

ARR/FTR Design Considerations

FTR Group

AFMTF

April 26, 2021

Based on collective feedback, develop proposals on separate ARR, FTR, Transparency/Simplicity themes with priority on ARRs

PJM to introduce and solicit feedback/additions today on themes and design components; introduce strawman proposal in May

Proposals for 22/23 planning period need to be first read at September MIC

ARRs

FTRs

Transparency
& Simplicity

ARRs

- Availability and Assignment of Congestion rights to Load
- Congestion Right Election (Claim or Sell Options)
- Auction Surplus
- Congestion Surplus
- Model details
- Amount of guaranteed ARRs
- Incremental ARR product types

FTRs

- FTR Auction bid limits
- FTR Option paths and clearing mechanism
- Invalid FTR Paths
- FTR product types
- Bilateral transaction functionality
- Source of Congestion dollars allocated to FTRs
- Available Rights not allocated or directly claimable by load
- FTR forfeiture rule

T&S

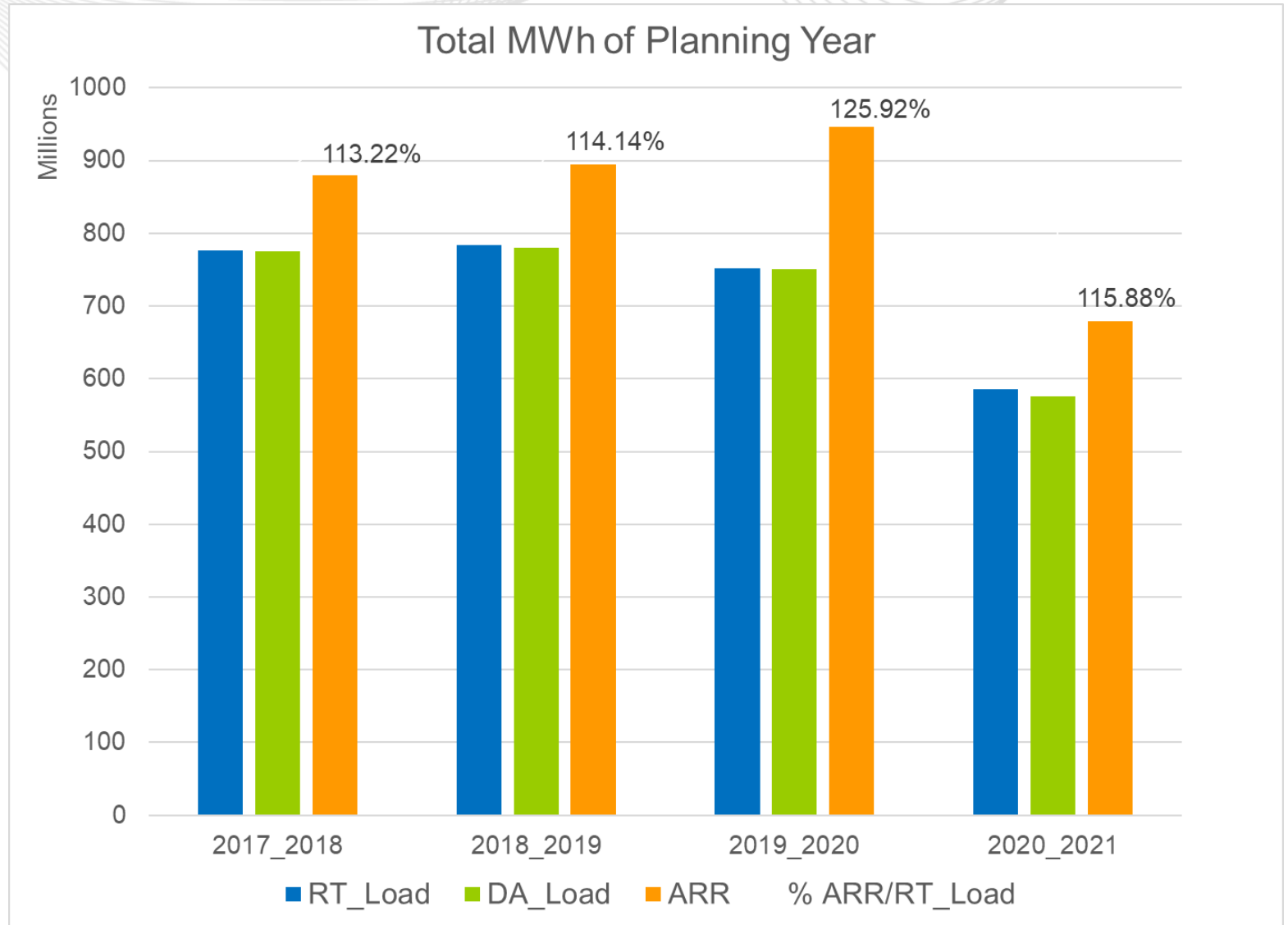
- Network model posting information
- Network model posting frequency
- Outage modeling

Select Analysis of Status Quo

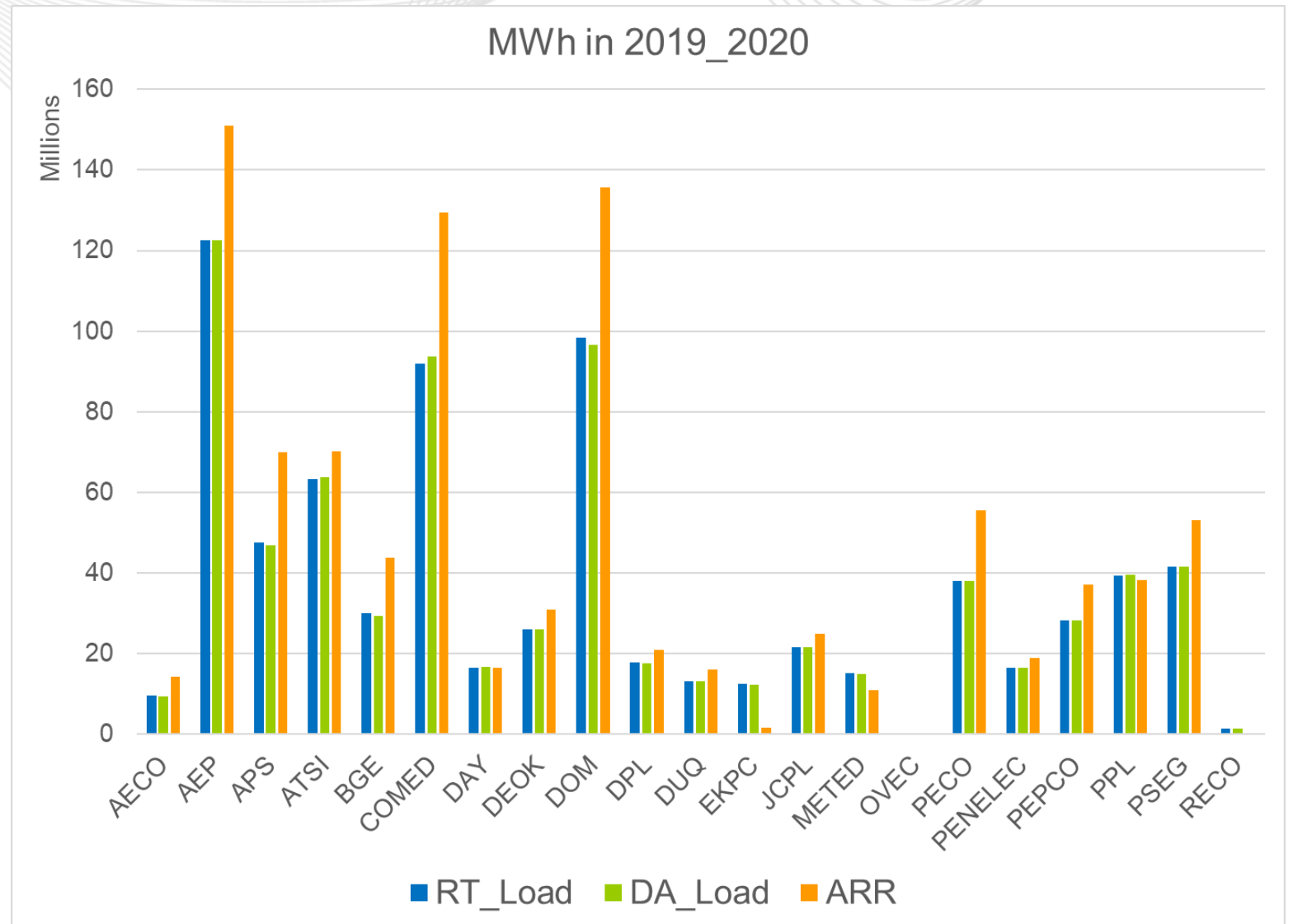
- Allocated ARR MWh covers DA and RT load in most zones
- Stage 1 resource capability does not cover NSPL in some zones
- Ultimate driver of ARR value is LSE choice between Auction Revenues or DA congestion (*emphasis on extreme weather*)
- FTR bid submission timing correlated with bid volume and will vary based on trade type

- ARRAs are entitlements allocated to firm transmission customers, capped at NSPL MW
- ARRAs nominated annually in March during 2-round, 5-stage process
 - Stage 1A, 1B; Stage 2 Round 1, 2, 3
- Stage 1 path selections are pre-determined based on Active Historical Generation Resources or Qualified Replacement Resources
 - Stage 1A nominations guaranteed for 10-years up-to Zonal Base Load
 - Stage 1B nominations subject to proration based on SFT
- Stage 2 path selections can source at any generators, hubs, Zone, external Interface Pricing Points (subject to proration)
- All ARRAs must sink a load settlement point unless physical zone is elected, as applicable

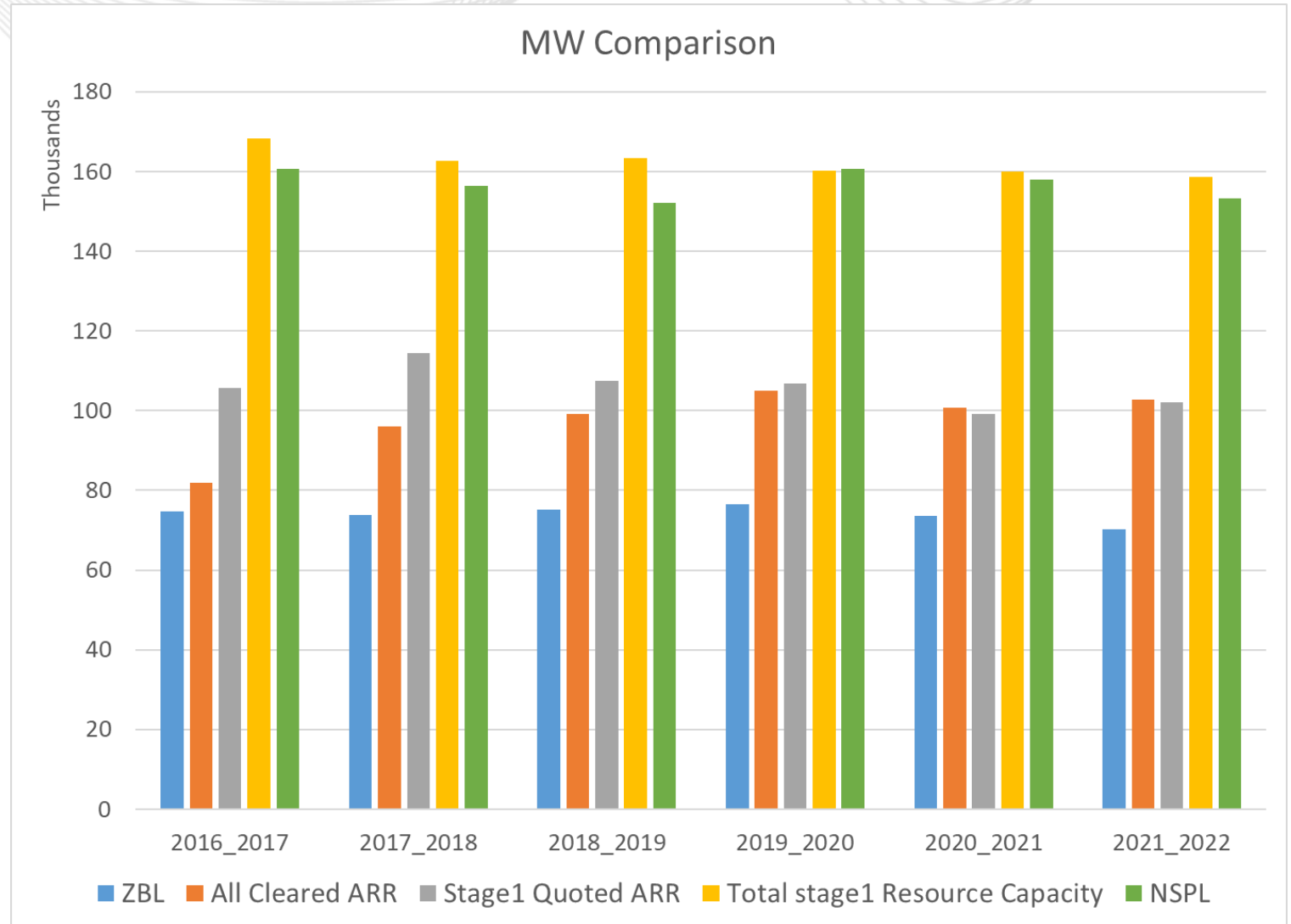
- ARR MWh covers all RT and DA loads



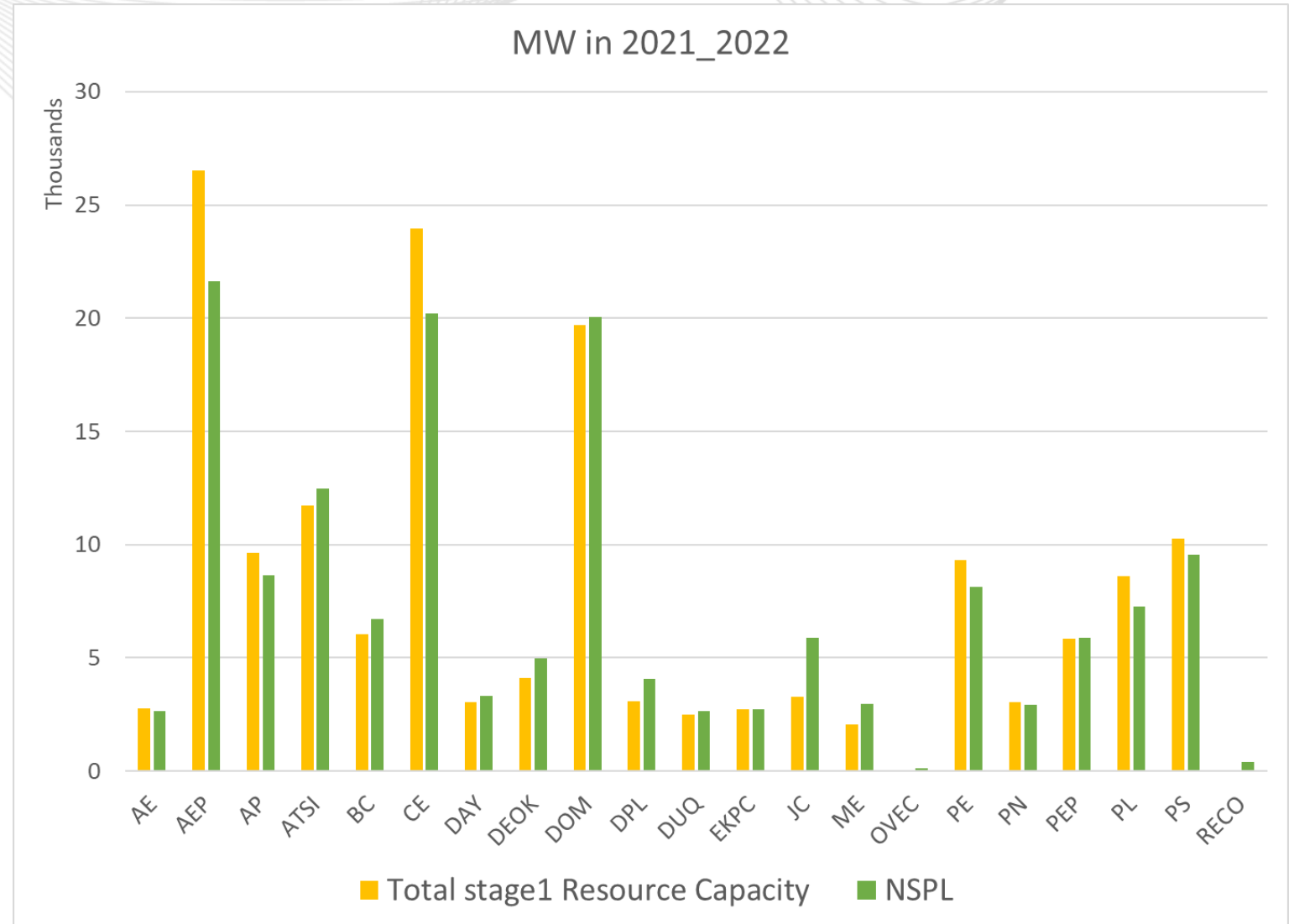
- ARR MWh covers RT and DA loads in most zones
- Exceptions in some zones
 - Loads not electing ARR
 - Stage1 limited by historical capacity and no QRR replacement



- Total MWs of the current stage1 resources are above NSPL



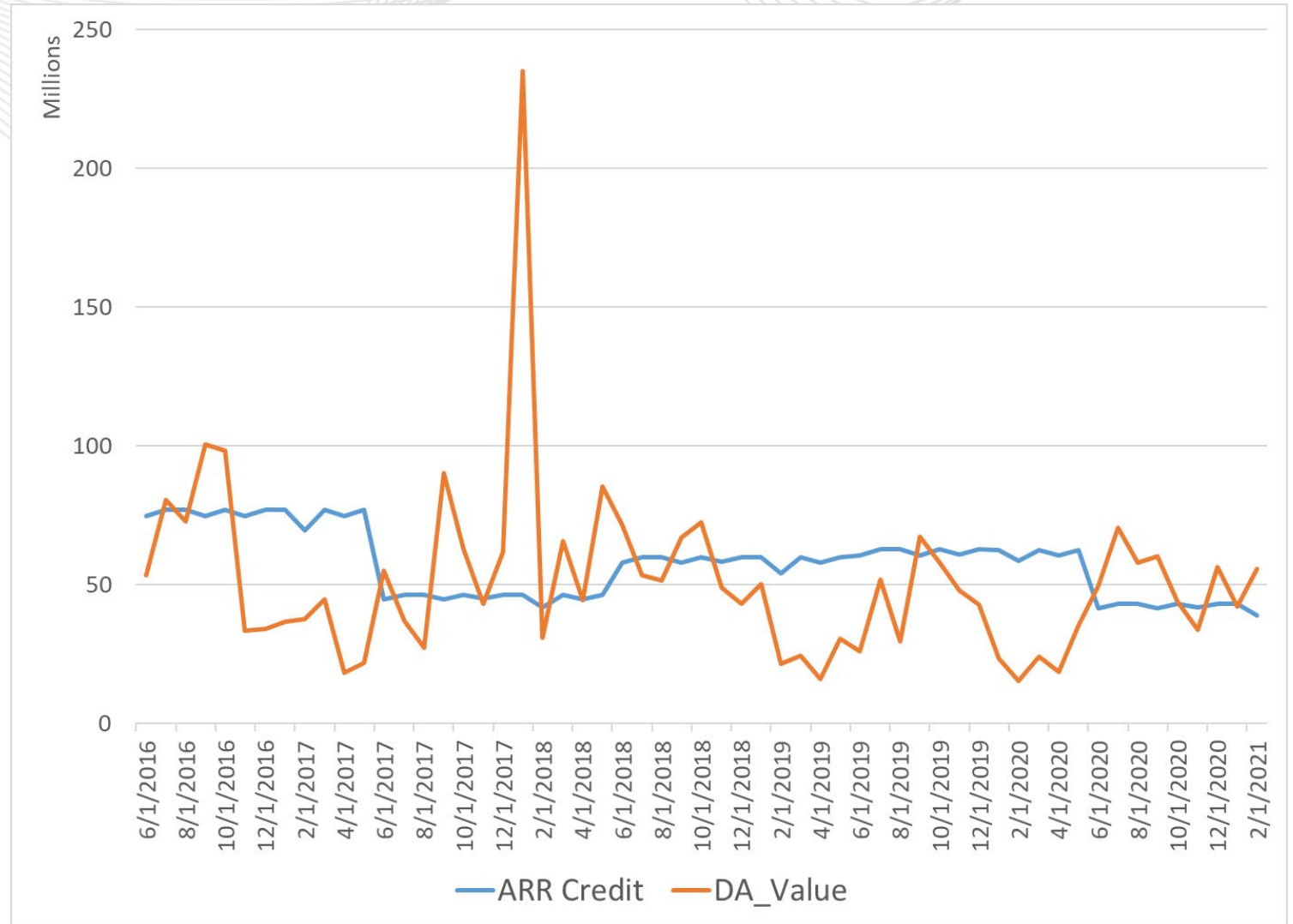
- Zonal stage1 resources are limited by
 - Total historical resources
 - SFT during QRR process



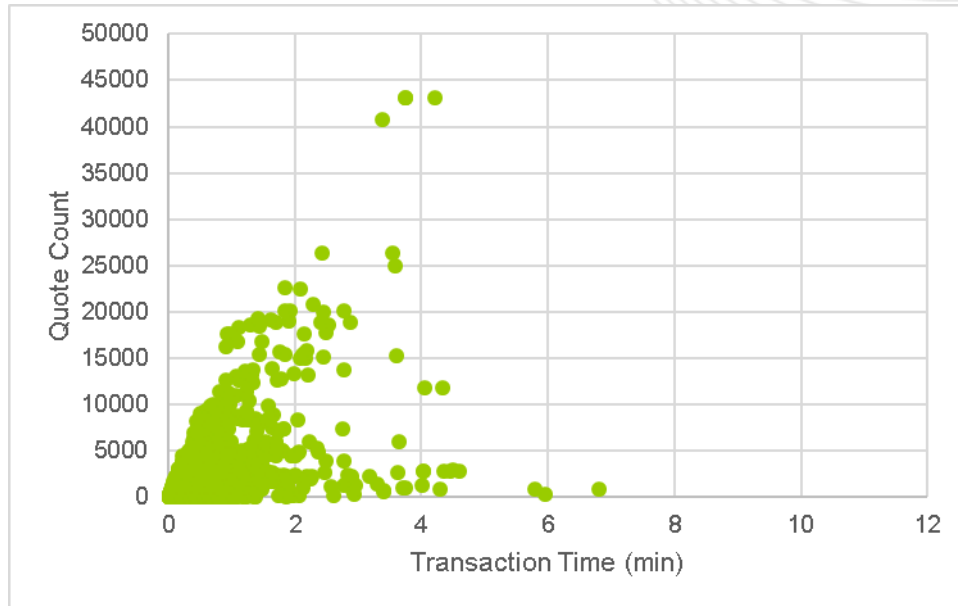
Annual Auction price is major driver for ARR Credit

ARR Credit is more stable

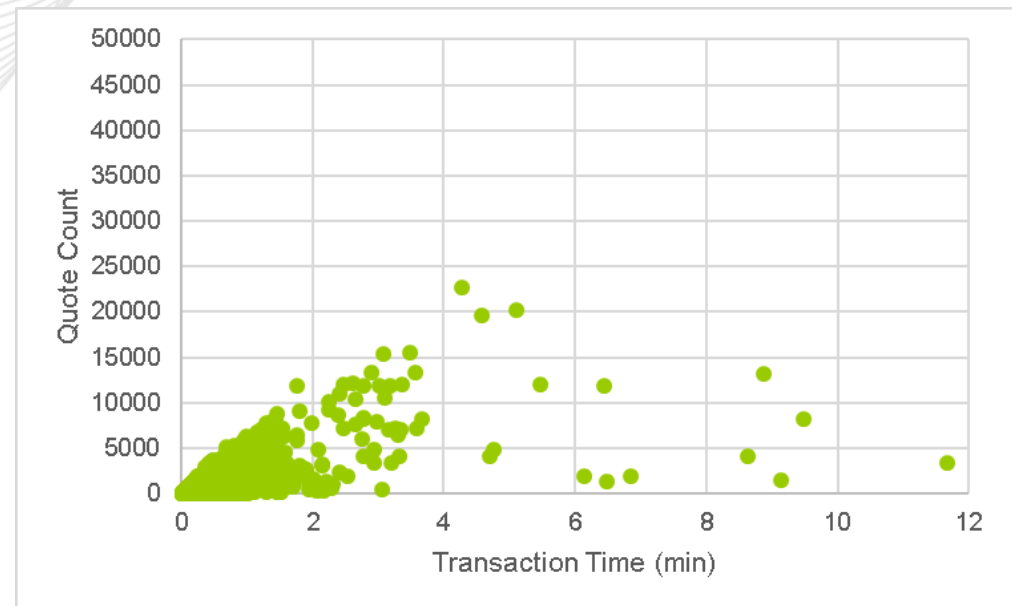
DA values significantly impacted by severe weather



Buy-only Count vs Transaction Time

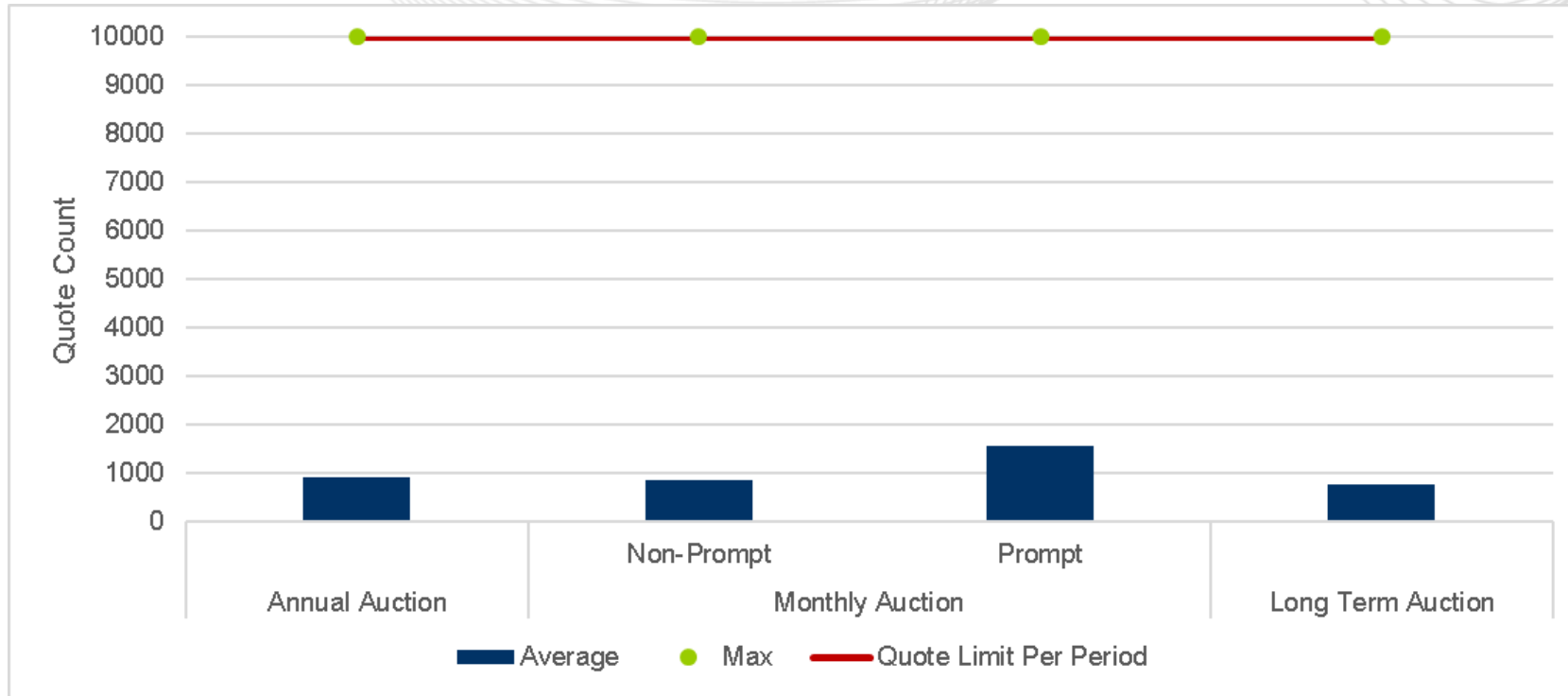


Sell-only Count vs Transaction Time

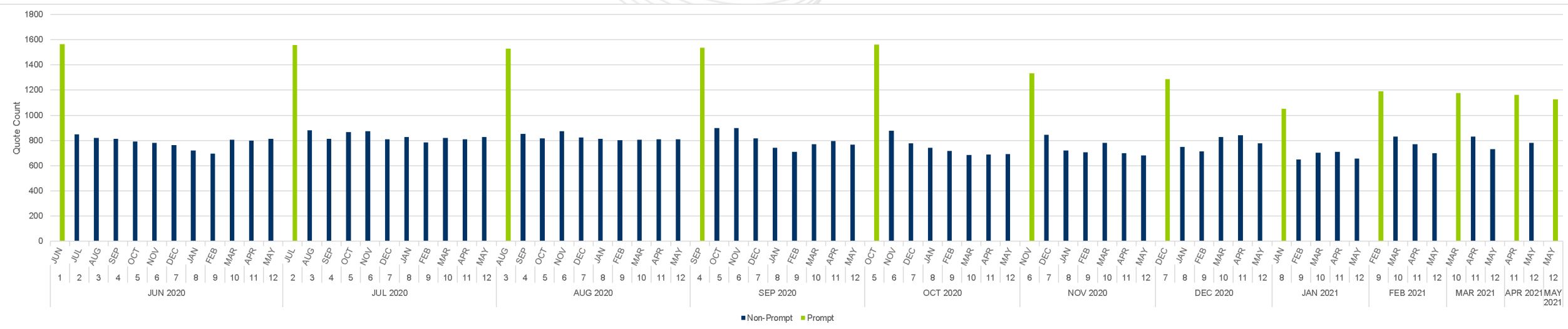


- Sell Offer transaction time is significantly more than Buy Bids
- 120,000 Buys projected to process in 40 minutes
- 120,000 Sells projected to process in 75 minutes

Quotes Per Participant and Period Type



- Average participant quotes per period well below 10,000 limit, but all auction types have some participants bidding at maximum limit
- Higher average quotes in prompt-month period of monthly auctions



- Average quotes by participant consistently higher in prompt-month

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Appendix

- NSPL stands for Network Service Peak Load
 - Also known as 1CP (Coincident Peak)
- Definition
 - Metered Demand Coincident with Zonal Peak Load Hour for Period Specified
- NSPLs are provided by PJM Market Settlements Group prior to a new year
 - All of the following steps are by zone:
 - Hourly load values from November, to October of the following year, are obtained
 - The maximum of all hourly load is determined
 - Final data is posted to PJM.com Billing, Settlements & Credit Website prior to the new year, and to the PJM.com FTR Website prior to the Annual Allocation for upcoming planning period
- EDCs provide PJM FTR Group each LSE's share of the total zonal NSPL

- ZBL stands for Zonal Base Load
- Tariff/OA/Manual 6 Definition
 - "Zonal Base Load" shall mean the lowest daily zonal peak load from the twelve month period ending October 21 of the calendar year immediately preceding the calendar year in which an annual Auction Revenue Right allocation is conducted, increased by the projected load growth rate for the relevant Zone, when non-extraordinary conditions exist for the applicable twelve month period, as determined by PJM. If the lowest daily zonal peak load from the applicable twelve month period is abnormally low due to extraordinary conditions, as determined by PJM, Zonal Base Load shall mean the next lowest daily zonal peak load that was not affected by extraordinary conditions during the applicable twelve month period, increased by the projected load growth rate for the relevant Zone. For the purposes of this definition, extraordinary conditions shall mean a significant event, or combination of events, that affect the operation of the bulk power system in an atypical manner and results in an abnormal reduction in the consumption of energy within a Zone.
- ZBLs are calculated by PJM FTR Group prior to a new planning period
 - All of the following steps are by zone:
 - Hourly load values from October 22, to October 21 of the following year, are obtained
 - The maximum of each day's hourly load is determined
 - The minimum of all daily peaks determined in the prior bullet is obtained
 - The result of the prior bullet is then scaled by the projected load growth rate of that zone
 - Final data is posted to PJM.com FTR Website prior to the Annual Allocation for upcoming planning period