Overview of Generation Reactive Capability in Planning Model

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Current Reactive Modeling Procedure - RTEP power flow case

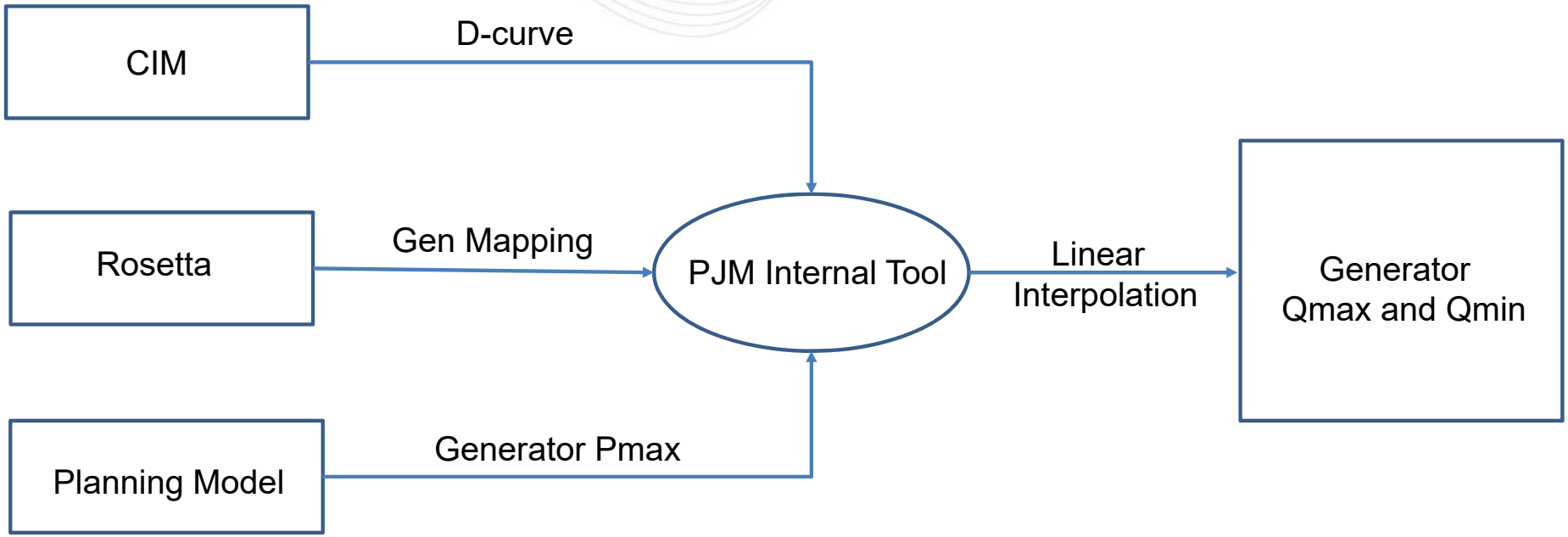
1. Use a mix and match approach.

   - In service units: use latest tested d-curves to determine reactive capabilities.
   - Future ISA units including uprating queue generation project: use PJM tariff PF requirement.

2. Inverter Based Resource - Wind/Solar units.

   - Reactive capability were proportionally divided based on its Capacity and Energy split.
   - For several TOs, PFs are used instead of tested d-curves.

Tested D-Curve Implementation



PF Rules Part 1- RTEP Power Flow Case

	Power Factor Requirement	Location	Modeling Required?
ISA and above (From AC2 queue)			
Synchronous generator (more than 20 MW)	0.95 leading - 0.90 lagging	Generation Terminal	Yes
Synchronous generator (equal or less than 20 MW)	0.95 leading - 0.90 lagging	Point of Interconnection	Yes
Wind generation	0.95 leading - 0.95 lagging	High side of main GSU	Yes
Solar generation	0.95 leading - 0.95 lagging	High side of main GSU	Yes
MTX project	0.95 leading - 0.95 lagging	Point of Interconnection	Yes
Increase in Generating Capacity or Energy output			
Synchronous generator	1.0 unity - 0.90 lagging		Yes
non syncronous generator	1.0 unity - 0.95 lagging		Yes

PF Rules Part 2- RTEP Power Flow Case

	Power Factor Requirement	Location	Modeling Required?
ISA and above (From AB1 queue to AC1 queue)			
Synchronous generator (more than 20 MW)	0.95 leading - 0.90 lagging	Generation Terminal	Yes
Synchronous generator (equal or less than 20 MW)	0.95 leading - 0.90 lagging	Point of Interconnection	Yes
Wind generation	0.95 leading - 0.95 lagging	Generation Terminal	Yes
Solar generation	0.95 leading - 0.95 lagging	Generation Terminal	Yes
MTX project	0.95 leading - 0.95 lagging	Point of Interconnection	Yes
Increase in Generating Capacity or Energy output			
Synchronous generator	1.0 unity - 0.90 lagging		Yes
non syncronous generator	1.0 unity - 0.95 lagging		Yes

PF Rules Part 3- RTEP Power Flow Case

	Power Factor Requirement	Location	Modeling Required?
ISA and above (Before AB1 queue)			
Synchronous generator (more than 20 MW)	0.95 leading - 0.90 lagging	Generation Terminal	Yes
Synchronous generator (equal or less than 20 MW)	0.95 leading - 0.90 lagging	Point of Interconnection	Yes
Wind generation	0.95 leading - 0.95 lagging	Point of interconnection	Per ISA
Solar generation	0.95 leading - 0.95 lagging	Point of interconnection	Per ISA
MTX project	0.95 leading - 0.95 lagging	Point of Interconnection	Yes
Increase in Generating Capacity or Energy output			
Synchronous generator	1.0 unity - 0.90 lagging		Yes
non syncronous generator	1.0 unity - 0.95 lagging		NO

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