

Transition Cycle 2, Phase 1 System Impact Study Reports

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Report Type: PJM provides two types of SIS reports:

1. Executive Summary Report: covers an entire cohort
2. Individual SIS Report: specific details for an individual Interconnection Service Request

Website Access: SIS Reports will be made available on PJM.com for Project Developers to access. Check the status and download the SIS reports at this location: <https://www.pjm.com/planning/m/cycle-service-request-status>



ANALYSIS ACTIVITIES	CASE DEVELOPMENT ACTIVITIES	TO ACTIVITIES
<ul style="list-style-type: none"> • Summer Peak, Light Load, Winter Peak • Special studies (Load Deliv, N-1-1 Analysis) • Affected system operator screening 	<ul style="list-style-type: none"> • Short circuit case build activity • Stability case and scope of work development 	<ul style="list-style-type: none"> • TO analysis • Review PJM analysis results and provide desk-side estimates for reinforcements. • Provide desk-side estimates for Interconnection Facilities.



Transition Cycle 2 Phase 1 Executive Summary Report

TC2 Phase 1 Executive Summary Report includes:

- List of all New Service Requests including high level project details
- Total Network Upgrade Cost Summary for all New Service Requests
- Network Impacts identified from the study
- CIR Claims for deactivated Generators



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Stability Reinforcements

Transition Cycle 2

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New Service Requests

System Impact Study Executive Summary Report

Transition Cycle 2 Phase I

Introduction

This Phase I System Impact Study executive summary report has been prepared in accordance with the PJM Open Access Transmission Tariff Part VII, Subpart D, sections 307 and 308. This report presents an executive summary of Phase I System Impact Study results for New Service Requests (projects) in Transition Cycle 2.

TC2 Phase 1 Individual SIS includes:

- Detailed information for a single New Service Request
- Breakdown of Transmission Owner scope of work and costs
- Network Impacts: Analysis Results/breakdown of all overloaded flowgates
 - Reflecting “GD2” Study Methodology
- Required Network Upgrades including magnitude estimated costs and scope of work.
- Will be posted on [pjm.com](https://www.pjm.com)



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Reactive Power Analysis
Steady-State Voltage Analysis

XYZ-123 Phase I Study Report

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Point Of Interconnection 138 kV

90.0 MW Capacity / 150.0 MW Energy

Introduction

This Phase I System Impact Study Report (PH1) has been prepared in accordance with the PJM Open Access Transmission Tariff, Part VII, Subpart D, sections 307 and 308 for New Service Requests (projects) in Transition Cycle 2. The Project Developer/Eligible Customer (developer) is Project Developer, LLC, and the Transmission Provider (TP) is PJM Interconnection, LLC (PJM). The interconnected Transmission Owner (TO) is Transmission Company, Inc.

Notable Changes

- Updates to the presentation of analysis to include Individual Plant Deliverability (IPD) results.
- Removal of “Local Congestion” sections in accordance with GD2 study methodology.
- Inclusion of Winter Peak analysis results.
- Look and feel updates throughout.

Reminder: Some projects may be required to provide a PSCAD model at DP2 if it is identified in the Phase II analysis that an EMT study is required in Phase III. Impacted projects will be notified of the requirement during Phase II SIS if we identify a need per the DMDG Guidelines, Section 3.

Readiness Deposit

Per Tariff Part VII, Subpart D, section 309 (Decision Point I) A.1.a.i and PJM Manual 14H, section 6.2, Readiness Deposit #2 (RD2) are funds committed by the Project Developer or Eligible Customer based upon the applicable contribution to Network Upgrades as defined below and not used to fund studies nor to offset Security.

During Decision Point I (DP1), the Project Developer or Eligible Customer is required to submit Readiness Deposit #2, which is calculated as 10% of cost allocation for required Phase I Network Upgrades minus Readiness Deposit #1.

Note 1: “Network Upgrades” referred to in the calculation include both (i) the Physical Interconnection Network Upgrades and (ii) the System Reliability Network Upgrades as shown in the Cost Summary table.

Note 2: Readiness Deposit #1 (RD1) = (\$4,000 * Project Size (MW))

Note 3: Readiness Deposit #2 can be zero, but may not be a negative number.

Readiness Deposit #2 Due for Project XYZ-123

Readiness Deposit #2 has been calculated for the project based on the Phase I System Impact Study results and is shown in the table below. This Readiness Deposit #2 must be provided at Decision Point I through either a wire transfer or letter of credit per Manual 14H, Section 6.2.

Readiness Deposit for XYZ-123

Project(s):	XYZ-123
10% of cost allocation for Phase I Network Upgrades (A)	\$1,234,576
Readiness Deposit #1 (RD1) Received (B)	\$1,234
Readiness Deposit #2 (RD2) due at DP1	$A - B = \$1,233,342$

Note: Failure to provide an acceptable form of Readiness Deposit (RD2) by the end of Decision Point I will result in withdrawal and termination of the New Service Request.

Summer Peak Analysis

The New Service Request XYZ-123 was evaluated as a 500 MW (250 MW Capacity) injection in the Transmission Owner area.

The request was part of a plant consisting of generators XYZ-123 and ABC-456. The total Energy output of the plant was evaluated at its maximum seasonal capability of 825 MW.

In compliance to applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners), the potential Summer Peak period network impacts were as follows:

Note: The capacity portion of Generation Interconnection Requests are evaluated for single or N-1 contingencies. The full energy output of Generation Interconnection Requests are evaluated for multiple facility contingencies (double circuit tower line, fault with a stuck breaker, and bus fault).

Click icon to see all the busses loading to this flowgate and impact of topology changing reinforcements

Summer Peak Analysis											
Type	Area	Facility Description	Contingency Name	Contingency Type	DC AC	Final Cycle Loading	Rating (MVA)	Rating Type	MVA to Mitigate	MW Contribution	Details
IPD	DVP	XYZ-123 TP-ALINE 115.0 kV Ckt 1 line	XYZ_P4-2: 878_GEN-B	Breaker	AC	1.15 %	249.0 MVA	C	287.1 MVA	19.98 MW	🔍
IPD	DVP	XYZ-123 TP-BLINE 115.0 kV Ckt 1 line	XYZ_P4-2: 939_SRT-D	Breaker	AC	1.15 %	249.0 MVA	C	287.1 MVA	19.98 MW	🔍
IPD	DVP	XYZ-123 TP-CLINE 115.0 kV Ckt 1 line	XYZ_P1-2: LN 4561_SRT-A-4	Single	AC	1.14 %	203.98 MVA	B	232.12 MVA	19.99 MW	🔍
GD	DVP/PEPCO	ASTATION-BSTATION 230.0 kV Ckt 1 line	XYZ_P4-2: H2T351_SRT-A	Breaker	AC	1.47 %	1417.0 MVA	B	2078.06 MVA	1.21 MW	🔍
GD	DVP/PEPCO	CSTATION-DSTATION 230.0 kV Ckt 1 line	XYZ_P4-2: H1T845_SRT-A	Breaker	AC	1.47 %	1417.0 MVA	B	2077.99 MVA	1.21 MW	🔍
GD	DVP/PEPCO	ESTATION - FSTATION 230.0 kV Ckt 1 line	XYZ_P4-2: 560T654_SRT-S	Breaker	AC	1.46 %	1417.0 MVA	B	2064.89 MVA	1.2 MW	🔍

New column identifying if the violation is resultant of the IPD or GD test

Hover over Facility or Contingency to reveal bus numbers and contingency definition

Bus numbers for this violation.

Summer Peak Analysis				
Facility Description	Contingency Name	Contingency Type	DC AC	Final C
YLINE5-YSTN5 500.0 kV Ckt 1 line	XYZ_P1: LN 878_GEN-B	Breaker	AC	
ZLINE7-ZSTN7 115.0 kV Ckt 2 line	XYZ_P9: LN 997_GEN-A	Breaker	AC	
TLINE5-TSTN5 230.0/500.0 kV Ckt 1 line	XYZ_P2: LN 213_GEN-A	Breaker	AC	
ALINE8-ASTN8 230.0/500.0 kV Ckt 1 line	XYZ_P5: LN 312_GEN-C	Breaker	AC	

Copy and Search functions built into the table.

The search function will scan all text in the table including some conditionally visible text like contingency definitions and bus numbers

Contingency Definition for this violation.

Summer Peak Analysis			
Contingency Name	Contingency Type	DC AC	Final C
XYZ_P1: LN 878_GEN-B	CONTINGENCY 'XYZ_P7: LN 525_GEN-C' REDACTED COMMAND /* FAKE SUBSTATION REDACTED COMMAND /* FAKE SUBSTATION REDACTED COMMAND /* FAKE SUBSTATION REDACTED COMMAND /* FAKE SUBSTATION REDACTED LINE		
XYZ_P9: LN 997_GEN-A			
XYZ_P2: LN 213_GEN-A			
XYZ_P5: LN 312_GEN-C			
XYZ_P2: LN 381_GEN-A			
XYZ_P6: LN 820_GEN-A			
XYZ_P1: LN 486_GEN-C	Breaker	AC	



Summer Peak Analysis					
Area	Facility Description	Contingency Name	Contingency Type	DC AC	Final C
DVP	YLINE5-YSTN5 500.0 kV Ckt 1 line	XYZ_P1: LN 878_GEN-B	Breaker	AC	
DVP	ZLINE7-ZSTN7 115.0 kV Ckt 2 line	XYZ_P9: LN 997_GEN-A	Breaker	AC	
DVP	TLINE5-TSTN5 230.0/500.0 kV Ckt 1 line	XYZ_P2: LN 213_GEN-A	Breaker	AC	
DVP	ALINE8-ASTN8 230.0/500.0 kV Ckt 1 line	XYZ_P5: LN 312_GEN-C	Breaker	AC	

- This section contains a list of other New Service Requests which share in the loading of an overloaded facility in your report.
- Changes made to these projects could impact your load flow analysis results and / or cost allocation for a particular network upgrade reinforcement.
- These are Generation Deliverability dependencies only. “Energy Only” projects will show a blank table.

New Service Request Dependencies

The New Service Requests below are listed in one or more dispatch for the overloads identified in this report. These projects contribute to the loading of the overloaded facilities identified in this report. The percent overload of a facility and cost allocation you may have towards a particular reinforcement could vary depending on the action of other projects. The status of each project at the time of the analysis is presented in the table. This list may change as other projects withdraw or modify their requests. This table is valid for load flow analyses only.

New Service Requests Dependencies		
Project ID	Project Name	Status
ZM28-762A	Substation Q 230kV	In Service
SF32-561	Substation L 500kV	In Service
NF33-434	Substation M 115kV	In Service

The System Reinforcements section contains a high-level cost breakdown of system reinforcements (shown here) as well as individual details for each system reinforcement.

XYZ-123 System Reinforcements:			
TO	RTEP ID	Title	Allocated Cost (\$USD)
Transmission Owner	n1234.1	Wreck and rebuild 12 miles of 230 kV Line #298 from Station A to Station B Substations with twin bundled (2) 768.2 ACSS/TW (20/7) "MAUMEE" conductor.	\$1,234,567
Transmission Owner	n1234.2	Wreck and rebuild 34 miles of 230 kV Line 298 from Station C to Station D Substations with twin bundled (2) 768 ACSS/TW (20/7) "MAUMEE" conductor.	\$234,567
Transmission Owner	n1234.3	Wreck and rebuild 56 miles of Line #511 between Station E and Station F Substations with three (3) 1351 ACSS/TW and associated substation work.	\$345,678
Grand Total:			\$1,814,812

System Reinforcement: x0001

Type	Load Flow
TO	Utility A
RTEP ID / TO ID	x0001 / TOX-AAA-001
Title	Upgrade transformer equipment at Substation A
Description	Upgrade transformer equipment at Substation A
Total Cost (\$USD)	\$40,000,000
Allocated Cost (\$USD)	\$10,000,000
Time Estimate	40 to 42 Months

Contributor

Click to see applicable ratings

Hover for details

Flowgates Addressed by this Reinforcement

Facility	Contingency
SUBSTATION A 230.0/500.0 kV Ckt 1 transformer	(Any)

Cost Allocation

Project	MW Impact	Percent Allocation	Allocated Cost (\$USD)
XYZ-123	120 MW	25.0%	\$11,000,000
XYZ-124	100 MW	24.0%	\$10,000,000
XYZ-125	135 MW	26.0%	\$12,000,000

Expanding the rows on the flowgates table will reveal the new ratings if there are any

Flowgates Addressed by this Reinforcement			
Facility			Contingency
SUBSTATION A 230.0/500.0 kV Ckt 1 transformer			(Any)
Rating Set	Rating Type	Rating Value	
(All)	A	1440.0 MVA	
(All)	B	1440.0 MVA	
(All)	C	1440.0 MVA	

Hovering over the “linked” indicator (if present) in the cost allocation table will reveal projects which were considered in aggregate for MW Impact because they share the same POI.

Project	MW Impact	Percent Allocation	Allocated Cost (\$USD)
XYZ-123	<div> SUBSTATION A 230 kV - Company 1: This project's cost allocation eligibility was based on the grouped impact of all New Service Requests which shared this POI within this cycle. The following project shared this POI: XYZ-123, XYZ-124, XYZ-125 </div>		
XYZ-124			
XYZ-125			

Cost Summary

The table below shows a summary of the total planning level cost estimates for this New Service Request project. These network upgrade costs are subject to change as a result of a facility study performed by the TO during the Phase II or Phase III System Impact Study.

Based on the Phase I SIS results, the XYZ-123 project has the following allocation of costs for interconnection. The cost contribution towards Readiness Deposit are also shown below.

Cost Summary		
Description	Cost Allocated to XYZ-123	Cost Subject to Readiness
Transmission Owner Interconnection Facilities (TOIF)	\$1,234,567	\$1,234,576
Other Scope	\$0	\$0
Option to Build Oversight	\$0	\$0
Physical Interconnection Network Upgrades		
Stand Alone Network Upgrades	\$0	\$0
Network Upgrades	\$1,234,567	\$1,234,567
System Reliability Network Upgrades		
Steady State Thermal & Voltage (SP & LL)	\$0	\$0
Transient Stability	\$0	\$0
Short Circuit	\$0	\$0
Transmission Owner Analysis		
SubRegional	\$0	\$0
Distribution	\$0	\$0
Affected System Study Reinforcements		
AFS - PJM Violatons	\$0	\$0
AFS - Non-PJM Violations	\$0	\$0
Total	\$2,469,134	\$2,469,134

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