#) on December 23rd, 2020

Problem statement and target congestion drivers posted on the [Competitive Planning Process](#) page

- Updated eligible congestion drivers list
- Updated Market Efficiency Economic Models (version date 03-05-2021) posted on the [Market Efficiency Secure Page](#)
 - Updated modeling data includes market efficiency base case files for all study years, PROMOD input files and sensitivities (see next slide for details)

2020/21 Long-Term Window – Base Case Update

- Updated PJM Generation Expansion
 - ISA/FSA status
 - retirements
- Updated Beverley to Muskingum 345 kV ratings to reflect AEP Sag study results
 - AEP Sag study details included in Appendix A
- Updated topology near Gibson to Francisco to Duff 345 kV line to include a planned MTEP upgrade
 - MISO ID 20345
- Added ~20 M2M flowgates based on historical analysis
- Updated some line ratings/impedances based on feedback from TOs
- Updated demand forecast to align with 2021 PJM Load Forecast Report (see next slide)
- Updated sensitivity scenarios to reflect above changes

Demand/Energy & DR Forecast Update

PJM Peak Demand and Energy Forecast

Load Forecast	2021	2025	2028	2031	2035
Peak (MW)	149,224	151,928	152,971	153,759	154,620
Energy (GWh)	780,068	794,760	802,993	806,729	815,394

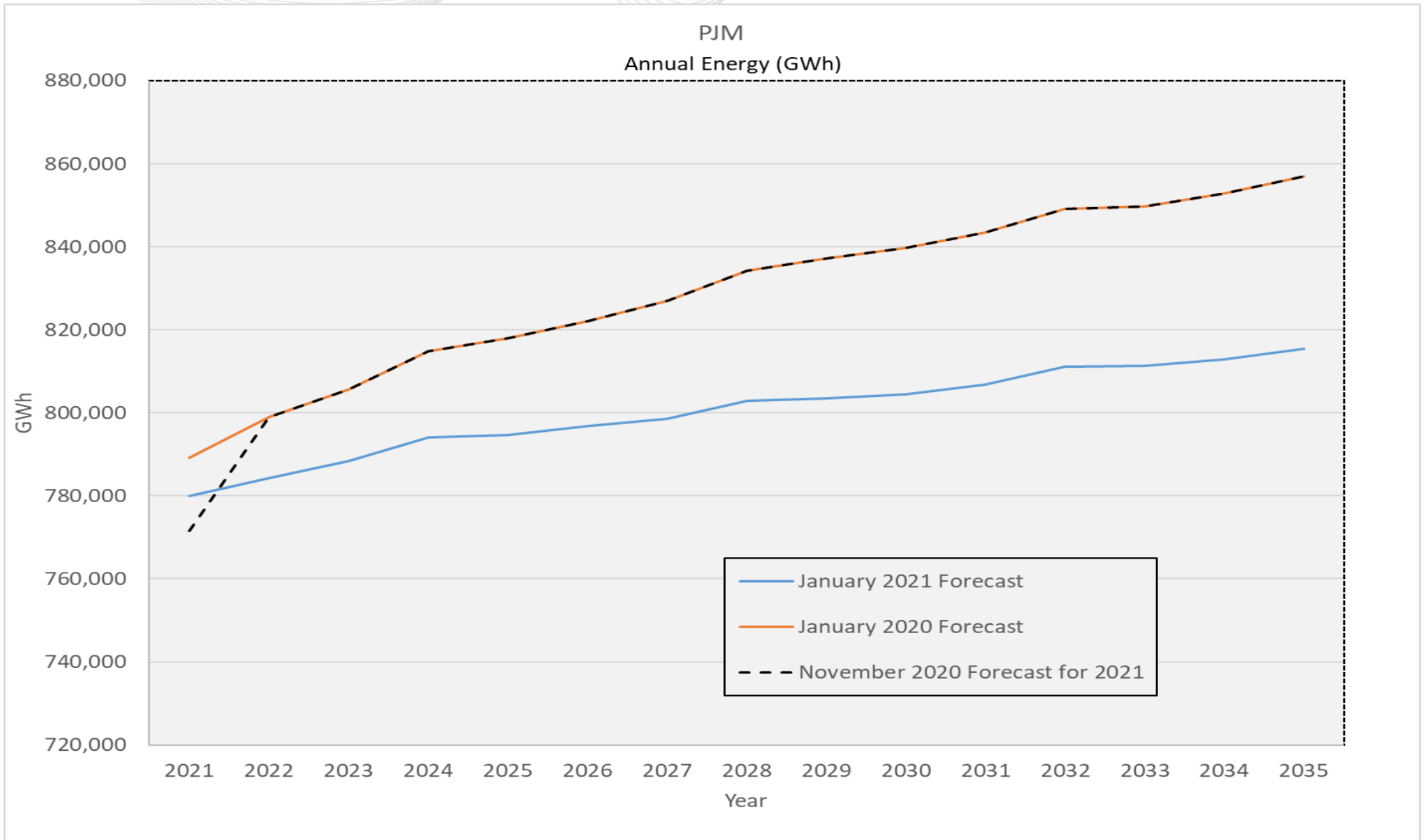
Notes:

1. Peak and energy values from the January 2021 PJM Load Forecast Report Table B-1 and Table E-1, respectively.
2. Model inputs are at the zonal level. To the extent zonal load shapes create different diversity, modeled PJM peak load may vary.

Demand Resource	2021	2025	2028	2031	2035
Demand Resource (MW)	8,779	8,910	8,947	8,982	9,022

Note:

1. Values from the January 2021 PJM Load Forecast Report Table B-7.



Updated ME Base Case - Congestion Changes

FG#	Constraint	From Area	To Area	Comment
ME-2	Muskingum River to Beverly 345 kV	AEP	AEP	A sag study completed by the TO eliminates the congestion
ME-9	Duff to Francisco 345 kV	DUK-IN	DUK-IN	Congestion eliminated by the MTEP upgrade 20345 (Upgrade 345kV line and terminals from Gibson - Francisco - Duff)
ME-10	Gibson to Francisco 345 kV	DUK-IN	DUK-IN	Congestion reduced below the threshold by the MTEP upgrade 20345 (Upgrade 345kV line and terminals from Gibson - Francisco - Duff)

ME-2, ME-9, and ME-10 constraints are no longer eligible congestion drivers (updates to the base reduced congestion below the eligibility threshold).

2020/21 RTEP Market Efficiency Window Eligible Congestion Drivers*

2020/21 RTEP Market Efficiency Window Eligible Energy Market Congestion Drivers* (Posted 03-05-2021)				ME Base Case (Annual Congestion \$million)		ME Base Case (Hours Binding)		Is Line Conductor Limited?	Conductor Ratings**	Comment
FG#	Constraint	FROM AREA	TO AREA	2025 Simulated Year	2028 Simulated Year	2025 Simulated Year	2028 Simulated Year			
ME-1	Kammer North to Natrium 138 kV	AEP	AEP	\$ 2.02	\$ 6.56	69	167	Yes		Internal Flowgate
ME-3	Junction to French's Mill 138 kV	APS	APS	\$ 9.18	\$ 11.97	276	301	No	SN/SE=221/268 MVA WN/WE=250/317 MVA	Internal Flowgate
ME-4	Yukon to AA2-161 Tap 138 kV	APS	APS	\$ 4.36	\$ 5.16	1742	1958	Yes		Internal Flowgate
ME-5	Charlottesville to Proffit Rd Del Pt 230 kV	DOM	DOM	\$ 3.76	\$ 4.96	121	124	Yes		Internal Flowgate
ME-6	Plymouth Meeting to Whitpain 230 kV	PECO	PECO	\$ 3.33	\$ 4.09	111	101	No	SN/SE=463/578 MVA WN/WE=521/639 MVA	Internal Flowgate
ME-7	Cumberland to Juniata 230 kV***	PLGRP	PLGRP	\$ 9.00	\$ 6.61	213	179	Yes		Internal Flowgate
ME-8	Harwood to Susquehanna 230 kV***	PLGRP	PLGRP	\$ 14.49	\$ 8.69	830	501	Yes		Internal Flowgate

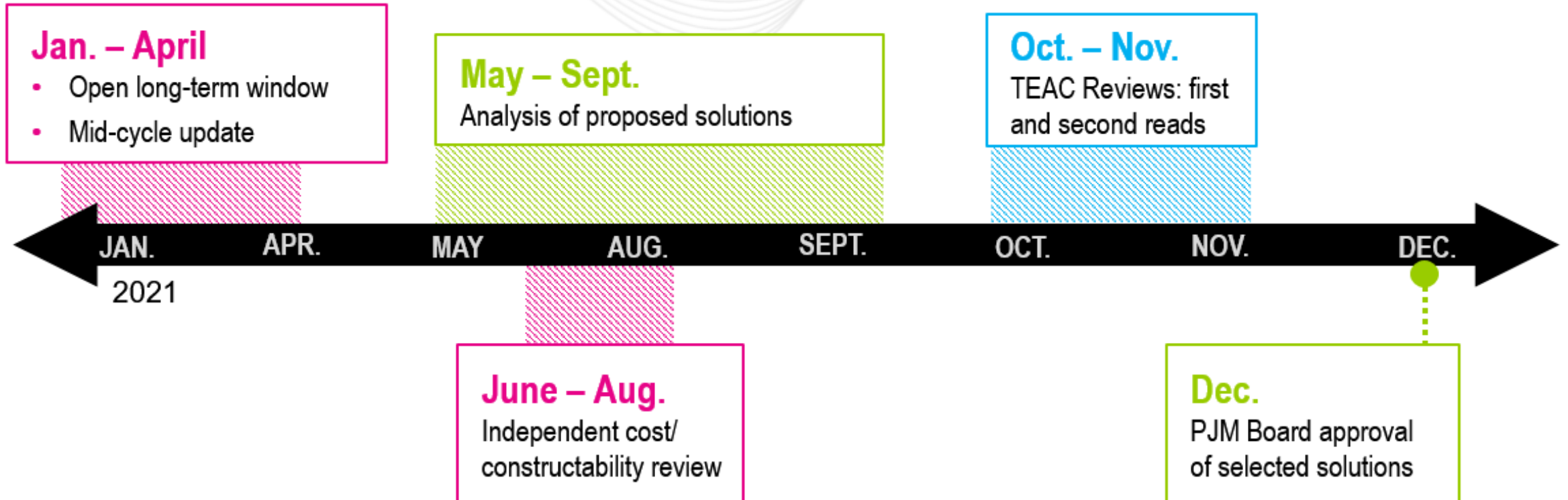
Notes:

* ME-2, ME-9, and ME-10 constraints no longer eligible congestion drivers (updates to the base reduced congestion below the eligibility threshold).

** Conductor ratings provided by TOs for congestion drivers that are limited by station equipment.

*** Cumberland – Juniata and Harwood – Susquehanna Congestion drivers may be impacted by DLR (Dynamic Link Rating) projects (Expected in-service date 06/01/2021).
Harwood – Susquehanna driver may be impacted by recently announced Talen Energy retirements. (Retirement notice not submitted to PJM).

2020/21 Long-Term Window Schedule



A decorative graphic consisting of multiple thin, overlapping wavy lines in a light gray color, positioned at the top center of the slide.

Appendix A

AEP Beverly – Muskingum River 345 kV Sag Study



Beverly – Muskingum River 345 kV Sag Study



- 3.79 miles
- Conductor Limited - Sag Derated
- Sag Study required to increase emergency ratings to conductor Maximum Operating Temperature (MOT)
- Light Detection and Ranging (LiDAR) data available



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