

Potential impact of MOPR order on DR resources

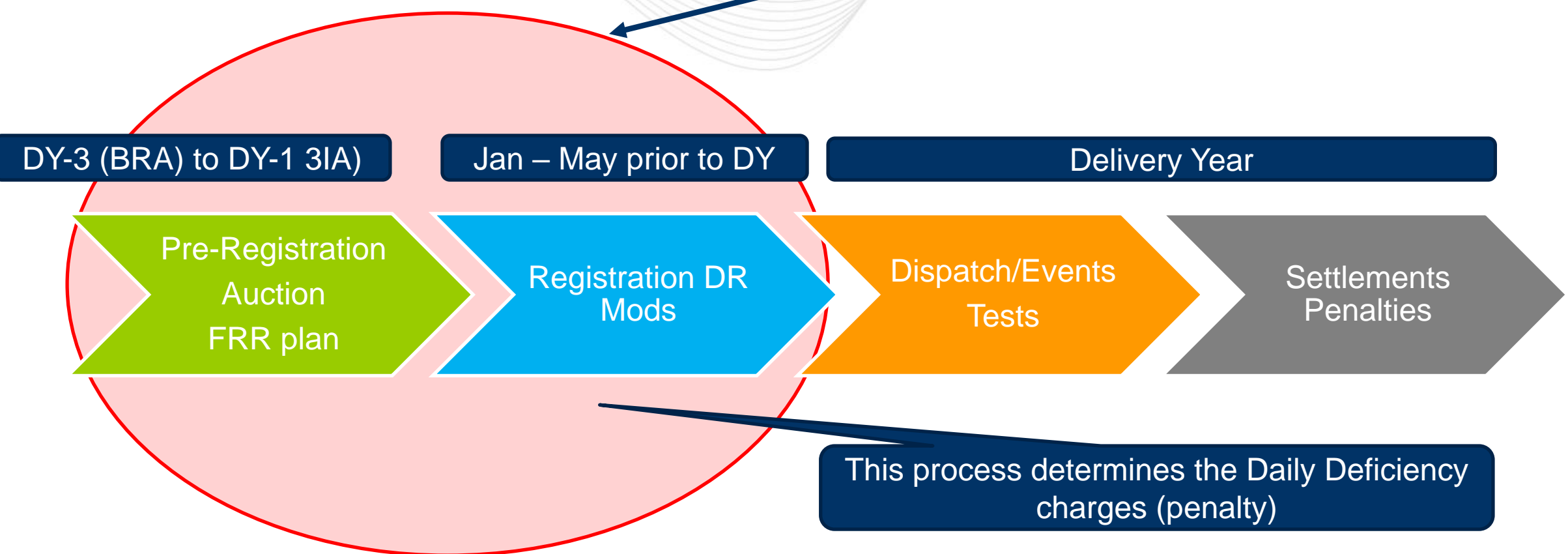
DRS
2/19/2020

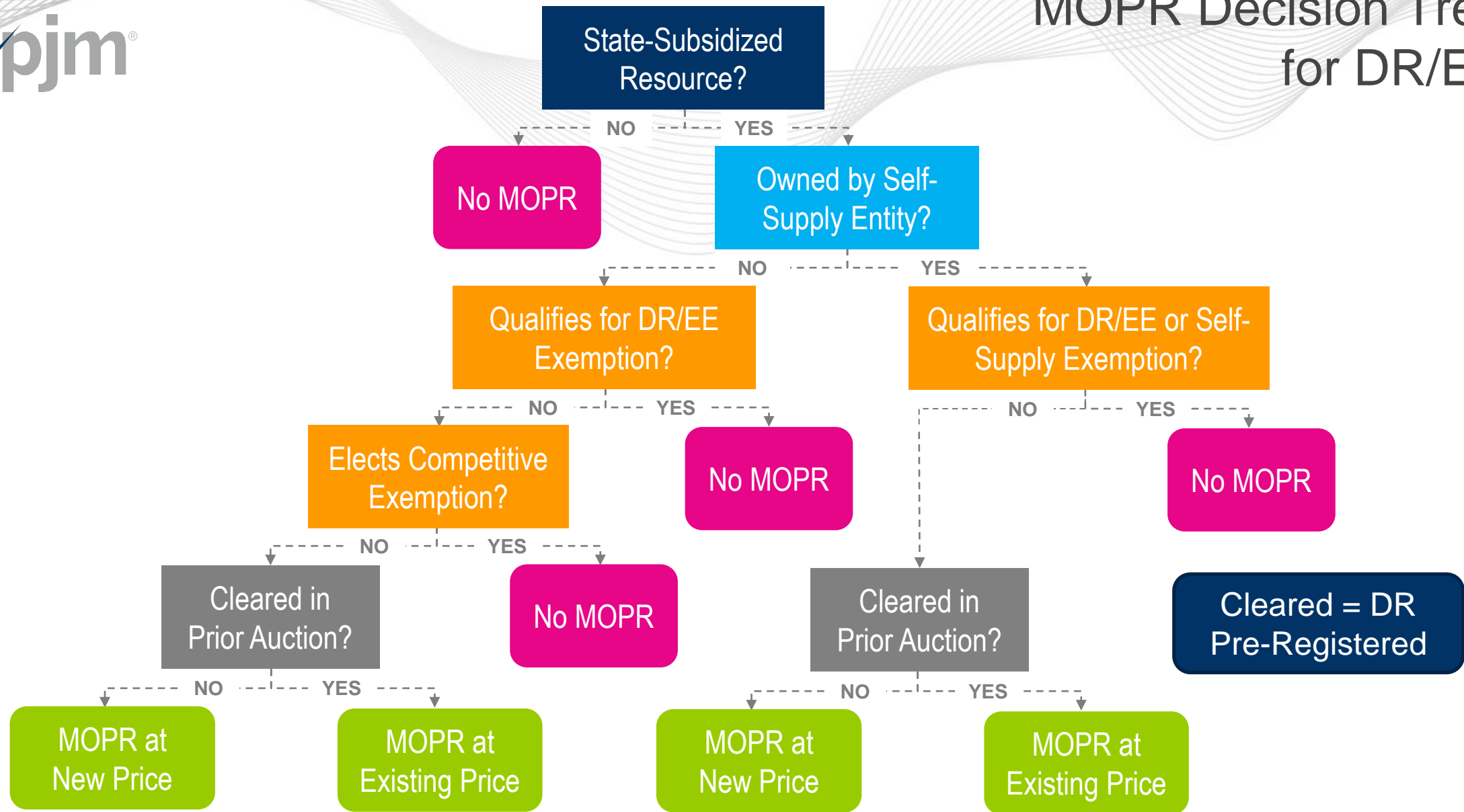
- Overview of MOPR order impact to DR
- Subsidies
- MOPR existing resource
- MOPR price structure
- DR process and MOPR order

This is a work in progress which will evolve for PJM compliance filing

- Assume all approaches discussed at DRS must comply with FERC order (whether you agree with the order or not)
- MOPR order impact
 - If resource receives “subsidy” then MOPR is applied
 - Resource that do not receive a “subsidy” may still need to change existing offer process to facilitate the calculation of MOPR prices for other resources
 - DR resources used as part of FRR plan are exempt

This is a work in progress and specifics may change for compliance filing

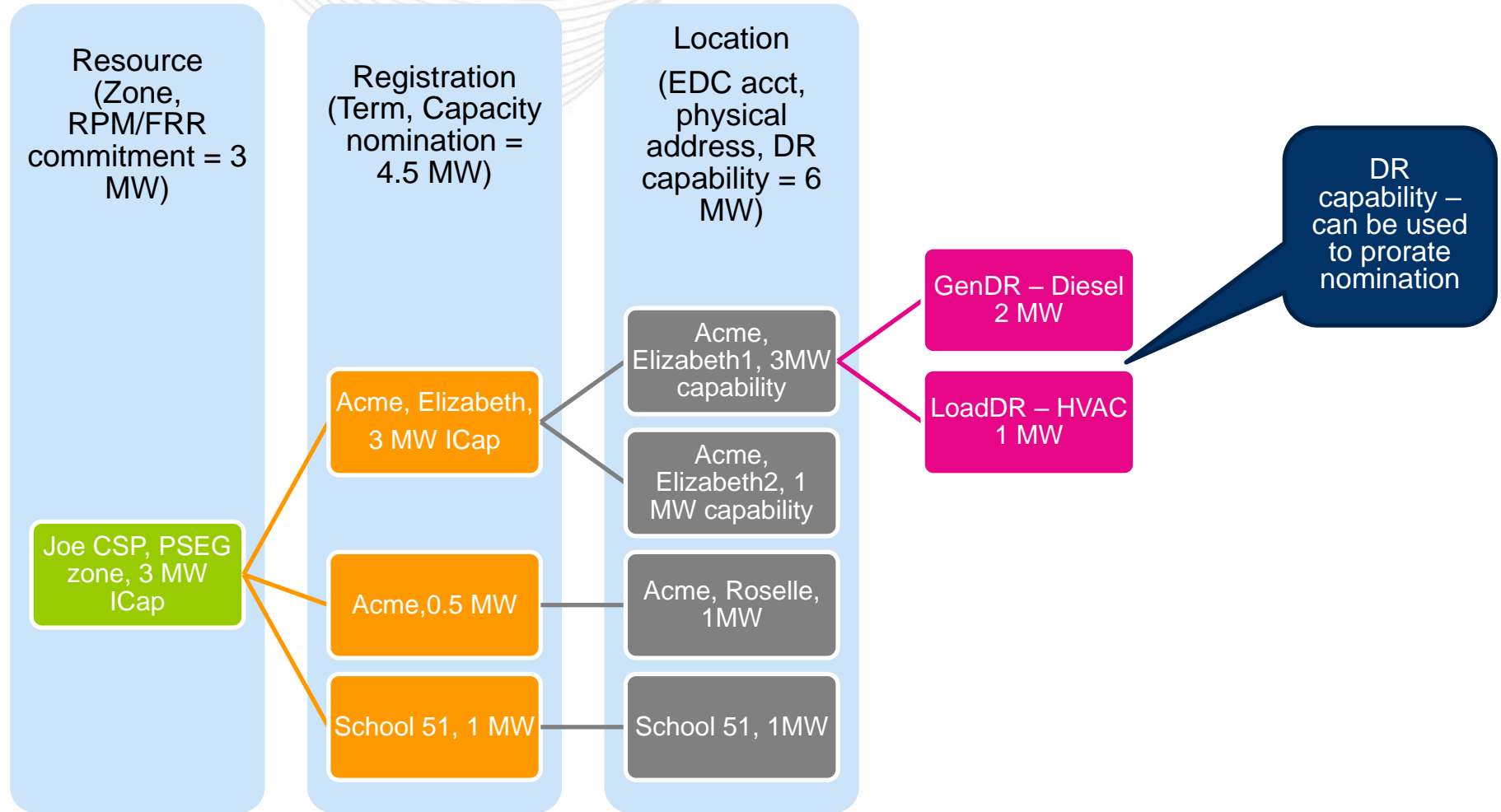




A direct or indirect payment, concession, rebate, subsidy, non-bypassable consumer charge, or other financial benefit that is (1) a result of any action, mandated process, or sponsored process of a state government, a political subdivision or agency of a state, or an electric cooperative formed pursuant to state law, and that (2) is derived from or connected to the procurement of (a) electricity or electric generation capacity sold at wholesale in interstate commerce, or (b) an attribute of the generation process for electricity or electric generation capacity sold at wholesale in interstate commerce, or (3) will support the construction, development, or operation of a new or existing capacity resource, or (4) could have the effect of allowing a resource to clear in any PJM capacity auction.

- No later than X days prior to the auction, the owner of any resource must identify in Capacity Exchange if it is eligible or ineligible to receive a state-subsidy for the relevant delivery year.
- By this same deadline, the owner of a State-Subsidized Resource may certify in Capacity Exchange that it will forgo the state-subsidy for the relevant delivery year (i.e., competitive exemption)
- The identification of a resource as a state-subsidized resource will carry across delivery years.
- An existing resource that is not eligible for a state-subsidy at the time of the certification process that subsequently elects to accept a state-subsidy for any part of the relevant delivery year will forgo capacity market revenues for that delivery year (subject to retroactive unit exception review)

Existing Process - Resource => Registration => Location



- CSP submits DR plan for “new” and “existing” resources
 - Existing resources criteria (currently registered and expect to be registered for future DY:
 - BRA (may) – Newer CSP (greater of DY and DY+1 MW)
 - 1st IA (sep) – current DY CSP (greater of DY and DY-1 MW)
 - 2nd IA (jul) – current DY CSP (greater of DY and DY-1 MW)
 - 3rd IA (feb)– Newer CSP (newer of DY and DY+1 MW)
 - Planned/New resource – Load reduction capability currently not registered
- CSP offers DR MWs into auction for typically 1 resource for each zone/LDA
 - When we had multiple products, a resource was created for each product
 - CSP would have multiple resources per zone



Key MOPR order “existing” parameters – PJM believes we can maintain current DR “existing” process for MOPR

- **(Existing_Exempt)** Existing Resource qualified for exemption – MW that cleared the auction or previously registered
 - PJM plans to define as all customers
 - registered prior to 20/21 or
 - registered for 20/21 to support MWs cleared in BRA/1rstIA/2ndIA, or
 - registered for 21/22 to support MWs cleared in BRA/1rstIA
 - PJM may need to develop an interim process to allow CSPs to register for 21/22 early depending on timing of 22/23 BRA.
- **(New)** New customers are treated similar to Generator uprate/repower
 - Customers registered for first time in 22/23 or later DY linked to MWs cleared in an auction
- **(Existing_NonExempt)** Existing Resources not qualified for exemption – registration associated with MWs that cleared an auction
 - New customers that are registered in subsequent DY linked to MWs cleared in an auction
- FERC indicated PJM may need to consider if CSP are required to have contracts with customers prior to auction
 - PJM does not believe this is necessary to comply with the order

Allows PJM to get to cleared MWs for 20/21 and 21/22

“Existing” for exemption is different from “Existing” for future MOPR price

- Competitive exemption allows a resource/location that receives a subsidy to forgo the subsidy and therefore not be subject to MOPR
- Track by Location during Pre-Registration process
 - If resource/customer elects Competitive exemption (forgo subsidy) and then subsequently receives a subsidy then:
 - Existing_NonExempt resource/customer not allowed to receive capacity revenue for entire DY
 - Unless it could demonstrate under the Unit-Specific Exemption that it would have cleared in the relevant auction
 - New resource/customer not allowed to participate in market for life of asset.



Unit Specific Exemption

- Work in progress

GenDR

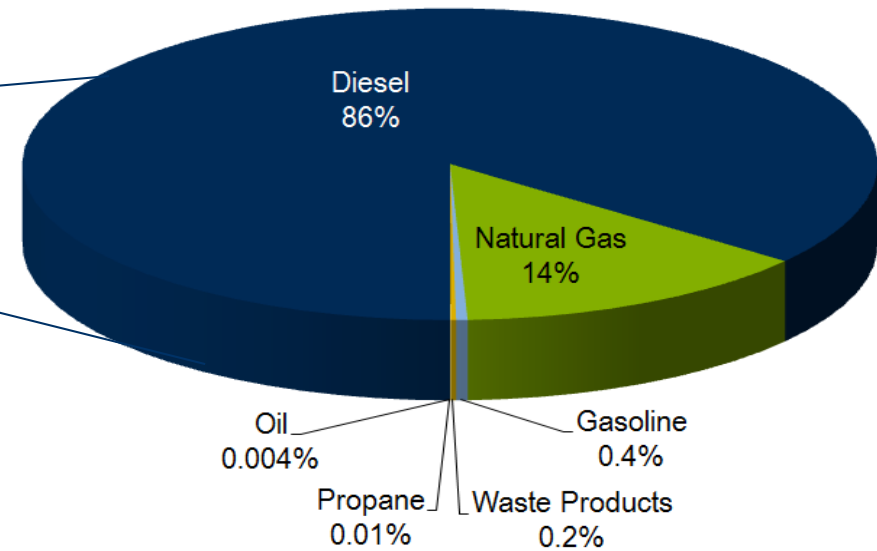
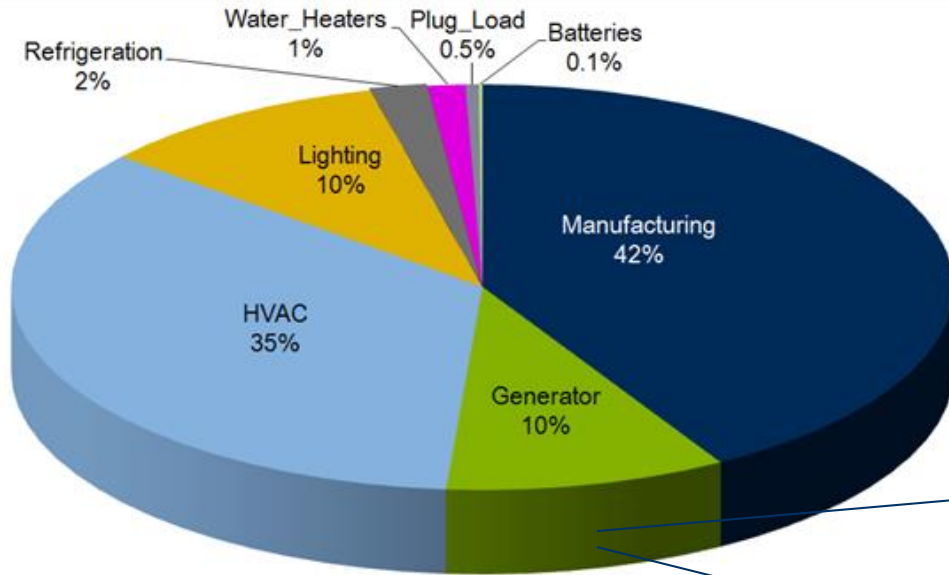
- Diesel
- Gas
- Etc.

LoadDR

- 3 year average offer prices

We do not have GenDR and LoadDR offers, registrations or capacity nominations today

GenDR breakdown (19/20 registrations) based on CSP reported capability





GenDR breakdown (19/20 registrations) based on CSP reported capability

Count of LOCATION_ID	Column Labels								
Row Labels	Diesel	Gasoline	Natural Gas	None	Oil	Propane	Waste Products	#N/A	Grand Total
Combustion Turbines	11	6	19				5		41
Internal Combustion Engine	1,622	1	339		1	9	4		1,976
Steam Engines and Cogeneration Units	4		38	2			7		51
#N/A								48	48
Grand Total	1,637	7	396	2	1	9	16	48	2,116

Sum of MAX_OUTPUT KW	Column Labels								
Row Labels	Diesel	Gasoline	Natural Gas	None	Oil	Propane	Waste Products	#N/A	Grand Total
Combustion Turbines	61,918	3,986	36,895				700		103,498
Internal Combustion Engine	1,585,129	68	142,529		35	302	812		1,728,875
Steam Engines and Cogeneration Units	7,804		49,326	7,000			27,183		91,313
#N/A								-	-
Grand Total	1,654,851	4,054	228,750	7,000	35	302	28,695	-	1,923,687

Priorities: 1) RICE – Diesel, 2) RICE – Gas, 3) CT – Gas, 4) Cogen/Steam - Gas

- GenDR
 - New
 - Diesel RICE(Gross CONE minus ?)
 - Gas RICE (Gross CONE minus ?)
 - Other (tbd) – unit specific exemptions?
 - Existing_NonExempt (Gross ACR minus unit specific offset)
 - Diesel RICE (Gross ACR minus ?)
 - Gas RICE (Gross ACR minus ?)
 - Other (tbd) – unit specific exemptions?
- GenDR offset – different than front of the meter generation and may include reliability value (avoided LOLE cost), retail cost saving, in addition to any wholesale market Energy and Ancillary Service \$.
 - How to handle?
- LoadDR
 - New – based on LoadDR 3 year average of offers
 - How to handle historic offers for first 3 years.
 - Breakout historic offers (linked to resource without GenDR) or some type of transition.
 - Existing_NonExempt – tbd (order does not stipulate)? Either same as New or \$0?

Class	Subsidy	Type	Existing_Exempt	Existing_Nonexempt	New
LoadDR	Yes	-	-	?	3yr Avg
LoadDR	No	-	-	-	-
GenDR	yes	gas	-	net ACR	net CONE
		diesel	-	net ACR	net CONE
		etc...	-	net ACR	net CONE
GenDR	no	gas	-		-
		diesel	-		-
		etc...	-		-

If CSP locations receive no subsidies, they may still need to break out offer by LoadDR and GenDR

1. Existing_Exempt (LoadDR+GenDR)
2. LoadDR No subsidy (Existing_NonExempt + New)
3. Load DR Subsidy (Existing_NonExempt)
4. Load DR Subsidy (New)
5. GenDR, No subsidy (Existing_NonExempt + New)
6. GenDR, Subsidy (Existing_NonExempt), Diesel
7. GenDR, Subsidy (Existing_NonExempt), Gas
8. GenDR, Subsidy (New), Diesel
9. GenDR, Subsidy (New), Gas

For each additional Gen class we add 2 additional resource types (list could increase to 15?)

- Potential options:
 - Create separate registrations for GenDR and LoadDR
 - Create separate nominations (GenDR and LoadDR) on each registration
 - PJM splits registration capacity nominations to GenDR and LoadDR based on prorate from Location load reduction capability
- Each registration will likely need to include only 1 location
- History: maybe we can use cleared resources with no Gen backed registrations to calculate 3 year LoadDR MOPR price?