

Billing for Energy Storage Resource Charging Energy

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September 14, 2018

Special MIC – Order 841 on ESR

Order 841:

“When an electric storage resource is charging to resell energy at a later time, then its behavior is similar to other load-serving entities, and we find that applicable transmission charges should apply.”

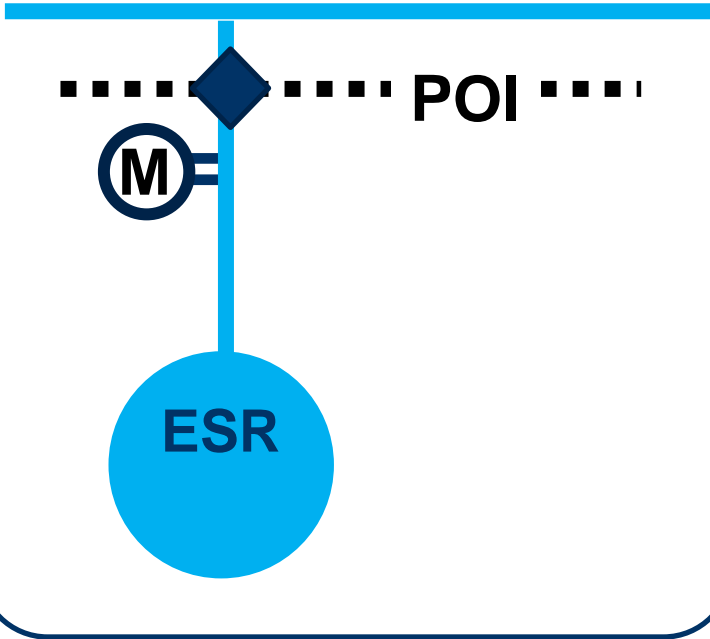
Order 841:

“We find that electric storage resources that are dispatched to withdraw and store electricity to provide a service in the RTO/ISO markets (such as frequency regulation or a downward ramping service) should not pay the same transmission charges as load during the provision of that service.”

Some ESR could sometimes serve end use load

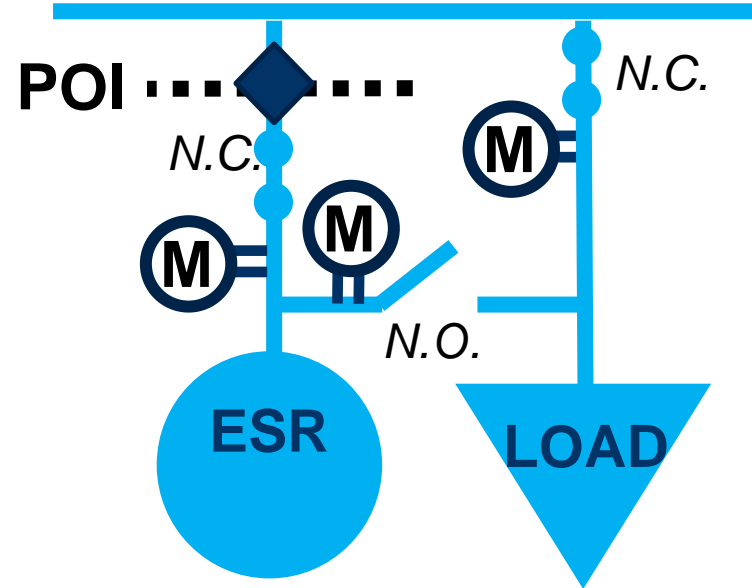
Plain old “front of meter ESR”

Utility grid



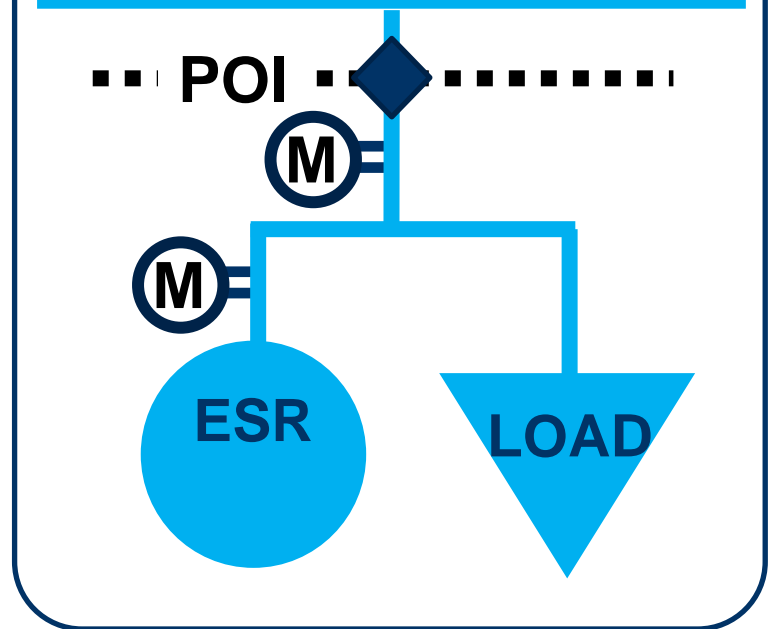
“Resilience” ESR

Utility grid

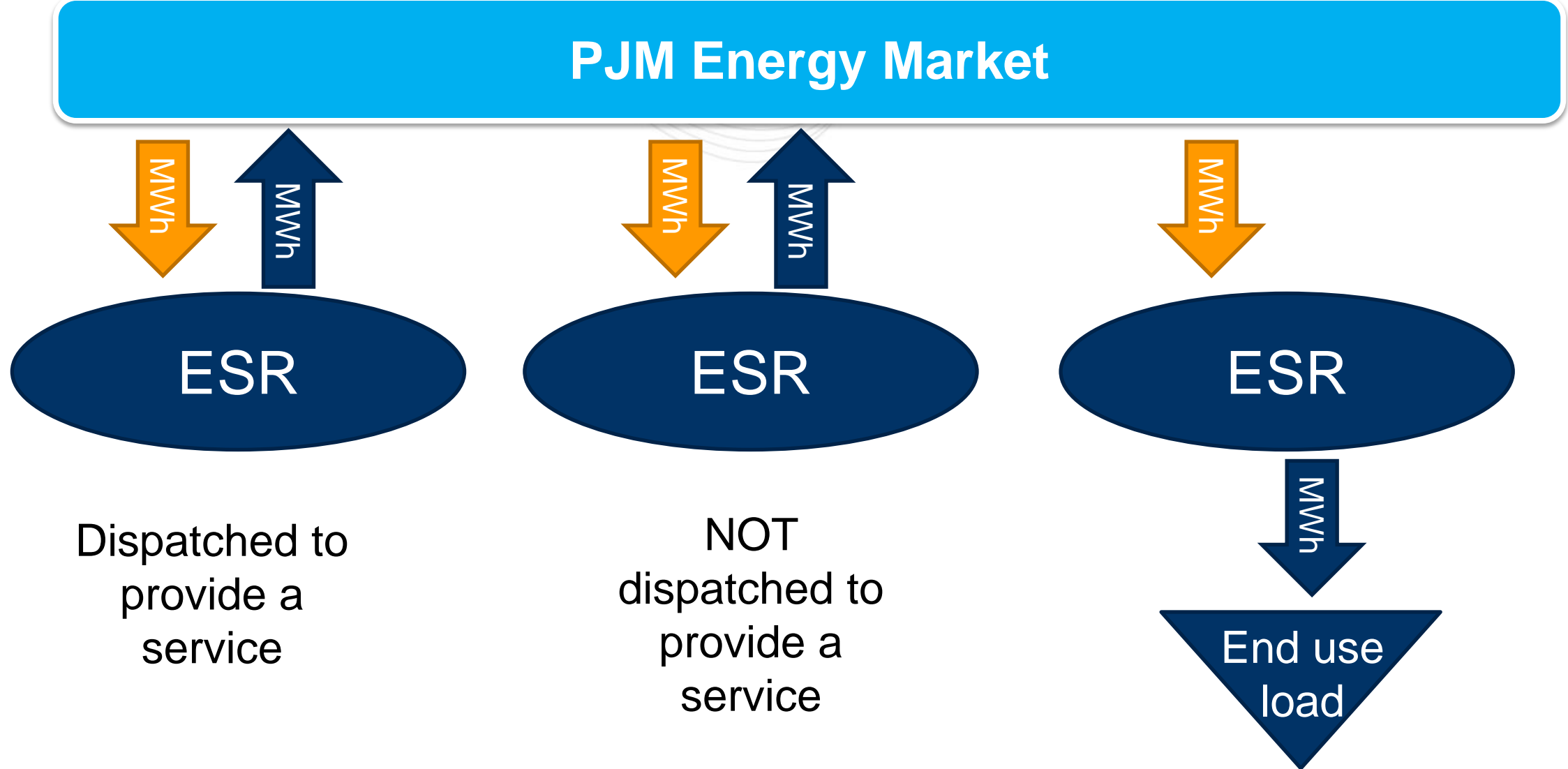


“Behind the customer meter” ESR

Utility grid



N.C. = normally closed switch. N.O. = normally open switch.



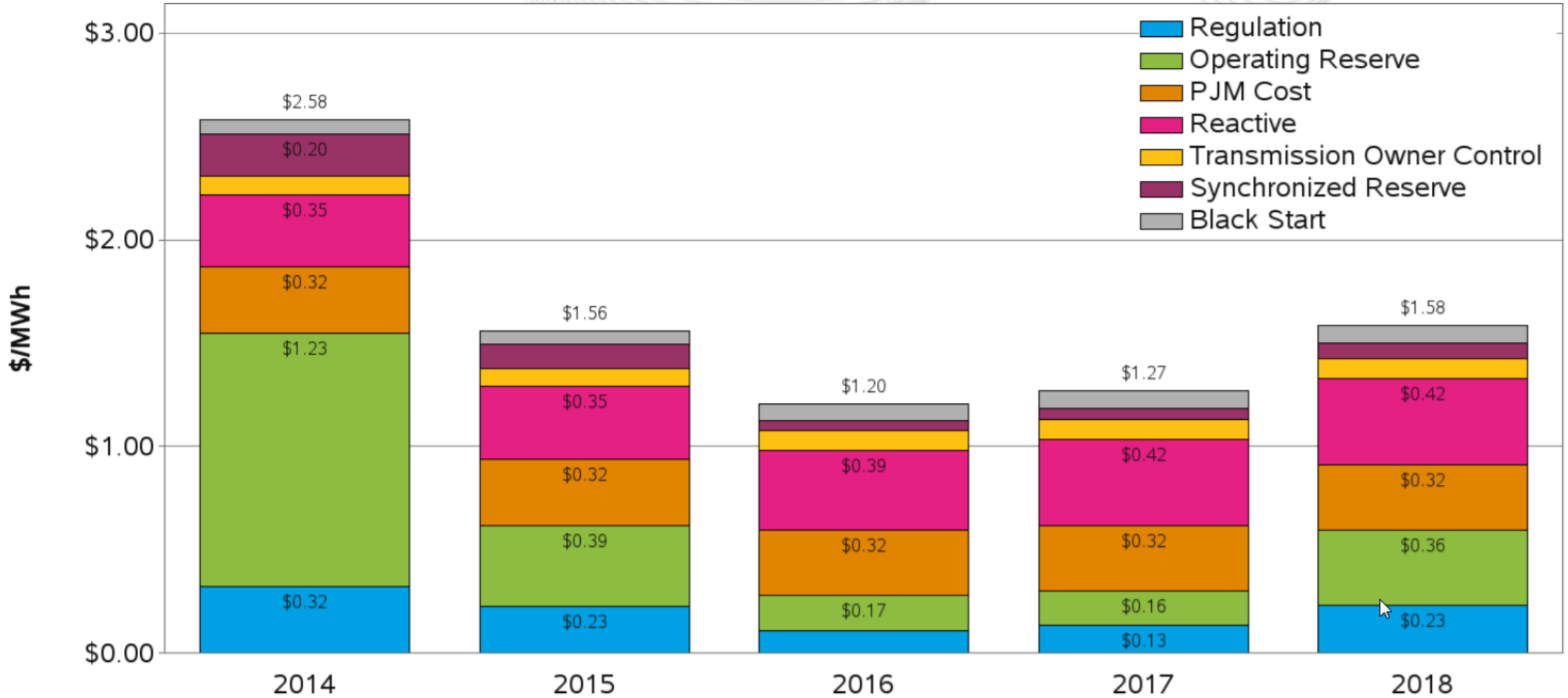


3 Categories of ESR Charging Depending on Resale and Dispatch

DRAFT STRAW PROPOSAL

	Sale to ESR → resale to PJM “Direct Charging Energy”		Sale to LSE → resale to load “Load-Serving Charging Energy”
<i>New Term</i>	“Dispatched Charging Energy”	“Non-Dispatched Charging Energy”	“Load-Serving Charging Energy”
<i>Non-energy Charges</i>	PJM Stated Rate (gen)	Stated Rate (gen) & NITS & misc w/ exceptions	NITS and misc & PJM Stated Rate (load) & RPM
<i>Source</i>	Not Transmission Customer	Transmission Customer	Transmission Customer and Load Serving Entity

2019 Implementation: methods needed to differentiate which MWh at a given ESR fall into which category



- Order 841 says Non-Dispatched Charging Energy should pay transmission charges, which makes it transmission customer load.
- Note that pumped hydro pumping today is not considered transmission customer load.
- In order to recognize the significant differences of ESR charging energy relative to ordinary transmission customer load, even when not dispatched, PJM proposes two exceptions and one clarification regarding these miscellaneous charges for “Non-Dispatched” Charging Energy.
 1. Exempt “Non-Dispatched” Charging Energy from Reactive Service charges.
 2. Exempt “Non-Dispatched” Charging Energy from Operating Reserve charges (apart from deviation).
 3. Clarify that “Non-Dispatched” Charging Energy pays the PJM Stated Rate as per generation, not load.



Draft Straw Proposal Changes for “Non-Dispatched” Charging Energy

Exempt	Reason
Reactive Service	<ul style="list-style-type: none">• ESR is obligated to supply reactive power while charging.• ESR is obligated to follow PJM control. PJM typically controls generators to alleviate or avoid reliability reactive constraints.
Operating Reserve (apart from deviations)	<ul style="list-style-type: none">• ESR is obligated to follow PJM control.• ESR “Direct Charging Energy” is not end-use load, ESR is expected to be a net supplier of value to PJM, and so ESR Direct Charging Energy is different from ordinary load.

Clarify	Reason
ESR to pay PJM Stated Rate as “generation”, not load.	<ul style="list-style-type: none">• ESR is obligated to follow PJM control.• ESR “Direct Charging Energy” is not end-use load, ESR is expected to be a net supplier of value to PJM, and so ESR Direct Charging Energy is different from ordinary Load.



NSPL = Network Service Peak Load

Status quo: miscellaneous charges

	Who	Determinant	Typical Magnitude
Black Start	Transmission Customers	NSPL (typically zonal 1CP)	Very small
Synch Reserve	LSEs	MWh	Very small
TO Control	Transmission Customers	MWh	Very small
Reactive Service	Transmission Customers	MWh	Small
Reactive Supply & Voltage Control	Transmission Customers	NSPL (typically zonal 1CP)	Small
PJM Stated Rate	Transmission Customers, generators, et al	MWh	Varies by class
Operating Reserve (non-deviation)	Transmission customers	MWh	Small
Regulation	LSEs	MWh	Small



Status quo: pumped hydro pumping & misc charges

	Who	Determinant	Pumping
Black Start	Transmission Customers	NSPL (typically zonal 1CP)	N/A
Synch Reserve	LSEs	MWh	N/A
TO Control	Transmission Customers	MWh	N/A
Reactive Service	Transmission Customers	MWh	N/A
Reactive Supply & Voltage Control	Transmission Customers	NSPL (typically zonal 1CP)	N/A
PJM Stated Rate	Transmission Customers, generators, et al	MWh	Applicable
Operating Reserve (non-deviation)	Transmission customers	MWh	N/A
Regulation	LSEs	MWh	N/A

NSPL = Network Service Peak Load



ESR Non-Dispatched Charging Energy = Transmission Customer

	Who	Determinant	Pumping
Black Start	Transmission Customers	NSPL (typically zonal 1CP)	N/A
Synch Reserve	LSEs	MWh	N/A
TO Control	Transmission Customers	MWh	N/A
Reactive Service	Transmission Customers	MWh	N/A
Reactive Supply & Voltage Control	Transmission Customers	NSPL (typically zonal 1CP)	N/A
PJM Stated Rate	Transmission Customers, generators, et al	MWh	Applicable
Operating Reserve (non-deviation)	Transmission customers	MWh	N/A
Regulation	LSEs	MWh	N/A

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Draft Straw Proposal for ESR “Non-Dispatched” Charging Energy

	Who	Determinant	Note
Black Start	Transmission Customers	NSPL (typically zonal 1CP)	Very small
Synch Reserve	LSEs	MWh	Not LSE
TO Control	Transmission Customers	MWh	Very small
Reactive Service	Transmission Customers	MWh	Exempt
Reactive Supply & Voltage Control	Transmission Customers	NSPL (typically zonal 1CP)	Small
PJM Stated Rate	Transmission Customers, gens, et al	MWh	Gen charges (not load charges)
Operating Reserve (non-deviation)	Transmission customers	MWh	Exempt from non-deviation charges
Regulation	LSEs	MWh	Not LSE