



Proposed Reactive Deficiency Business Rules and Charges

PJM Reactive Power Focus Group
PJM Planning Committee
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- Mark Sims (PJM)
- GO and TO Representatives
 - APS
 - BGE
 - ComEd
 - Dominion
 - FPL
 - FE
 - NRG
 - ODEC
 - PECO
 - PSEG
 - RRI

- Reactive Deficiency exists when an existing synchronous generator submits a capacity or energy increase to the Generator Interconnection Queue and such increase results in the generator not meeting the PJM Power Factor requirements.
- It is not the intention of the Focus Group to change the existing tariff requirements.
- Proposed Reactive Deficiency business rules will not be applied retroactively to existing generators.

- Reactive Deficiency will be replaced, if all possible, by generator spinning Vars or, if infeasible or cost prohibited, by dynamic Vars (e.g. SVC or similar reactive devices).
- Shunt Capacitor application could be considered and will be reviewed by PJM on a case by case basis.
- Reactive Deficiency is defined as the difference between the MVar to meet the PJM requirements and the MVar capability after the upgrade.
- Reactive Deficiency Charge is equal to the reactive deficiency (in MVar) times the most recent average cost estimates (in \$/MVar) for installing SVCs on the PJM systems.

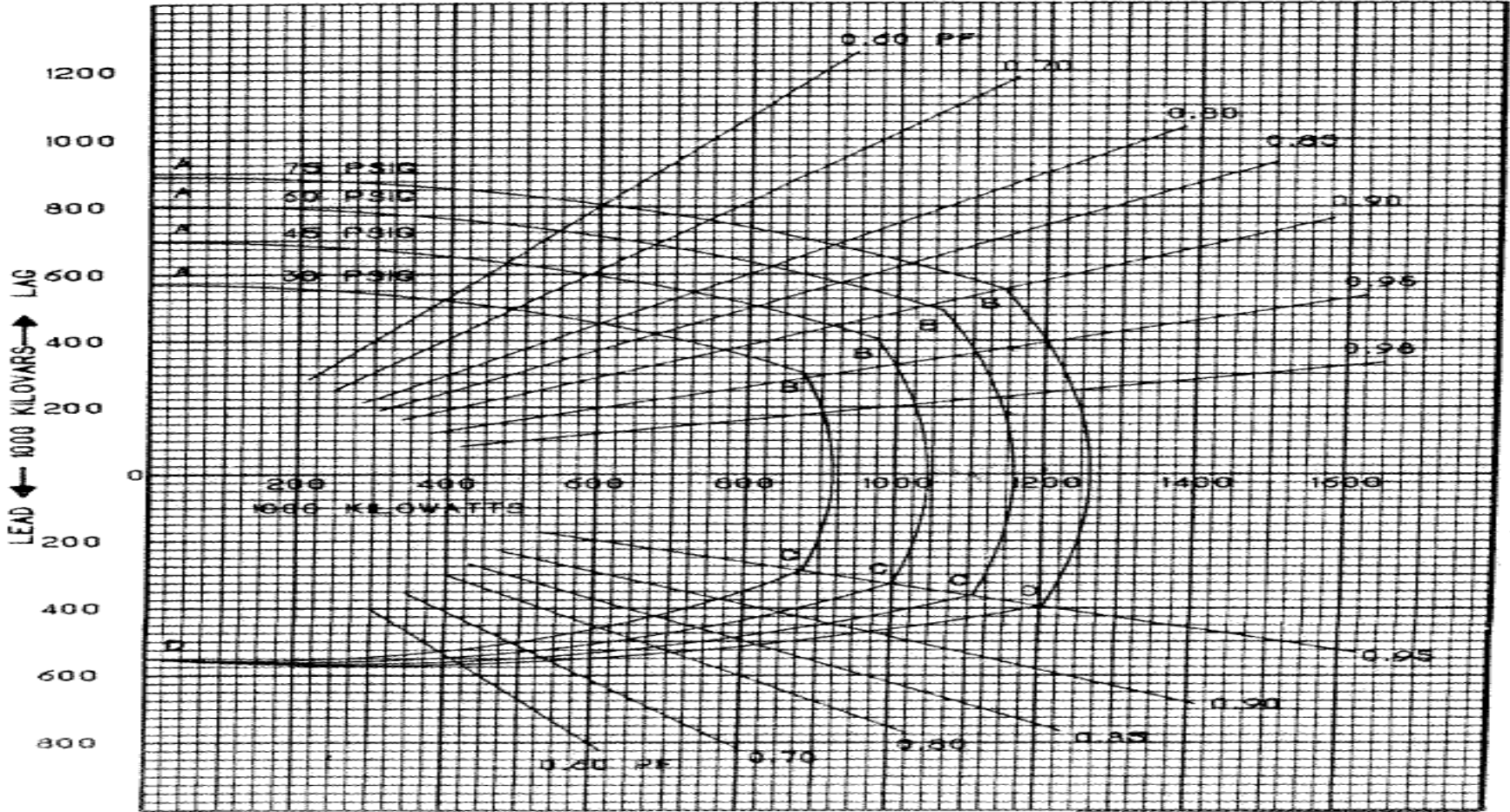
- There will be 2 SVC cost estimates – one for installation at and above 230kV and one below 230kV.
- Applicable charge is based on the generator's interconnection voltage.
- For reactive deficiency greater than or equal to 50 MVar, the TO provides actual SVC cost estimate.
- Reactive Deficiency Payment (in cash or a letter of credit) will be used to fund reactive projects in the Transmission Owner's zone in which the Interconnection Customer's generator is located.
- Transmission Owner shall be responsible to construct, own and maintain these reactive projects.

- Existing Generators without a FERC Proforma Interconnection Service Agreement
 - The MVar requirement for the incremental MW increase is stated in the Part VI, Att.O, App. 2, Section 4.7.1.2 of the Tariff
 - The MVar requirement for the before upgrade maximum facility MW output is the existing (grandfathered) MVar capability of the unit
 - The total MVar requirement after the upgrade is the sum of the two above
- The Reactive Deficiency is the difference between the above total MVar requirement after the upgrade and the unit's actual MVar capability at the maximum facility output after the upgrade

- Existing Generators with a FERC Proforma ISA
 - The MVar requirement for the incremental MW increase is stated in the Part VI, Att.O, App. 2, Section 4.7.1.2 of the Tariff
 - The MVar requirement for the before upgrade maximum facility MW output is based on the same tariff requirement as above
 - The total MVar requirement after the upgrade is the sum of the two above
- The Reactive Deficiency is the difference between the above total MVar requirement after the upgrade and the unit's actual MVar capability at the maximum facility output after the upgrade

Generator X – Unit 1 Reactive Capability Curve

ATB 4 POLE, 1.264.970 KVA. 1800 RPM. 22000 VOLTS
 .90 PF. .58 SCR. 75 PSIG HYDROGEN PRESSURE. 545VOLTS EXCITATION



CURVE AB LIMITED BY FIELD HEATING
 CURVE BC LIMITED BY ARMATURE HEATING
 CURVE CD LIMITED BY ARMATURE CORE END HEATING

Generator X – Unit 1	MW	MVar requirement (Generator with an ISA)	MVar requirement (Generator without an ISA)
Max Facility Output (Winter rating)	1225		
Requested Δ MW Increase	20		
MVar requirement w.r.t. Δ MW		9.7 (Calculated)	
Maximum facility output after the upgrade	1245		
Actual MVar Capability after upgrade			175
MVAR Capability of Existing Unit		593.3 (Calculated)	381 (Grandfathered)
MVar Requirement		$593.3 + 9.7 = \mathbf{603}$	$381 + 9.7 = \mathbf{390.7}$
Reactive Deficiency		$603 - 175 = \mathbf{428}$	$390.7 - 175 = \mathbf{215.7}$

- MRC Approval
- Implementation

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