



**GEN-2015-046**  
Impact Restudy for  
Dickinson Transformer  
Constraint Re-evaluation

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By Generator Interconnections

## REVISION HISTORY

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DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
10/1/2018	Generator Interconnection	Initial draft report issued.	
10/16/2018	SPP	Corrected language in paragraph before Table 3, Removed Kummer Ridge – Roundup Project in Appendix E, Final report issued.	

## EXECUTIVE SUMMARY

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The GEN-2015-046 Interconnection Customer requested a re-evaluation of the Dickinson transformer constraint identified in the DISIS-2015-002-4 restudy. SPP has performed this re-evaluation to determine whether the transformer is still required, given significant withdrawals and load forecast changes that have occurred since the latest re-study.

SPP's analysis shows that the transformer upgrade is still required and that GEN-2015-046 no longer meets the criteria for cost allocation.

Nothing in this study should be construed as a guarantee of transmission service or delivery rights. If the customer wishes to obtain deliverability to final customers, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the customer.

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## INTRODUCTION

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The re-evaluation of DISIS-2015-002-4 Impact Restudy is a generation interconnection study performed to evaluate whether the upgrade of the Dickinson transformer is a required for the requests shown in Table 1. This re-evaluation utilized the updated load forecast of the 2017 ITP Near Term models as well as the removal of several higher-queued and current-study withdrawn requests.

**TABLE 1: INTERCONNECTION REQUESTS**

Request	Capacity (MW)	Point of Interconnection	Group
GEN-2015-046	300	Tande 345 kV	16
GEN-2015-096	150	Tap Belfied - Rhame 230kV	16
GEN-2015-098	100	Mingusville 230kV	16

## POWER FLOW ANALYSIS

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The original DISIS-2015-002-4 study utilized the 2016 ITP Near Term (2015 Series) models. In order to capture the more recent load forecasts, this restudy utilized the 2017 ITP Near Term (2016 Series) models.

The base models were modified by adding active interconnection requests through DISIS-2015-002-4 and re-dispatching those models as needed to reflect the additional generation.

The following higher queued and current study withdrawn requests were removed from the models:

- GEN-2010-007IS
- GEN-2014-004IS
- GEN-2014-012
- GEN-2014-047
- GEN-2015-031

An ACCC analysis was performed on the models and TDF was then collected on the constraints.

In the original DISIS-2015-002-4 study, the Dickinson transformer was observed to overload under system-intact conditions. Three interconnection requests met the criteria for cost allocation: GEN-2015-046, GEN-2015-096, and GEN-2015-098.

**TABLE 2: TDF RESULTS FROM DISIS-2015-002-4**

	<b>TDF (%)</b>			
<b>Source/Season</b>	<b>2016 WP</b>	<b>2020 SP</b>	<b>2020 WP</b>	<b>2025 SP</b>
GEN-2015-046	2.965	---	---	---
GEN-2015-096	5.771	5.723	5.702	5.731
GEN-2015-098	5.177	5.131	5.11	5.139

In the re-study, the Dickinson transformer overload was again observed in the 2017 Winter Peak, 2021 Winter Peak models are under N-1 and the 2026 Summer Peak model is under system intact conditions. Using a strict distribution factor threshold of 3.00% pursuant to SPP Business Practice 7250, only GEN-2015-096 and GEN-2015-098 met the criteria for cost allocation.

**TABLE 3: TDF RESULTS FROM DICKINSON TRANSFORMER RE-EVALUATION**

	<b>TDF (%)</b>			
<b>Source/Season</b>	<b>2017 WP</b>	<b>2021 SP</b>	<b>2021 WP</b>	<b>2026 SP</b>
GEN-2015-046	0.632	---	1.947	2.783
GEN-2015-096	14.358	---	5.902	5.678
GEN-2015-098	12.188	---	5.336	5.083

The cost allocation for the Dickinson transformer for the three interconnection requests changed as shown in the following table.

**TABLE 4: DICKINSON TRANSFORMER COST ALLOCATION**

	<b>DISIS-2015-002-4</b>	<b>Re-evaluation</b>
GEN-2015-046	\$4,677,679	\$0
GEN-2015-096	\$4,435,730	\$7,363,452
GEN-2015-098	\$2,650,770	\$4,400,728

The total cost allocation for each interconnection request is shown in Appendix E.

## APPENDIX E

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# Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades\*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
<b>GEN-2015-046</b>			
GEN-2015-046 Interconnection Costs See One-Line Diagram.	Current Study	\$3,759,097	\$3,759,097
MISO Affected System Study See section 4 power flow analysis.	Current Study	\$TBD	\$TBD
Neset - Tande 230kV CKT 1 Build new 230kV line from Neset - Tande	Previously Allocated		\$3,000,000
Neset 230kV Terminal Upgrade(s) Install necessary terminal equinstall necessary terminal upgrades at Neset 230kV to accommodate new 230kV line from new Tande substation	Previously Allocated		\$4,000,000
Tande 345/230kV Substation Construct new 345kV Tande Substation & Tande 345/230/13kV transformer Construct new 345kV Tande Substation adjacent to the existing 230kV Neset Substation and	Previously Allocated		\$18,000,000
	<b>Current Study Total</b>	\$3,759,097	
<b>GEN-2015-096</b>			
Dickinson 230/115/13.8kV CKT 2 Build new 230/115/13.8kV Transformer circuit #2 at Dickinson and expand Dickinson 115kV switchyard	Current Study	\$7,363,452	\$11,764,180
GEN-2015-096 Interconnection Costs See One-Line Diagram.	Current Study	\$0	\$0
MISO Affected System Study See section 4 power flow analysis.	Current Study	\$TBD	\$TBD
Tande 345/230kV Substation Construct new 345kV Tande Substation & Tande 345/230/13kV transformer Construct new 345kV Tande Substation adjacent to the existing 230kV Neset Substation and	Previously Allocated		\$18,000,000
	<b>Current Study Total</b>	\$7,363,452	

\* Withdrawal of higher queued projects will cause a restudy and may result in higher costs



<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
<b>GEN-2015-098</b>			
Dickinson 230/115/13.8kV CKT 2 Build new 230/115/13.8kV Transformer circuit #2 at Dickinson and expand Dickinson 115kV switchyard	Current Study	\$4,400,728	\$11,764,180
GEN-2015-098 Interconnection Costs See One-Line Diagram.	Current Study	\$1,870,058	\$1,870,058
MISO Affected System Study See section 4 power flow analysis.	Current Study	\$TBD	\$TBD
Tande 345/230kV Substation Construct new 345kV Tande Substation & Tande 345/230/13kV transformer Construct new 345kV Tande Substation adjacent to the existing 230kV Neset Substation and	Previously Allocated		\$18,000,000
	<b>Current Study Total</b>	<b>\$6,270,786</b>	

\* Does not include cost to mitigate possible AECI and MISO Affected System Upgrade(s).

\* Withdrawal of higher queued projects will cause a restudy and may result in higher costs