



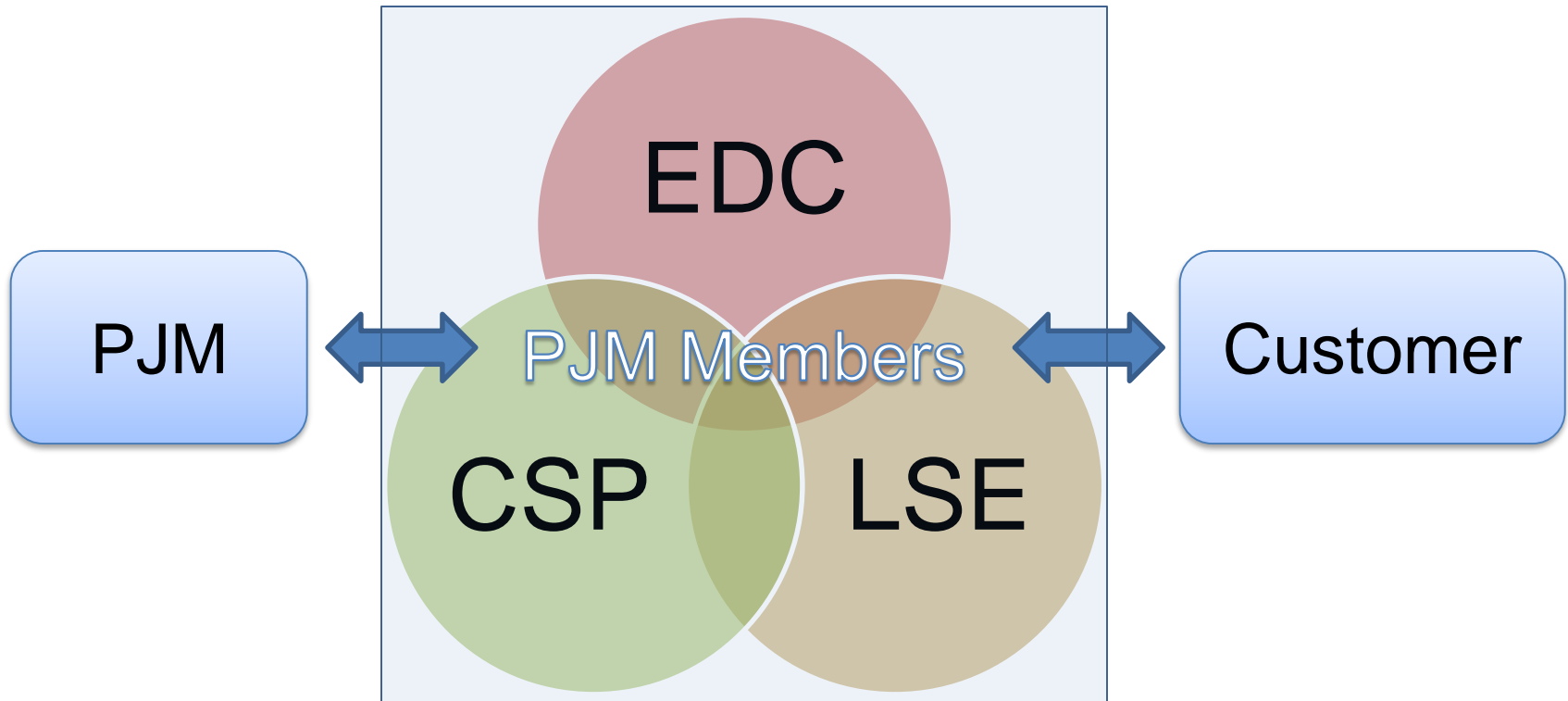
Update on PJM DR opportunities

COG BUILT
ENVIRONMENT AND
ENERGY ADVISORY
COMMITTEE

February 15, 2018

Washington, DC

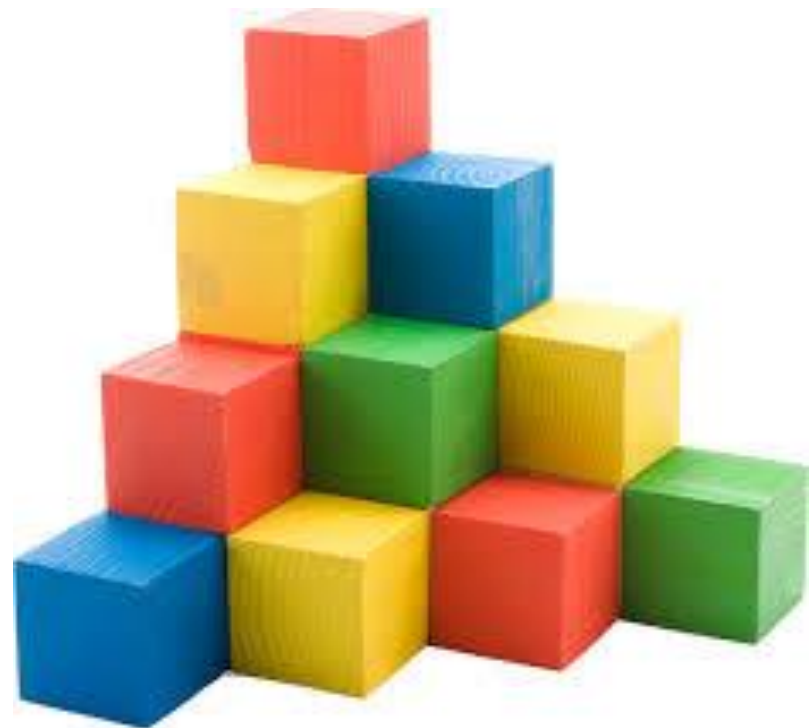
*Electric Distribution Company –
distribute electricity to the customer*



*Curtailment Service Provide –
provide DR services to customer*

*Load Serving Entity – provide
electricity for the customer*

- Wholesale market provides building blocks for robust participation
 - Energy
 - Capacity
 - Ancillary Services



Capacity Market transition toward Capacity Performance ("CP") annual requirement to reduce load

Now through 19/20 DY

Annual &
Summer
Products

May 2017 BRA

20/21 DY and future

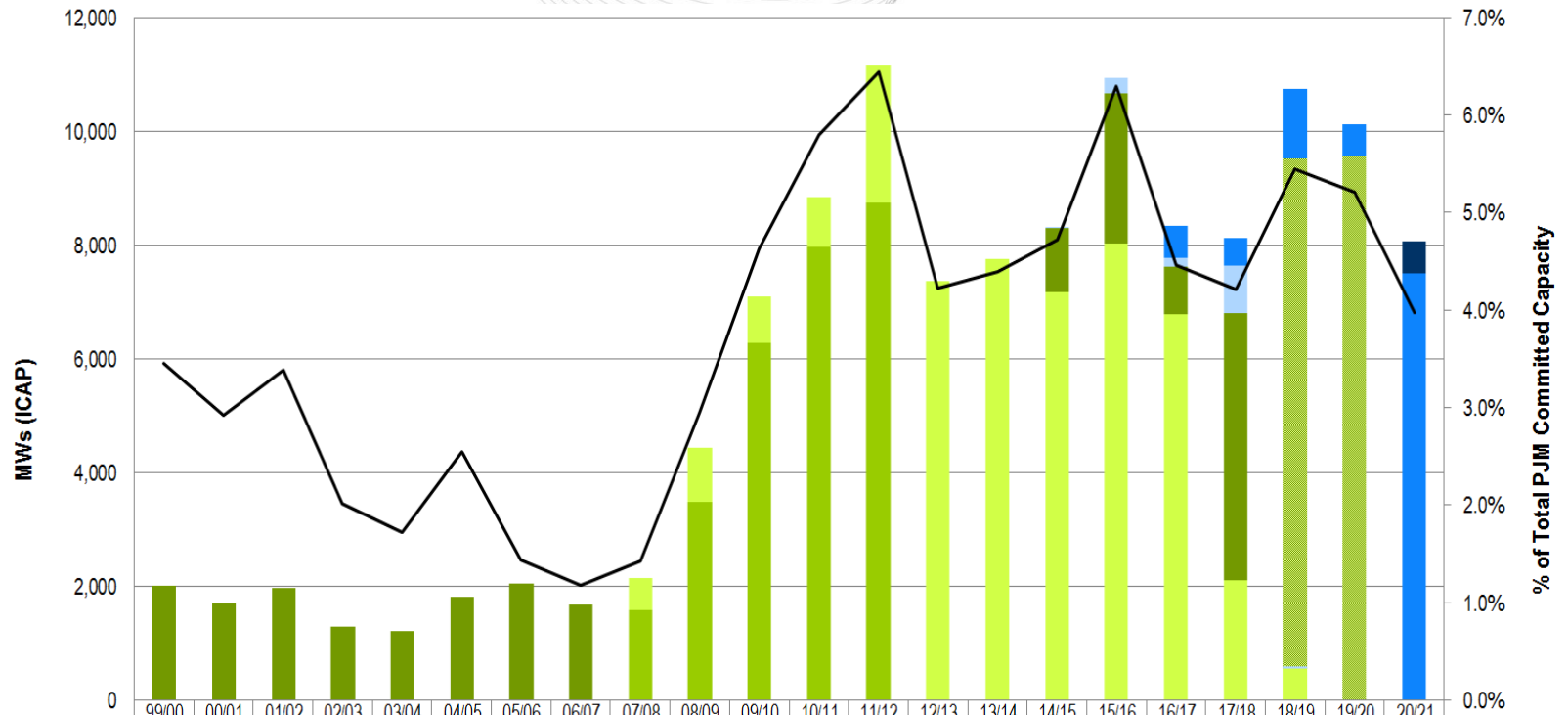
Annual (CP)
Product with
seasonal
aggregation

Summer DR can participate with Summer only requirements if aggregated with CP resource with excess Winter capability

- **Economic DR**
 - 5 minute settlements – receive 5 minute LMP.
 - price cap in energy market must be $< \$1,000$ Mwh, unless supported by incremental cost information
- **Emergency DR (“Load Management”)**
 - Review current capacity penalty (current rate based on 30 expected hours per year),
 - Summer Only DR – explore other opportunities for DR that can only reduce load in the summer
 - Test requirement review may be initiated over the next year
 - CSP required to test for 1 hour if not dispatched by PJM

- **Price Responsive Demand (“PRD”)**
 - measurement and verification may be changed to be consistent with Emergency DR (use WPL in the winter)
- **DER (behind the meter generation used to net load)**
 - Review and enhance existing process used for DER with capability beyond serving native load to provide output to wholesale market.
 - Identify DER that does not participate in the wholesale market for security analysis, situational awareness, and communication (during grid emergency).

- DR Capacity Market participation by product by Delivery Year (1999/2000 through 2020/2021)



	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	
PRD																							558
Annual - CP																		574	493	1,224	563	7,508	
Base - CP																				8,907	9,553		
Annual - DR																22	266	144	822	44			
Extended Summer - DR																1,126	2,635	836	4,694	1			
Limited - DR									555	940	815	869	2,425	7,361	7,753	7,166	8,027	6,783	2,111	555			
Limited - ILR									1,585	3,489	6,274	7,961	8,731					0	0	0	0	0	0
Limited - ALM	2,005	1,693	1,962	1,292	1,207	1,806	2,042	1,677										0	0	0	0	0	0
DR as % of Total PJM Committed Capacity	3.5%	2.9%	3.4%	2.0%	1.7%	2.5%	1.4%	1.2%	1.4%	2.9%	4.6%	5.8%	6.4%	4.2%	4.4%	4.7%	6.3%	4.5%	4.2%	5.4%	5.2%	4.0%	