



Facility Study Agreement (FSA) Units

June 15, 2018

- Status Quo:
 - Consider all FSAs & suspended ISAs at time of case build.
 - If FSAs or suspended ISAs are excluded from the Base Case at time of case build, TEAC should be notified.
- Issues with Status Quo
 - Generation mismatch between Market Efficiency Base Case and Reliability Case
 - Some FSA-related network upgrades may not be available at the time of case build
 - Most FSA units are never built
- FSA example on the next slide

- It was identified that a significant portion of the SUSQ-HARW simulated congestion was caused by the generator Sunbury #2 (Queue: AA2-182, FSA status)
- At the time of mid-cycle update, the reliability study for Sunbury #2 was in-progress and specific network upgrades were not finalized and available to be included in the base case.
- Congestion, therefore benefits, decreased significantly when the specific network upgrades were added to the base case.

- PJM Proposal:
 - By default, exclude from the Base Case the FSAs & suspended ISAs at time of case build.
 - In case of a reserve deficiency, resources with an FSA or a suspended ISA will be ranked by commercial probability, and PJM will include the resources with the highest rankings, as well as the expected network upgrades, in the market efficiency base case, until the reserve requirement is met.

- Over 85% of queued generation requests ultimately withdraws from the interconnection process and does not reach commercial operation
- Commercial probability model is based on historical data for projects that have either achieved in-service status or have withdrawn from PJM's interconnection queue.
- The model is used to calculate commercial probabilities for those projects that have not yet achieved resolution (active, under construction, or suspended).
- Commercial probabilities derived with logistic regression models are currently used in PJM's Installed Reserve Margin (IRM) Study.

- Commercial probability estimates address the following factors:
 - **Queue Stage:** Feasibility, Impact, Facilities, ISA/WMPA
 - **Fuel Type:** Natural Gas, Coal, Nuclear, Biomass, Hydro, Methane, Oil, Solar, and Wind.
 - **Location/State:** NJ, PA, VA, MD, OH, DE, IL, IN, NC, and WV. Other states that are not significantly represented in the Interconnection Queue's historical data were grouped in the category 'Other.'
 - **Size:** MW of energy to be supplied by the interconnection queue if it reaches commercial operation.
 - **Type of Project:** new unit or uprate to an existing unit.



Sample Commercial Probabilities

Unit #	Status	MW Energy	MW Capacity	Fuel	State	New/Uprate	Probability
1	FSA	10	10	Coal	WV	Uprate	91.6%
2	FSA	50	50	Natural Gas	VA	Uprate	90.8%
3	FSA	34	34	Hydro	VA	Uprate	90.7%
4	FSA	74	74	Natural Gas	NJ	Uprate	85.5%
5	FSA	30	30	Natural Gas	PA	Uprate	73.0%
6	FSA	50	100	Natural Gas	PA	Uprate	72.8%
7	FSA	5	5	Nuclear	PA	Uprate	58.2%
8	FSA	5	5	Nuclear	PA	Uprate	58.2%
9	FSA	0	3	Solar	OA	Uprate	54.0%
10	FSA	16.3	5.8	Wind	WV	Uprate	51.3%
11	FSA	200	26	Wind	IN	New	50.9%
12	FSA	15	5.7	Solar	VA	New	40.6%

Unit #	Status	MW Energy	MW Capacity	Fuel	State	New/Uprate	Probability
13	FSA	15.6	10.4	Solar	VA	New	39.1%
14	FSA	19.9	1.9	Other	OH	New	32.9%
15	FSA	2.3	0.87	Solar	NJ	New	30.4%
16	FSA	2.6	0.99	Solar	NJ	New	30.4%
17	FSA	1140	1040	Natural Gas	PA	New	28.2%
18	FSA	18	12.4	Solar	PA	New	14.4%
19	FSA	80	56	Solar	NC	New	6.3%
20	FSA	451	451	Natural Gas	DE	New	5.6%
21	FSA	120	84	Solar	NC	New	1.1%
22	FSA	1500	195	Wind	IN	New	0.1%
23	FSA	130	16.9	Wind	NC	New	0.0%