



Grid Codes: Recommendations for Merging Transmission and Distribution Codes

October 2020





Table of content

1.	Acronyms	3
2.	Introduction	4
3.	Scope of document	6
4.	Structure and content of Tx connection code	6
5.	Structure and content of Dx connection code	12
6.	 First step of a future generator connection code 6.1 Interim step of merging C25 and C39 6.2 Recommended interim combined circular – article level 	18 18 52
7.	Recommendations for roadmap	59
8.	References	60
9.	Further reading on grid codes and guiding documents	60

Document history

Rev.	Date	Author	Reviewer	Description
0.0	2020.06.28	Knud Johansen	ERAV, DEA	Draft document released for comments
0.1	2020.07.03	Knud Johansen	ERAV, DEA	Section 6 - tables finalized, section 7 added
				Language corrections all over in the document.
				Section 6 spilt up into two subsections:
				Section 6.1 – an interim step in the merging is included as
				proposed by ERAV.
				Section 6.2 - the recommended final merging is kept as the
0.2	2020.09.29	Knud Johansen	ERAV, DEA	current version of C25 and C39 is lacking several essential
				requirements and the requirements is not sorted into cat-
				egories (A, B, C, D) so it's difficult for the reader to find the
				relevant requirements.
				Section 7 is corrected accordingly with introduction of sec-
				tion 6.1 and related activities.
				Section 6.2 – content with final generator connection code
0.2	2020.10.05	Knud Johansen	ERAV, DEA	moved to the report D3.3. The content changed to the fi-
0.5				nal content of the interim version with a combination of
				the articles from circular C25 and C39.
1.0	2020.10.08	Knud Johansen	ERAV	Document released for final comments.

1. Acronyms

The table includes acronyms used in this document.

AS	Ancillary Services
C25	Circular 25 – The regulations on electricity transmission system
C39	Circular 39 – The regulations on electricity distribution system
DSO	Distribution System Operator
Dx	Distribution grid system
FSM	Frequency Sensitivity Mode – frequency control mode in normal frequency range
GC	Grid Code
GL	European Guideline
ISO	Independent System Operator – system balancing responsible
LFSM-O	Limited Frequency Sensitivity Mode – Overfrequency – required frequency response in case of high
	system frequency – above normal range
LFSM-U	Limited Frequency Sensitivity Mode – Underfrequency – required frequency response in case of low
	system frequency – below normal range
NC	European Network Code
NC RfG	Network Code for connecting all types of generators
RSO	Relevant System Operator – could be a TSO or DSO depending on the specific grid
RTO	Regional Transmission System Operator
SA	Synchronous Area – an electricity system with the same frequency
SO GL	ENTSO-E System Operation Guideline
TSO	Transmission System Operator
Тх	Transmission grid system
VN	Vietnamese
VN GC	Vietnamese Grid Code – one collective document

2. Introduction

The main purpose of this document is to recommend a possible merging of the grid connection requirements for connections in the transmission grid system C25 (Tx) and the distribution grid system C39 (Dx).

Based on the review of the current VN grid connection code documents, a recommendation is provided for further indepth discussions in the VN electricity sector and brought up at the next maintenance cycle of the VN GC for Tx and Dx connections.

This document provides a proposal on how to merge the current grid connection code based on our experience from the global arena of grid codes, especially European/Danish regulations, looking at the structure and content of the Tx and DX grid codes. A detailed analysis of the requirement structure can be found in the report for Deliverable 3.1 according to the VN DEPP DE2 ToR agreement.

As the resulting proposal for a new structure and content of the VN connection code, this document includes recommendations for a merging of the Tx and Dx connection codes in future releases of the VN GC documents.

The primary motivation and reflections for a merged grid connection code are the following.

- 1. Why establish one single grid connection code?
 - a. Generator manufacturers need a clear set of minimum technical requirements to develop their products.
 - b. Plant developers needs a clear set of minimum technical requirements to design and select components/subsystems for power plant development. They are looking to minimize the risk of mistakes on technical aspects.
 - c. Investors are looking to minimize financial risks. Do not revise the code too often (revision cycle should not be more often than every 4-5 years). It typically takes 2-3 years to fully establish a renewable power plant. If technical requirements change during the establishment process, investors may move their investments to less regulated places on the globe. Creating a sound investment climate is one of the success criteria.
 - d. Generation units connected to Tx and Dx grid systems are the same and the grid systems need the same stabilizing services as specified in the grid connection code. The amount of services could be different in various parts of the grid system which is handled by parameter ranges and allocation of the specific parameters for the specific part of the grid system.
- 2. Who is the typical reader / user of a grid connection code?
 - a. Product design engineers
 - b. Power system design engineers
 - c. Power plant developers
 - d. Power system investors
- 3. What is the recommendation on content? What to include as a minimum?
 - a. Specification of the legal foundation for the technical regulation e.g. VN Electricity Act
 - b. Scope of document
 - c. Legal aspects / document validity / confidentiality / entry into force / reference to other regulations of relevance
 - d. Definitions and acronyms

- 1. Plant categories used, e.g. A, B, C, D, for sorting the requirements
- 2. Grid connection point, compliance evaluation point, etc.
- e. All relevant minimum technical requirements to be fulfilled to achieve grid connection
 - 1. Operational ranges frequency / voltage
 - 2. Power quality aspects
 - 1. headroom for emission of harmonics, flicker, rapid voltage changes, etc.
 - 2. resistance to disturbances in the grid
 - 3. Active power control capability
 - 4. Reactive power capability
 - 5. Protection requirements
 - 6. Communication and information exchange and protection capability
 - 7. Documentation requirements
 - 1. compliance testing
 - 2. electrical simulation model
 - 3. product type certificates
 - 4. safety certificates
 - 5. compliance certificates
- f. All relevant technical information about the grid connection point
 - 1. Short-circuit impedance minimum / maximum
 - 2. Frequency plot for grid connection point impedance
 - 3. Availability of grid connection point
 - 4. Normal operating conditions frequency, voltage,
 - 1. normal operating state
 - 2. alert operating state
 - 5. Abnormal operating conditions
 - 1. emergency operating state
 - 2. system restoration state
 - 3. black-out state
- 4. Recommended structure of technical requirements of a connection code an example.

Generator technology	Synchronous	Non-synchronous
	generation systems	generation systems
Requirement categories		
(plant size)		
Requirements for category A	Minimum requirements for A	Minimum requirements for A
Requirements for category B	Minimum requirements for B	Minimum requirements for B
Requirements for category C	Minimum requirements for C	Minimum requirements for C
Requirements for category D	Minimum requirements for D	Minimum requirements for D

Note:

The recommendation is for requirements to be specified as cumulative, meaning that minimum requirements for category B are based on minimum requirements for category A plus additional requirements for category B; minimum requirements for category C are based on minimum requirements for category B plus additional

requirements for category C; minimum requirements for category D are based on minimum requirements for category C plus additional requirements for category D.

In section 6 below, a detailed proposal for the final, merged grid connection code is stated.

3. Scope of document

Compare the VN grid connection codes to international regulations, especially European/Danish regulations, focusing on the generic connection code structure and content with the aim of harmonizing and combining existing distribution and transmission connection codes into one grid code. This document only concerns grid connection of generation facilities.

Based on a list of structural and content differences, present recommendations on how differences found could enrich future revisions of the VN grid code documents.

The recommendations for a merging of the Tx and Dx connection code can be adopted in future releases of the VN GC documents, depending on the needs in VN's industry.

This document is provided as deliverable 3.2 according to the VN DEPP DE2 ToR agreement.

4. Structure and content of Tx connection code

The structure and articles in the current Tx connection code are as listed in the table below. Articles not included in the merged connection code structure are marked with strikethrough in the table.

Chapter I, GENERAL PROVISIONS	C25/2016/TT-BCT
	Article 1. Governing scope
	Article 2. Regulated entities
	Article 3. Interpretation of terms
Chapter II, REQUIREMENTS FOR	
OPERATION OF ELECTRICITY	
TRANSMISSION SYSTEM	
	Article 4. Frequency
	Article 5. Stabilization of electricity system
	Article 6. Voltage
	Article 7. Phase balance
	Article 8. Harmonics
	Article 9. Flicker perceptibility
	Article 10. Voltage fluctuation
	Article 11. Neutral grounding
	Article 12. Short-circuit current and fault clearing
	time
	Article 13. Earth fault factor
	Article 14. Reliability of transmission grid
	Article 15. Loss of power on transmission grid

Chapter III, LOAD FORECASTING		
FOR NATIONAL ELECTRICITY		
SYSTEM		
		Article 16. General provisions on residual load
		forecasting for national electricity system
		Article 17. Annual load forecasting
		Article 18. Monthly load forecasting
		Article 19. Weekly load forecasting
		Article 20. Daily load forecasting
		Article 21. Load forecasting in a electricity market
		transaction cycle
Chapter IV, TRANSMISSION		Note: this chapter is removed according to the
GRID DEVELOPMENT PLAN		C30 statements.
		Question: where will these requirements be placed
		in the future? In the proposed grid planning code?
		Article 22. General principle
		Article 23. Content of transmission grid develop-
		ment plan
		Article 24. Responsibility for supplying infor-
		mation serving formulation of transmission grid
		development plan
		Article 25. Procedures for formulation, approval
		and public announcement of transmission grid
		development plans
Chapter V, CONNECTION TO	Section 1. GENERAL	
TRANSMISSION GRID	PRINCIPLE	
		Article 26. Connection point
		Article 27. Borders of assets and operation man-
		agement
		Article 28. General requirements
	Section 2. GENERAL	
	TECHNICAL REQUIREMENTS	
	FOR EQUIPMENT	
	CONNECTING TO	
	TRANSMISSION GRID	
		Article 29. Requirements for connecting equip-
		ment
		Article 30. Requirements for protective relay sys-
		tem
		Article 31. Requirements for information system

	Article 32. Requirements for connection of SCADA
	system
	Article 33. Neutral grounding in transformers
	Article 34. Power factor
	Article 35. Load fluctuation
	Article 36 Automatic frequency load shedding
	system
	Article 37. Requirements of Control Center
Section 3. TECHNICAL	
REQUIREMENTS FOR	
CONNECTION TO HYDRO	
POWER PLANTS AND	
	Article 28 Pequirements for generating sets'
	Afticle 58. Requirements for generating sets
	Article 39. Excitation system of a generating set
	Article 40. Governor
	Article 41. Black start
Section 4. TECHNICAL	
REQUIREMENTS OF WIND	
AND SOLAR POWER PLANTS	
	Article 42. Technical requirements of wind and
	solar power plants
Section 5. PROCEDURES FOR	
CONNECTION AGREEMENT	
	Article 43. Procedures
	Article 44. Time limit for execution of connection
	agreement
Section 6.	
IMPLEMENTATION OF	
CONNECTION AGREEMENT	
	Article 45. Rights to get access to equipment at
	connection points
	Article 46. Dossier for inspection of energizing
	conditions
	Article 47. Inspection of conditions for energizing
	connection points
	Article 48. Energizing connection points
	Article 49. Trial operation, acceptance and official
	operation of equipment behind connection points
	Article 50. Inspection and monitoring of equip-
	ment after being put into official operation

		Auticle F1 Device and after simulation of the second
		Article 51. Replacement of equipment at connec-
		tion points
	Section 7. PREPARATION	
	FOR ENERGIZING	
	ELECTRICAL EQUIPMENT OF	
	TRANSMISSION NETWORK	
	OPERATOR	
		Article 52 Dessier for inspection of connection
		point energizing conditions
		Article 53. Energizing
		Article 54 Replacement of equipment on trans
		mission grid
		Article 55 General provisions on disconnection
		and reconnection
		Article 56. Voluntary disconnection
		Article 57 Compulsory disconnection
		Article 57. Compulsory disconnection
		Article 58. Reconnection
Chapter VI, OPERATION OF	Section 1. OPERATING	
ELECTRICITY TRANSMISSION	PRINCIPLES	
SYSTEM		
		Article 59. Operation modes of electricity trans-
		mission system
		Article 60. Operating principles of electricity
		transmission system
		Article 61. Inspection and monitoring of protec-
		tive relay system
		Article 62. Stable operation of electricity system
		Article 63. Trial operation and monitoring
		Article 64. Handling of incident
		Article 65 Notice of decline in electricity system
		Article 65. Notice of decline in electricity system
		Article 66 Load chadding for electricity system so
		Article 66. Load shedding for electricity system se-
	Section 2 RESPONSIBILITY	
	OF UNITS IN OPERATION OF	
	ELECTRICITY TRANSMISSION	
	SYSTEM	
		Article 67. Responsibility of electricity system and
		market operator
		Article 68. Responsibility of transmission network
		operator
		Article 69. Responsibility of generating units

	Article 70 Decreancibility of electricity distribution
 	units, electricity retailers
	Article 71. Responsibility of electricity customers
Section 3. ANCILLARY	
SERVICES	
	Article 72. Types of ancillary services
	Article 73. Technical requirements of ancillary ser-
	vices
	Article 74. Principles of determining demand for
	ancillary services
	Article 75. Registration of ancillary services
 Section 4 MAINTENANCE	
TRANSMISSION SYSTEM	
	Article /b. General provisions on maintenance
	and repair of electricity transmission system
	Article 77. Establishment of plan for maintenance
	and repair of electricity transmission system
	Article 78. Order of priority on separation of
	equipment for maintenance and repair
	Article 79. Registration for separation of equip-
	ment for maintenance and repair
	Article 80. Separation of equipment in operation
	for urgent repair
	Article 81. Reports on urgent separation of equip
	ment for repair
Section 5. ELECTRICITY	
SYSTEM SCHEDULING AND	
DISPATCHING	
	Article 82. Day ahead mobilization schedules
	Article 83. Obligations for system security
	Article 84. Real time dispatching
	Article 85. Methods of real time operation of
	electricity system
Section 6. COORDINATION	
IN OPERATION, EXCHANGE	
OF INFORMATION AND	
OPERATION REPORTING	
MODES	
	Article 86. General responsibility for operation co-
	ordination
	Article 87. Exchange of information
	5

	Article 88. Confidentiality
	Article 89. Reporting of incidents in national elec-
	tricity system
	Article 90. Reporting of performance of transmis-
	sion grid
	Article 91. Reporting of operation plan and result
	of operation of national electricity system
Chapter VII, ASSESSMENT OF	
ELECTRICITY SYSTEM SECURITY	
	Article 92. General provisions on assessment of
	electricity system security
	Article 93. Reserve capacity and electrical energy
	of electricity system
	Article 94. Assessment of medium term assess-
	ment of electricity system security
	Article 95. Assessment of short term assessment
	of electricity system security
Chapter VIII, ASSESSMENT OF	
QUALITY OF OPERATION OF	
ELECTRICITY TRANSMISSION	
SYSTEM	
	Article 96. General requirements
	Article 97. Performance indicators of electricity
	system and market operator
	Article 98. Performance indicators of transmission
	network operator
Chapter IX, SETTLEMENT OF	
DISPUTES AND HANDLING OF	
VIOLATION	
	Article 99. Settlement of disputes
	Article 100. Handling of violation
Chapter X, IMPLEMENTATION	
	Article 101. Implementation
	Article 102. Effect

5. Structure and content of Dx connection code

The structure and articles in the current Dx connection code are as listed in the table below. The articles not included in the merged connection code structure are marked with strikethrough in the table.

Chapter I, GENERAL RULES		С39/2015/ТТ-ВСТ
		Article 1. Scope
		Article 2. Subject of applications
		Article 3. Definitions
Chapter II, REQUIREMENTS FOR	Section 1. TECHNICAL	
OPERATION OF ELECTRICAL	REQUIREMENTS	
DISTRIBUTION SYSTEM		
		Article 4. Frequency
		Article 5. Voltage
		Article 6. Balance Phase
		Article 7. Harmonics voltage
		Article 8. Blinking voltages
		Article 9. Short circuit and eliminate the problem
		of time
		Article 10. Grounding mode
		Article 11. Coefficient of trouble touching the
		ground
	Section 2. ELECTRICITY	
	SUPPLY RELIABILITY AND	
	POWER LOSS	
		Article 12. Indication of power supply reliability of
		distribution grids
		Article 13. Index of power supply reliability
		Article 14. Loss of power distribution grid
		Article 15. The order of approval of the norm of
		power supply reliability, annual electricity loss of
		the distribution grid
	Section 3. QUALITY	
	REQUIREMENT OF	
	CUSTOMER SERVICE	
		Article 16. The target quality of service customers
		Article 17. Require quality of service customers
Chapter III, DEMAND		
FORECASTING ELECTRIC		
LOADING DISTRIBUTION		
ELECTRIC SYSTEM		

		Article 18. General provisions on forecasting the
		demand for electricity load of the electricity dis-
		tribution system
		Article 19. Forecast of electricity load demand
		year
		Article 20. Forecast of monthly load demand
		Article 21 Ecrecast of electricity demand for
		weekly load
		Note: this chapter is removed according to the
		(30 statements
		Question: where will these requirements he placed
		question, where will these requirements be placed
		m the juturer in the proposed gnd planning coder
		Article 22 Conoral provisions on investment
		nlans to develop distribution grids
		Article 22 Bequirements for investment plans
		Anticle 23. Requirements for investment plans
		to develop electricity distribution network every
		yeur Article 24 - Content of investment along to de
		Article 24. Content of investment plan to de-
		velop distribution grid
		Article 25. Order of approving investment
		plans to develop distribution grid
Chapter V, CONNECTION TO	Section 1. GENERAL	
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper-
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop-
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con-
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec-
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion Article 30. Requirements for electrical equipment
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion Article 30. Requirements for electrical equipment connected
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion Article 30. Requirements for electrical equipment connected Article 31. Requirements phase balance
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion Article 30. Requirements for electrical equipment connected Article 31. Requirements for harmonics
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and operation management Article 28. Complying with electricity development planning Article 29. Responsibility to comply with the connection requirements and coordinate the connection Article 30. Requirements for electrical equipment connected Article 31. Requirements phase balance Article 32. Requirements for harmonics Article 33. Requirements on voltage flicker
Chapter V, CONNECTION TO DISTRIBUTION GRID	Section 1. GENERAL PRINCIPLE	Article 26. Connection points Article 27. Boundary of asset allocation and oper- ation management Article 28. Complying with electricity develop- ment planning Article 29. Responsibility to comply with the con- nection requirements and coordinate the connec- tion Article 30. Requirements for electrical equipment connected Article 31. Requirements phase balance Article 32. Requirements for harmonics Article 33. Requirements on voltage flicker Article 34. Requirement for groundwater regime

		Article 36 Protection system requirements
		Article 37. Information system requirements
		Article 38. Requirements for connecting SCADA
		system
		Article 39. Requirements for generating sets of
		hydroelectric plants and thermal power plants
		connected to distribution networks
		Article 40. Requirements for the wind power, so-
		lar power plant connected to the electricity distri-
		bution networks from the medium voltage level
		upwards
		Article 41. Requirements for solar power system
		connected to the distribution grid with low volt-
		age supply
		Article 42. Technical requirements of the Control
		Center
	Section 3. ORDER AND	
	CONNECTION AGREEMENT	
		Article 43 Application for connection
		Article 44. Order of agreement on connection of
		medium voltage and 110 kV
		Article 45. Time limit for reviewing and signing
		the Connection Agreement
	Section 4	
3		
		Article AG Access to equipment at the connection
		Article 40. Access to equipment at the connection
		Article 47 Drovide deguments to sheek the condi
		Article 47. Provide accuments to check the condi-
		tion of electrical connection points for K custom-
		ers using distribution grid at 110 kV voltage level
		and customers have generator sets connected at
		Article 48. Provide documents to check the condi-
		tion of electrical connection points for customers
		using electricity with separate power stations
		connected to meaium voltage grid
		Article 49. Check condition energized connection
ļ		points
		Article 50. Close electrical connection points

		Antiple F1 Test and essentiance and ante mutinte
		Article 51. Test and acceptance order to put into
		Article 52 Check and monitor the operation of
		connection devices
		Article 52. Deplace and install additional equip
		Article 53. Replace and Install additional equip-
		ment at the connection point
		Article 54. Implementation of antihypertensive
		connected to the grid for electricity customers
	Section 5. PREPARARING	
	ENERGIZING FOR	
	CONNECTION POINT TO	
	ELECTRICAL EQUIPMENT	
	DISTRIBUTION OPERATOR	
		Article 55. Provide records to check the condition
		of electrical connection points for electrical
		equipment of the electricity distribution unit
		Article 56. Power connection points for electrical
		equipment of the electricity distribution unit
		Article 57. Replace and install additional equip-
		ment on the distribution grid
	Section 6. DISCONNECTION	
	AND RESTORING	
	CONNECTION	
		Article 58. General provisions for connection sep-
		aration and connection recovery
		Article 59. Separating voluntary connection
		Article 60. Required splice
		Article 61. Restore connection
	Section 1. RESPONSIBILITIES	
	IN OPERATION	
SYSTEM		
		Article 62 Responsibilities of the electricity distri
		hution unit
		Article C2. Deepensibilities of the notional shortwise
		Article 63. Responsibilities of the national electric
		nty system moderation unit, the moderation level
		Article 64. Responsibilities of the Customer uses
		electricity distribution networks
	Section 2. MAINTENANCE	
	PLAN AND REPAIR	
	DISTRIBUTION ELECTRIC	
	SYSTEM	

1	
	Article 65. General provisions on the protection
	and line repair system in distribution
	Article 66. Plan for maintenance and repair of the
	year
	Article 67. Plan for maintenance and repair of the
	month
	Article 68. Planning maintenance, repair weeks
Section 3. PLAN OF	
 OPERATION	
	Article 69. operating plan year
	Article 70. Operational planning months
	Article 71. Operational planning week
	Article 72. Mode of operating the day
	Article 73. Operating distribution electricity sys-
	tem
Section 4. OPERATION IN EMERGENCY	
	Article 74. Emergency situation
	Article 75. Operating distribution power system in
	case of breakdown or disintegration of whole or
	part of transmission power system
	Article 76. Operating distribution electricity sys-
	tem in case of island separation
	Article 77. Operating power distribution system
	when a serious incident occurs on the power dis-
	tribution grid voltage of 110 kV
	Article 78. Restore power distribution system
Section 5. LOAD AND	
VOLTAGE CONTROLS	
	Article 79. Load control
	Article 80. Stop reducing the power supply
	Article 81. Develop a plan to sack load
	Article 82. Measures to lay off load
	Article 83. Performing load dismissal
	Article 84. Perform voltage regulators
	Article 85. Monitoring and Remote Control
Section 6. EXCHANGE	
INFORMATION IN	
OPERATION AND	
REPORTING REGIME	

		Article 86. Information exchange form
		Article 87. Information exchange in operation
		Article 88. Notice of unusual situations
		Article 89. Notice of serious incidents
	Section 7 COOPDINATION	
	OF OPERATION	
		Article 90. General responsibility in coordinating
		operation
		Article 91. Coordinate the operation
	Section 8. TEST ON THE	
	DISTRIBUTION ELECTRIC	
	SYSTEM	
		Article 92. General requirements for experiments
		on distribution power systems
		Article 93 Cases of experimenting on equipment
		on distribution grid
		Article 94. Cases of experiment of generating sets
		Article 95. Responsibility in experimental equip-
		ment on distribution grid
		Article 96. Experimental order at the request of
		the Power Distribution Unit
		Article 97. Experimental order at the request of
		customers using distribution grid
		Article 98. Responsibility after the experiment
	Section 9. REPORT ON	
	OPERATION OF	
	DISTRIBUTION ELECTRICITY	
	SVSTEM	
	515121	Article 00. The reporting regime
Chapter VII, IMPLEMENTATION		
		Article 100. Organization of implementation
		Article 101. Amending a number of Articles of Cir-
		cular No. 12/2010 / TT-BCT dated April 15, 2010
		of the Minister of Industry and Trade regulating
		transmission power system and Circular No.
		40/2014 / TT BCT dated November 5 in 2014, the
		Minister of Industry and Trade stipulated the reg-
		ulation of national electricity system regulation
		Article 102. Effect
		I

6. First step of a future generator connection code

6.1 Interim step of merging C25 and C39

To advance from the two separate codes (C25 and C39) as of today the following combination of the articles of circular C25 and C39 into articles in a combined interim version is proposed as given in table overview on next pages.

For improved reading the Excel sheet "Report 3.2 - Table with C25-C39 combined" might be applicable.

In subsection 6.2 the structure and articles of the combined version is illustrated.

	C25/2016/TT-BCT			C39/2015/TT-BCT		Cor	nbined Circular - Inter	im version
Chapter #, de- scription	Section, descrip- tion	Circular xx, ar- ticle yyy	Chapter #, de- scription	Section, descrip- tion	Circular xx, article yyy	Chapter #, de- scription	Section, descrip- tion	Circular xx, article yyy
Chapter I, GENERAL PROVISIONS			Chapter I, GENERAL RULES			Chapter I, GENERAL RULES		
-		Article 1. Gov- erning scope	-		Article 1. Scope			Article 1. Governing scope
-		Article 2. Regu- lated entities	-		Article 2. Subject of applications			Article 2. Regulated entities
-		Article 3. Defi- nitions	-		Article 3. Definitions			Article 3. Definitions
Chapter II, REQUIREMENTS FOR OPERATION OF ELECTRICITY TRANSMISSION SYSTEM			Chapter II, REQUIREMENTS FOR OPERATION OF ELECTRICAL DISTRIBUTION SYSTEM	Section 1. TECHNICAL REQUIREMENTS		Chapter II, REQUIREMENTS FOR OPERATION OF ELECTRICAL SYSTEM	Section 1. TECHNICAL REQUIREMENTS	Article 4. Frequency
-		Article 4. Fre- quency	-		Article 4. Frequency			Article 5. Stabilization of electricity system
-		Article 5. Stabi- lization of elec- tricity system	-		Article 5. Voltage			Article 6. Voltage
-		Article 6. Volt- age	-		Article 6. Phase Bal- ance			Article 7. Phase bal- ance



Article 7. Article 8. Harmonics Article 7. Phase balance Harmonics voltage Article 9. Flicker per-Article 8. Har-Article 8. Blinking voltmonics ceptibility ages Article 9. Article 9. Article 10. Voltage Flicker percep-Short-circuit fluctuation tibility and eliminate the problem of time Article 10. Article 10. Article 11. Neutral Voltage fluctu-Grounding grounding ation mode Article 11. Article 12. Short-circuit Article 11. Neutral Coefficinet current and fault clearof trouble grounding ing time touching the ground Article 12. Section 2. Article 13. Earth fault Short-circuit ELECTRICITY factor current and SUPPLY fault clearing **RELIABILITY AND** POWER LOSS time Article 13. Article 14. Reliability of Article 12. Section 2. ELECTRICITY Earth fault facgrid Inidcation of power sup-SUPPLY tor ply reliability **RELIABILITY AND** of distribu-POWER LOSS tion grids

_	Article 14. Reli-	_		Article 13.		Article 15. Index of
	ability of trans-			Index of		power supply reliablity
	mission grid			power sup-		
				ply reliablity		
-	Article 15. Loss	_		Article 14.		Article 16. Loss of
	of power on			Loss of		power on grid
	transmission			power distri-		
	grid			bution grid		
-		_		Article 15.		Article 17. The process
				The order of		of approval of the in-
				approval of		dex of power supply
				the norm of		reliability , annual elec-
				power sup-		tricity loss of the distri-
				ply reliability		bution grid
				, annual		
				electricity		
				loss of the		
				distribution		
				grid		
-		_	Section 3.		Section 3.	Article 16. The target
			QUALITY		QUALITY	quality of service cus-
			REQUIREMENT OF		REQUIREMENT OF	tomers
			CUSTOMER		CUSTOMER	
			SERVICE		SERVICE	
_		_		Article 16.		Article 17. Require
				The target		quality of service cus-
				quality of		tomers
				service cus-		
				tomers		
_		_		Article 17.		
				Require		
				quality of		

			service cus-		
			tomers		
Chapter III, LOAD		_		Chapter III, LOAD	
FORECASTING				FORECASTING	
FOR NATIONAL				FOR NATIONAL	
ELECTRICITY				ELECTRICITY	
SYSTEM				SYSTEM	
	Article 16.	_			Article 18. General
	General provi-				provisions on residual
	sions on resid-				load forecasting for
	ual load fore-				electricity system
	casting for na-				
	tional electric-				
	ity system				
	Article 17. An-				Article 19. Annual load
	nual load fore-				forecasting
	casting				
	Article 18.				Article 20. Monthly
	Monthly load				load forecasting
	forecasting				
	Article 19.	Chapter III,			Article 21. Weekly load
	Weekly load	DEMAND			forecasting
	forecasting	FORECASTING			
		ELECTRIC			
		LOADING			
		DISTRIBUTION			
		ELECTRIC SYSTEM			
	Article 20.		Article 18.		Article 22. Daily load
	Daily load fore-		General pro-		forecasting
	casting		visions on		
			forecasting		
			the demand		

	23/61									
					for electric-					
					ity load of					
					the electric-					
					ity distribu-					
					tion system					
		Article 21.			Article 19.			Article 23. Load fore-		
		Load forecast-			Forecast of			casting in a electricity		
		ing in a elec-			electricity			market transaction cy-		
		tricity market			load de-			cle		
		transaction cy-			mand year					
		cle								
Chapter IV,					Article					
TRANSMISSION					20. Fore-					
GRID					cast of					
DEVELOPMENT					monthly					
PLAN					load de-					
					mand					
		Article 22.			Article					
		General princi-			21. Fore-					
		ple			cast of elec-					
					tricity de-					
					mand for					
					weekly load					
		Article 23.	Chapter IV,		Article 19.			 		
		Content of	INVESTMENT		Weekly load			ļ		
		transmission	PLAN FOR		forecasting			ļ		
		grid develop-	DEVELOPMENT OF					ļ		
		ment plan	DISTRIBUTION					ļ		
			ELECTRIC					l		
			NETWORK					ļ		

	24/61									
		Article 24. Re-			Article 20.					
		sponsibility for			Daily load					
		supplying in-			forecasting					
		formation								
		serving formu-								
		lation of trans-								
		mission grid								
		development								
		plan								
		Article 25. Pro-			Article 21.					
		cedures for			Load fore-					
		formulation,			casting in a					
		approval and			electricity					
		public an-			market					
		nouncement of			transaction					
		transmission			cycle					
		grid develop-								
		ment plans								
Chapter V,	Section 1.				Article	Chapter IV,	Section 1.	Article 24. Connection		
CONNECTION TO	GENERAL				24. Con-	CONNECTION TO	GENERAL	point		
TRANSMISSION	PRINCIPLE				tent of in-	TRANSMISSION	PRINCIPLE			
GRID					vestment	GRID				
					plan to de-					
					velop distri-					
					bution grid					
		Article 26.			Article			Article 25. Borders of		
		Connection			25. Or-			assets and operation		
		point			der of ap-			management		
					proving in-					
					vestment					

				plans to de-		
				velop distri-		
				bution grid		
	Article 27. Bor-	Chapter V,	Section 1.			Article 26. General re-
	ders of assets	CONNECTION TO	GENERAL			quirements
	and operation	DISTRIBUTION	PRINCIPLE			
	management	GRID				
	Article 28.			Article 26.	Section 2.	Article 27. Require-
	General re-			Connection	GENERAL	ments for electrical
	quirements			pointS	TECHNICAL	equipment connected
					REQUIREMENTS	
					FOR EQUIPMENT	
					CONNECTING TO	
					GRID	
 Section 2.				Article		Article 28. Require-
GENERAL				27.Boundary		ments phase balance
TECHNICAL				of asset allo-		·
REQUIREMENTS				cation and		
FOR EQUIPMENT				operational		
CONNECTING TO				manage-		
TRANSMISSION				ment		
GRID						
	Article 29. Re-			Article 28.		Article 29. Require-
	quirements for			Complying		ments for harmonics
	connecting			with elec-		
	equipment			tricity devel-		
				opment		
				planning		
	Article 30. Re-			Article 29.		Article 30. Require-
	quirements for			Responsibil-		ments on voltage
	protective re-			ity to comply		flicker
	lay system			with the		

26/61									
				connection					
				require-					
				ments and					
				coordinate					
				the connec-					
				tion					
	Article 31. Re-		Section 2.				Article 31. Require-		
	quirements for		TECHNICAL				ment for groundwater		
	information		REQUIREMENTS				regime		
	system		FOR EQUIPMENT						
			CONNECTION						
	Article 32. Re-			Article 30.			Article 32. Power fac-		
	quirements for			Require-			tor requirements		
	connection of			ments for					
	SCADA system			electrical					
				equipment					
				connected					
	Article 33.			Article 31.			Article 35. Load fluctu-		
	Neutral			Require-			ation		
	grounding in			ments phase					
	transformers			balance					
	Article 34.			Article 32.			Article 36. Automatic		
	Power factor			Require-			frequency load shed-		
				ments for			ding system		
				harmonics					
	Article 35.			Article 33.			Article 33. Protection		
	Load fluctua-			Require-			system requirements		
	tion			ments on					
				voltage					
				flicker					

	Article 36. Au-		Article 34.		Article 34. Infor-
	tomatic fre-		Require-		mation system re-
	quency load		ment for		quirements
	shedding sys-		groundwa-		
	tem		ter regime		
	Article 37. Re-		Article 35.		Article 35. Require-
	quirements of		Power factor		ments for connecting
	Control Center		require-		SCADA system
			ments		
Section 3.			Article 36.		Article 36. Technical
TECHNICAL			Protection		requirements of the
REQUIREMENTS			system re-		Control Center
FOR CONNECTION			quirements		
TO HYDRO POWER					
PLANTS AND					
THERMO POWER					
PLANTS					
	Article 38. Re-		Article 37.	Section 3.	
	quirements for		Information	TECHNICAL	
	generating		system re-	REQUIREMENTS	
	sets' power		quirements	FOR CONNECTION	
	control			TO HYDRO POWER	
				PLANTS AND	
				THERMO POWER	
				PLANTS CONNECT	
				TO ELECTRICITY	
				NETWORK	
	Article 39. Exci-		Article 38.		Article 37. Require-
	tation system		Require-		ments for generating
	of a generating		ments for		sets' power control
	set		connecting		

			SCADA sys-			
			tem			
Article 40.			Article 39.			Article 38. Excitation
Governor			Require-			system of a generating
			ments for			set
			generating			
			sets of hy-			
			droelectric			
			plants and			
			thermal			
			power			
			plants con-			
			nected to			
			distribution			
			networks			
Article 41.			Article 40.			Article 39. Governor
Black start			Require-			
			ments for			
			the wind			
			power, so-			
			lar power			
			plant con-			
			nected to			
			the electric-			
			ity distribu-			
			tion net-			
			works from			
			the medium			
			voltage level			
			upwards			
	Article 40. Governor Article 41. Black start	Article 40. Governor Article 41. Black start	Article 40. Governor Article 41. Black start	Article 40. Article 39. Governor Require- ments for generating sets of hy- droelectric plants and thermal power Article 41. Article 41. Black start Require- ments for the wind power , so- lar power plant con- nected to distribution networks Require- ments for the wind power , so- lar power plant con- nected to the electric- ity distribu- tion net- works from the medium voltage level upwards	Article 40. Article 39. Governor Require- ments for generating sets of hy- droelectric plants and thermal power plants con- netced to distribution networks Article 40. Black start Require- Black start Require- it he wind power plant con- netted to distribution netted to it he wind power plant con- netted to the wind power plant con- netted to the wind power plant con- netted to the electric- ity distribu- tion net- works from the medium voltage level upwards upwards	Article 40. Article 39. Governor Require- ments for generating sets of hy- droelectric plants and thermal power plants con- nected to distribution networks Article 41. Article 40. Black start Require- ments for the wind power, so- lar power plant con- nected to the electric- ity distribu- tion net- works from the medium voltage level upwards

					29/6	1		
	Section 4.				Article 41.			Article 40. Black start
	TECHNICAL				Require-			
	REQUIREMENTS				ments for			
	OF WIND AND				solar power			
	SOLAR POWER				system con-			
	PLANTS				nected to			
					the distribu-			
					tion grid			
					with low			
					voltage sup-			
					ply			
		Article 42.			Article 42.		Section 4.	
		Technical re-			Technical re-		TECHNICAL	
		quirements of			quirements		REQUIREMENTS	
		wind and solar			of the Con-		OF WIND AND	
		power plants			trol Center		SOLAR POWER	
							PLANTS CONNECT	
							TO ELECTRICITY	
							NETWORK	
-	Section 5.		-	Section 3. ORDER				Article 41. Technical
	PROCEDURES FOR			AND PROCEDURES				requirements of wind
	CONNECTION			FOR CONNECTION				and solar power plants
	AGREEMENT			AGREEMENT				
-		Article 43. Pro-	-		Article 43.		Section 5.	Article 42. Application
		cedures			Application		PROCEDURES FOR	for connection
					for connec-		CONNECTION	
					tion		AGREEMENT	
-		Article 44.	_		Article 44.			Article 43. Procedures
		Time limit for			Order of			
		execution of			agreement			

		connection			on connec-		
		agreement			tion of me-		
					dium volt-		
					age and 110		
					Κv		
_	Section 6.		_		Article 45.		Article 44. Time limit
	IMPLEMENTATION				Time limit		for execution of con-
	OF CONNECTION				for review-		nection agreement
	AGREEMENT				ing and sign-		
					ing the Con-		
					nection		
					Agreement		
_		Article 45.	_	Section 4.		Section 6.	
		Rights to get		IMPLEMENTATION		IMPLEMENTATION	
		access to		OF WIRING TO		OF CONNECTION	
		equipment at		CUSTOMER USE		AGREEMENT	
		connection		DISTRIBUTED			
		points		ELECTRIC			
				NETWORK			
_		Article 46. Dos-	-		Article 46.		Article 45. Rights to
		sier for inspec-			Access to		get access to equip-
		tion of energiz-			equipment		ment at connection
		ing conditions			at the con-		points
					nection		
					point		
		Article 47. In-			Article 47.		Article 46. Dossier for
		spection of			Provide doc-		inspection of energiz-
		conditions for			uments to		ing conditions
		energizing con-			check the		
		nection points			condition of		
					electrical		
					connection		

			31/6	1	
			points for K		
			customers		
			using distri-		
			bution grid		
			at 110 kV		
			voltage level		
			and custom-		
			ers have		
			generator		
			sets con-		
			nected at		
			medium		
			voltage level		
	Article 48. En-		Article 48.		Article 47. Inspection
	ergizing con-		Provide doc-		of conditions for ener-
	nection points		uments to		gizing connection
			check the		points
			condition of		
			electrical		
			connection		
			points for		
			customers		
			using elec-		
			tricity with		
			separate		
			power sta-		
			tions con-		
			nected to		
			medium		
			voltage grid		

			32/6	51	
	Article 49. Trial		Article 49.		Article 48. Energizing
	operation, ac-		Check condi-		connection points
	ceptance and		tion ener-		ļ
	official opera-		gized con-		ļ
	tion of equip-		nection		ļ
	ment behind		points		ļ
	connection				ļ
	points				ļ
	Article 50. In-		Article 50.		Article 49. Trial opera-
	spection and		Close elec-		tion, acceptance and
	monitoring of		trical con-		official operation of
	equipment af-		nection		equipment behind
	ter put into of-		points		connection points
	ficial operation				
	Article 51. Re-		Article 51.		Article 50. Inspection
	placement of		Test and ac-		and monitoring of
	equipment at		ceptance or-		equipment after put
	connection		der to put		into official operation
	points		into opera-		
			tion of		
			equipment		
			after con-		
			nection		
			point		
Section 7.			Article 52.		Article 51. Replace-
PREPARATION			Check and		ment of equipment at
FOR ENERGIZING			monitor the		connection points
ELECTRICAL			operation of		
EQUIPMENT OF			connection		
TRANSMISSION			devices		
NETWORK					
OPERATOR					

			33/6	51		
	Article 52. Dos-		Article 53.			Article 52. Implemen-
	sier for inspec-		Replace , in-			tation of antihyperten-
	tion of connec-		stall addi-			sive connected to the
	tion point en-		tional equip-			grid for electricity cus-
	ergizing condi-		ment at the			tomers
	tions		connection			
			point			
	Article 53. En-		Article 54.		Section 7.	
	ergizing		Implementa-		PREPARATION	
			tion of anti-		FOR ENERGIZING	
			hypertensive		ELECTRICAL	
			connected		EQUIPMENT OF	
			to the grid		NETWORK	
			for electric-		OPERATOR	
			ity custom-			
			ers			
	Article 54. Re-	Section 5.				Article 52. Dossier for
	placement of	PREPARARING				inspection of connec-
	equipment on	ENERGIZING FOR				tion point energizing
	transmission	CONNECTION				conditions
	grid	POINT TO				
		ELECTRICAL				
		EQUIPMENT				
		DISTRIBUTION				
		OPERATOR				
	Article 55.		Article 55.			Article 53. Energizing
	General provi-		Provide rec-			
	sions on dis-		ords to			
	connection		check the			
	and reconnec-		condition of			
	tion		electrical			
			connection			

				34/6	51		
				points for			
				electrical			
				equipment			
				of the elec-			
				tricity distri-			
				bution unit			
		Article 56. Vol-		Article 56.			Article 54. Replace-
		untary discon-		Power con-			ment of equipment on
		nection		nection			transmission grid
				points for			
				electrical			
				equipment			
				of the elec-			
				tricity distri-			
				bution unit			
		Article 57.		Article		Section 8.	Article 55. General
		Compulsory		57.Replace		DISCONNECTION	provisions on discon-
		disconnection		and install		AND RESTORING	nection and reconnec-
				additional		CONNECTION	tion
				equipment			
				on the distri-			
				bution grid			
		Article 58. Re-	Section 6.				Article 56. Voluntary
		connection	DISCONNECTION				disconnection
			AND RESTORING				
			CONNECTION				
Chapter VI,	Section 1.			Article 58.			Article 57. Compulsory
OPERATION OF	OPERATING			General pro-			disconnection
ELECTRICITY	PRINCIPLES			visions for			
TRANSMISSION				connection			
SYSTEM				separation			

				35/6	51		
				and connec-			
				tion recov-			
				ery			
	Article 59. Op-			Article 59.			Article 58. Reconnec-
	eration modes			Separating			tion
	of electricity			voluntary			
	transmission			connection			
	system						
	Article 60. Op-			Article 60.	Chapter V,	Section 1.	
	erating princi-			Required	OPERATION OF	OPERATING	
	ples of electric-			splice	ELECTRICITY	PRINCIPLES	
	ity transmis-				SYSTEM		
 	sion system						
	Article 61. In-			Article 61.			Article 59. Operation
	spection and			Restore con-			modes of electricity
	monitoring of			nection			system
	protective re-						
	lay system						
	Article 62. Sta-	Chapter VI,	Section 1.				Article 60. Operating
	ble operation	OPERATION OF	RESPONSIBILITIES				principles of electricity
	of electricity	DISTRIBUTION	IN OPERATION				system
	system	ELECTRIC SYSTEM					
	Article 63. Trial			Article 62.			Article 61. Inspection
	operation and			Responsibili-			and monitoring of pro-
	monitoring			ties of the			tective relay system
				electricity			
				distribution			
 				unit			
	Article 64.			Article 63.			Article 62. Stable oper-
	Handling of in-			Responsibili-			ation of electricity sys-
	cident			ties of the			tem
				national			

			36/6	51	
			electricity		
			system mod-		
			eration unit,		
			the modera-		
			tion level		
			have control		
	Article 65. No-		Article 64.		Article 63. Trial opera-
	tice of decline		Responsibili-		tion and monitoring
	in electricity		ties of the		
	system secu-		Customer		
	rity		uses elec-		
			tricity distri-		
			bution net-		
			works		
	Article 66.	Section 2.			Article 64. Handling of
	Load shedding	MAINTENANCE			incident
	for electricity	PLAN AND REPAIR			
	system secu-	DISTRIBUTION			
	rity	ELECTRIC SYSTEM			
Section 2.			Article 65.		Article 65. Notice of
RESPONSIBILITY			General pro-		decline in electricity
OF UNITS IN			visions on		system security
OPERATION OF			the protec-		
ELECTRICITY			tion and line		
TRANSMISSION			repair sys-		
SYSTEM			tem in distri-		
			bution		
			Article 66.		Article 66. Load shed-
			Plan for		ding for electricity sys-
			mainte-		tem security
			nance and		

repair of the year Article 67. Section 2. Plan for RESPONSIBILITY OF UNITS IN mainte-**OPERATION OF** nance and repair of the ELECTRICITY month TRANSMISSION SYSTEM Article 67. Responsibil-Article 68. ity of electricity system Planning mainteand market operator nance, repair weeks Section 3. PLAN Article 68. Responsibil-OF OPERATION ity of transmission network operator Article 67. Re-Article 69. Article 69. Responsibilsponsibility of ity of generating units operating electricity sysplan year tem and market operator Article 70. Responsibil-Article 70. Article 68. Responsibility of Operational ity of electricity distribution units, electricity transmission planning network operretailers months ator Article 69. Re-Article 71. Article 71. Responsibilsponsibility of Operational ity of electricity cusgenerating planning tomers units week

			38/6	51		
	Article 70. Re-		Article 72.		Section 3.	
	sponsibility of		Mode of op-		ANCILLARY	
	electricity dis-		erating the		SERVICES	
	tribution units,		day			
	electricity re-					
	tailers					
	Article 71. Re-		Article 73.			Article 72. Types of an-
	sponsibility of		Operating			cillary services
	electricity cus-		distribution			
	tomers		electricity			
			system			
Section 3.		Section 4.				Article 73. Technical
ANCILLARY		OPERATION IN				requirements of ancil-
SERVICES		EMERGENCY				lary services
	Article 72.		Article 74.			Article 74. Principles of
	Types of ancil-		Emergency			determining demand
	lary services		situation			for ancillary services
	Article 73.		Article 75.			Article 75. Registration
	Technical re-		Operating			of ancillary services
	quirements of		distribution			
	ancillary ser-		power sys-			
	vices		tem in case			
			of break-			
			down or dis-			
			integration			
			of whole or			
			part of			
			transmission			
			power sys-			
			tem			

			39/6	51		
	Article 74.		Article 76.		Section 4.	
	Principles of		Operating		MAINTENANCE	
	determining		distribution		AND REPAIR OF	
	demand for		electricity		ELECTRICITY	
	ancillary ser-		system in		SYSTEM	
	vices		case of is-			
			land separa-			
			tion			
	Article 75. Reg-		Article 77.			Article 76. General
	istration of an-		Operating			provisions on mainte-
	cillary services		power distri-			nance and repair of
			bution sys-			electricity system
			tem when a			
			serious inci-			
			dent occurs			
			on the			
			power distri-			
			bution grid			
			voltage of			
			110 kV			
Section 4.			Article 78.			Article 77. Establish-
MAINTENANCE			Restore			ment of plan for
AND REPAIR OF			power distri-			maintenance and re-
ELECTRICITY			bution sys-			pair of electricity
TRANSMISSION			tem			transmission system
 SYSTEM						
	Article 76.	Section 5. LOAD				Article 78. Plan for
	General provi-	AND VOLTAGE				maintenance and re-
	sions on	CONTROLS				pair of the year
	maintenance					
	and repair of					
	electricity					

transmission system Article 77. Es-Article 79. Article 79. Plan for tablishment of Load control maintenance and replan for pair of the month maintenance and repair of electricity transmission system Article 78. Or-Article 80. Article 80. Planning der of priority Stop, reducmaintenance, repair on separation ing the weeks of equipment power supfor mainteply nance and repair Article 79. Reg-Article 81. Article 78. Order of istration for Develop a priority on separation separation of plan to sack of equipment for equipment for load maintenance and remaintenance pair and repair Article 82. Article 79. Registration Article 80. Separation of for separation of Measures to lay off load equipment in equipment for mainteoperation for nance and repair urgent repair Article 81. Re-Article 102. Article 80. Separation

Scope and

Objectives

of equipment in opera-

tion for urgent repair

40/61

ports on ur-

	gent separa-				
	tion of equip-				
	ment for repair				
	Article 86. Ob-		Article 103.		Article 81. Reports on
	jective		General Pro-		urgent separation of
			visions		equipment for repair
	Article 87.		Article 104.	Section 5.	Article 82
	Main planning		Technical	ELECTRICITY	
	principles and		Require-	SYSTEM	
	criteria		ments for	SCHEDULING AND	
			Metering	DISPATCHING	
			Equipment		
	Article 88.		Article 105.		Article 83
	Strategic Plans		Metering		
			Register		
	Article 89.		Article 106.		Article 84
	Five-Year Dis-		Multifunc-		
	tribution Net-		tional Me-		
	work Plan		tering Sys-		
			tems		
	Article 90. The		Article 83.		Article 85
	Procedure for		Performing		
	Developing the		load dismis-		
	Five-year Dis-		sal		
	tribution Net-				
	work Plan				
	Article 91. The		Article 84.	Section 6. PLAN	
	Provision of		Perform	OF OPERATION	
	Planning Data		voltage reg-		
			ulators		

Article 92. Article 86. operating Article 85. Electronic Monitoring plan year and Remote Maps Control Article 93. Article 87. Operational Section 6. Planning Facili-EXCHANGE planning months ties of the Dis-INFORMATION IN tribution Licen-**OPERATION AND** REPORTING see REGIME Article 94. Article 86. Article 88. Operational Measures for Information planning week Reducing exchange Losses form Article 95. Article 87. Article 89. Mode of op-Consumption Information erating the day (Load) Foreexchange in casting operation Article 90. Operating Article 96. Dis-Article 88. Notice of distribution electricity tribution Netunusual situwork Studies system ations Section 5. Article 89. Section 7. ELECTRICITY Notice of se-**OPERATION IN** SYSTEM rious inci-EMERGENCY SCHEDULING AND dents DISPATCHING Article 97. Section 7. Article 91. Emergency

COORDINATION

OF OPERATION

42/61

situation

General Provi-

sions

			43/6	π.		
	Article 98.		Article			Article 92. Operating
	Scope and Ob-		90.General			power system in case
	jectives		responsibil-			of breakdown or disin-
			ity in coordi-			tegration of whole or
			nating oper-			part of transmission
			ation			power system
	Article 99.		Article 91.			Article 93. Operating
	Short-term		Coordinate			electricity system in
	Load Forecast		the opera-			case of island separa-
	of the Custom-		tion			tion
	ers Connected					
	to the Distribu-					
	tion Network					
	Article 100.	Section 8. TEST				Article 94. Operating
	Outage Plan-	ON THE				power system when a
	ning	DISTRIBUTION				serious incident occurs
		ELECTRIC SYSTEM				on the power distribu-
						tion grid voltage of
						110 kV
	Article 101.		Article 92.			Article 95. Restore
	Operational		General re-			power system
	Management		quirements			
	of the Distribu-		for experi-			
	tion Network		ments on			
			distribution			
			power sys-			
			tems			
	Article 82. Day-		Article 93.		Section 8. LOAD	
	ahead mobili-		Cases of ex-		AND VOLTAGE	
	zation sched-		perimenting		CONTROLS	
	ules		on equip-			

	ment on dis-	
	tribution	
	grid	
Article 102.	Article 94.	Article 96. Load con-
Scope and Ob-	Cases of ex-	trol
jectives	periment of	
	generating	
	sets	
Article 103.	Article 95.	Article 97. Stop , re-
General Provi-	Responsibil-	ducing the power sup-
sions	ity in experi-	ply
	mental	
	equipment	
	on distribu-	
	tion grid	
Article 104.	Article 96.	Article 98. Develop a
Technical Re-	Experi-	plan to sack load
quirements for	mental or-	
Metering	der at the	
Equipment	request of	
	the Power	
	Distribution	
	Unit	
Article 105.	Article 97.	Article 99. Measures
Metering Reg-	Experi-	to lay off load
ister	mental or-	
	der at the	
	request of	
	customers	
	using distri-	
	bution grid	

	Article 106.			Article 98.		Article 100. Scope and
	Multifunctional			Responsibil-		Objectives
	Metering Sys-			ity after the		
	tems			experiment		
	Article 83. Ob-		Section 9. REPORT			Article 101. General
	ligations for		ON OPERATION			Provisions
	system secu-		OF DISTRIBUTION			
	rity		ELECTRICITY			
			SYSTEM			
	Article 84.			Article 99.		Article 102. Technical
	Real-time dis-			The report-		Requirements for Me-
	patching			ing regime		tering Equipment
	Article 85.	Chapter VII,				Article 103. Metering
	Methods of	IMPLEMENTATION				Register
	real-time oper-					
	ation of elec-					
	tricity system					
Section 6.				Article 100.		Article 104. Multifunc-
COORDINATION				Organization		tional Metering Sys-
IN OPERATION,				of imple-		tems
EXCHANGE OF				mentation		
INFORMATION						
AND						
OPERATIONAL						
REPORTING						
MODES						

	46/61			
Article 86.	A	Article 101.		Article 105. Perform-
General re-	A	Amending a		ing load dismissal
sponsibility for	n	number of		
operation co-	A	Articles of		
ordination	C	Circular No.		
	1	12/2010 /		
	Т	TT-BCT		
	d	dated April		
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	tł	he Minister		
	0	of Industry		
	а	and Trade		
	re	regulating		
	tr	ransmission		
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	te	em and Cir-		
	CI	cular No.		
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	la	ated the		
	re	egulation of		
	n	national		
	e	electricity		
	Sy	system regu-		
	la	ation		

	Article 87. Ex-		Article 102.		Article 106. Perform
	change of in-		Effect		voltage regulators
	formation				
	Article 88.				Article 107. Monitor-
	Confidentiality				ing and Remote Con-
					trol
	Article 89. Re-			Section 9.	
	porting of inci-			EXCHANGE	
	dents in na-			INFORMATION IN	
	tional electric-			OPERATION AND	
	ity system			REPORTING	
				REGIME	
	Article 90. Re-				Article 108. Infor-
	porting of per-				mation exchange form
	formance of				
	transmission				
	grid				
	Article 91. Re-				Article 109. Infor-
	porting of op-				mation exchange in
	eration plan				operation
	and result of				
	operation of				
	national elec-				
	tricity system				
Chapter VII,					Article 110. Notice of
ASSESSMENT OF					unusual situations
ELECTRICITY					
SYSTEM SECURITY					
	Article 92.				Article 111. Notice of
	General provi-				serious incidents
	sions on as-				
	sessment of				

					1
	electricity sys-				
	tem security				
	Article 93. Re-			Section 10.	
	serve capacity			COORDINATION	
	and electrical			OF OPERATION	
	energy of elec-				
	tricity system				
	Article 94. As-				Article 112.General re-
	sessment of				sponsibility in coordi-
	medium-term				nating operation
	assessment of				
	electricity sys-				
	tem security				
	Article 95. As-				Article 113. Coordinate
	sessment of				the operation
	short-term as-				
	sessment of				
	electricity sys-				
	tem security				
Chapter VIII,				Section 11. TEST	
ASSESSMENT OF				ON THE ELECTRIC	
QUALITY OF				SYSTEM	
OPERATION OF					
ELECTRICITY					
TRANSMISSION					
SYSTEM					
	Article 96.				Article 114. General
	General re-				requirements for ex-
	quirements				periments on distribu-
					tion power systems

	Article 97. Per-				Article 115. Cases of
	formance indi-				experimenting on
	cators of elec-				equipment on distribu-
	tricity system				tion grid
	and market op-				
	erator				
	Article 98. Per-				Article 116. Cases of
	formance indi-				experiment of gener-
	cators of trans-				ating sets
	mission net-				
	work operator				
Chapter IX,					Article 117. Responsi-
SETTLEMENT OF					bility in experimental
DISPUTES AND					equipment on distribu-
HANDLING OF					tion grid
VIOLATION					
	Article 99. Set-				Article 118. Experi-
	tlement of dis-				mental order at the re-
	putes				quest of the Power
					Distribution Unit
	Article 100.				Article 119. Experi-
	Handling of vi-				mental order at the re-
	olation				quest of customers us-
					ing distribution grid
Chapter X,					Article 120. Responsi-
IMPLEMENTATION					bility after the experi-
					ment
	Article 101. Im-			Section 12.	
	plementation			REPORT ON	
				OPERATION OF	
				ELECTRICITY	
				SYSTEM	

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	Article 102. Ef-		Chapter VI,	
	fect		ASSESSMENT OF	
			ELECTRICITY	
			SYSTEM SECURITY	
				Article 121. General
				provisions on assess-
				ment of electricity sys-
				tem security
				Article 122. Reserve
				capacity and electrical
				energy of electricity
				system
				Article 123. Assess-
				ment of medium-term
				assessment of electric-
				ity system security
				Article 124. Assess-
				ment of short-term as-
				sessment of electricity
				system security
			Chapter VII,	
			ASSESSMENT OF	
			QUALITY OF	
			OPERATION OF	
			ELECTRICITY	
			SYSTEM	
				Article 125. General
				requirements
				Article 126. Perfor-
				mance indicators of
				electricity system and
				market operator

		51/6	1	
				Article 127. Perfor-
				mance indicators of
				network operator
			Chapter VIII,	
			SETTLEMENT OF	
			DISPUTES AND	
			HANDLING OF	
			VIOLATION	
				Article 128. Settlement
				of disputes
				Article 129. Handling
				of violation
			Chapter IX,	
			IMPLEMENTATION	
				Article 130. Implemen-
 	 	 		 tation
				Article 131. Effect

6.2 Recommended interim combined circular – article level

The combined articles from circular C25 and C39 is recommended to be as illustrated in the table below.

The interim version will still be impaired from the sorting of the requirements into generator categories based on size. Additionally, the combined interim version will include several articles with requirements which is not relevant to generator grid connection. The recommend step must be observed as a step on the road to a final generator connection code as recommend in report D3.3.

	Combined Circular - Inte	erim version
Chapter #, description	Section, description	Circular xx, article yyy
Chapter I, GENERAL RULES		
		Article 1. Governing scope
		Article 2. Regulated entities
		Article 3. Definitions
Chapter II, REQUIREMENTS FOR	Section 1. TECHNICAL	Article 4. Frequency
OPERATION OF ELECTRICAL SYSTEM	REQUIREMENTS	
		Article 5. Stabilization of electricity system
		Article 6. Voltage
		Article 7. Phase balance
		Article 8. Harmonics
		Article 9. Flicker perceptibility
		Article 10. Voltage fluctuation
		Article 11. Neutral grounding
		Article 12. Short-circuit current and fault clearing
		time
		Article 13. Earth fault factor
	Section 2. ELECTRICITY	Article 14. Reliability of grid
	SUPPLY RELIABILITY	
	AND POWER LOSS	
		Article 15. Index of power supply reliability
		Article 16. Loss of power on grid
		Article 17. The process of approval of the index of
		power supply reliability, annual electricity loss of
		the distribution grid
	Section 3. QUALITY	Article 16. The target quality of service customers
	REQUIREMENT OF	
	CUSTOMER SERVICE	
		Article 17. Require quality of service customers
Chapter III, LOAD FORECASTING FOR		
NATIONAL ELECTRICITY SYSTEM		



		Article 18. General provisions on residual load
		forecasting for electricity system
		Article 19. Annual load forecasting
		Article 20. Monthly load forecasting
		Article 21. Weekly load forecasting
		Article 22. Daily load forecasting
		Article 23. Load forecasting in a electricity market
		transaction cycle
Chapter IV, CONNECTION TO TRANSMISSION GRID	Section 1. GENERAL PRINCIPLE	Article 24. Connection point
		Article 25. Borders of assets and operation man-
		agement
		Article 26. General requirements
	Section 2. GENERAL	Article 27. Requirements for electrical equipment
	TECHNICAL	connected
	REQUIREMENTS FOR	
	EQUIPMENT	
	CONNECTING TO GRID	
		Article 28. Requirements phase balance
		Article 29. Requirements for harmonics
		Article 30. Requirements on voltage flicker
		Article 31. Requirement for groundwater regime
		Article 32. Power factor requirements
		Article 35. Load fluctuation
		Article 36. Automatic frequency load shedding sys-
		tem
		Article 33. Protection system requirements
		Article 34. Information system requirements
		Article 35. Requirements for connecting SCADA
		system
		Article 36. Technical requirements of the Control
		Canter
	Section 3. TECHNICAL	
	REQUIREMENTS FOR	
	CONNECTION TO	
	HYDRO POWER PLANTS	
	AND THERMO POWER	
	PLANTS CONNECT TO	
	ELECTRICITY NETWORK	
		Article 37. Requirements for generating sets'
		power control
		Article 38. Excitation system of a generating set
		Article 39. Governor

	Article 40. Black start
Section 4. TECHNICAL	
REQUIREMENTS OF	
WIND AND SOLAR	
POWER PLANTS	
CONNECT TO	
ELECTRICITY NETWORK	
	Article 41. Technical requirements of wind and so-
	lar power plants
Section 5.	Article 42. Application for connection
PROCEDURES FOR	
CONNECTION	
AGREEMENT	
	Article 43. Procedures
	Article 44. Time limit for execution of connection
	agreement
Section 6.	
IMPLEMENTATION OF	
CONNECTION	
AGREEMENT	
	Article 45. Rights to get access to equipment at
	connection points
	Article 46. Dossier for inspection of energizing
	conditions
	Article 47. Inspection of conditions for energizing
	connection points
	Article 48. Energizing connection points
	Article 49. Trial operation, acceptance, and official
	operation of equipment behind connection points
	Article 50. Inspection and monitoring of equip-
	ment after putting into official operation
	Article 51. Replacement of equipment at connec-
	tion points
	Article 52. Implementation of antihypertensive
	connected to the grid for electricity customers
Section 7.	
PREPARATION FOR	
ENERGIZING	
ELECTRICAL	
EQUIPMENT OF	
NETWORK OPERATOR	
	Article 52. Dossier for inspection of connection
	point energizing conditions
	Article 53. Energizing

		Article 54 Replacement of equipment on trans-
		mission grid
	Section 8.	Article 55. General provisions on disconnection
	DISCONNECTION AND	and reconnection
	RESTORING	
	CONNECTION	
		Article 56. Voluntary disconnection
		Article 57. Compulsory disconnection
		Article 58. Reconnection
Chapter V, OPERATION OF	Section 1. OPERATING	
ELECTRICITY SYSTEM	PRINCIPLES	
		Article 59. Operation modes of electricity system
		Article 60. Operating principles of electricity sys-
		tem
		Article 61. Inspection and monitoring of protective
		relay system
		Article 62. Stable operation of electricity system
		Article 63. Trial operation and monitoring
		Article 64. Handling of incident
		Article 65. Notice of decline in electricity system
		security
		Article 66. Load shedding for electricity system se-
		curity
	Section 2.	
	RESPONSIBILITY OF	
	UNITS IN OPERATION	
	OF ELECTRICITY	
	TRANSMISSION	
	SYSTEM	
		Article 67. Responsibility of electricity system and
		market operator
		Article 68. Responsibility of transmission network
		operator
		Article 69. Responsibility of generating units
		Article 70. Responsibility of electricity distribution
		units, electricity retailers
		Article 71. Responsibility of electricity customers
	Section 3. ANCILLARY SERVICES	
		Article 72. Types of ancillary services
		Article 73 Technical requirements of ancillary ser-
		vices
		VICES

	Article 74 Principles of determining demand for
	ancillary services
	Article 75 Degistration of ancillary services
 Section 4	Article 73. Registration of ancinary services
Section 4.	
 5151 EIVI	Article 76 Concrel provisions on maintenance and
	Article 76. General provisions on maintenance and
	Acticle 77. Establishment of alex former intervence
	and repair of electricity transmission system
	Article 78. Deep for maintenance and renair of the
	Article 78. Plan for maintenance and repair of the
	Article 79. Plan for maintenance and repair of the
	month
	Article 80. Planning maintenance, repair weeks
	Article 78. Order of priority on separation of
	equipment for maintenance and repair
	Article 79. Registration for separation of equip-
	ment for maintenance and repair
	Article 80. Separation of equipment in operation
	for urgent repair
	Article 81. Reports on urgent separation of equip-
	ment for repair
Section 5. ELECTRICITY	Article 82. Day-ahead mobilization schedules
SYSTEM SCHEDULING	
AND DISPATCHING	
	Article 83. Obligations for system security
	Article 84. Real-time dispatching
	Article 85. Methods of real-time operation of elec-
	tricity system
Section 6. PLAN OF	
OPERATION	
	Article 86. operating plan year
	Article 87. Operational planning months
	Article 88. Operational planning week
	Article 89. Mode of operating the day
	Article 90. Operating distribution electricity sys-
	tem
Section 7. OPERATION	
IN EMERGENCY	

	Article 91. Emergency situation
	Article 92. Operating power system in case of
	breakdown or disintegration of whole or part of
	transmission power system
	Article 93. Operating electricity system in case of
	island separation
	Article 94. Operating power system when a seri-
	ous incident occurs on the power distribution grid
	voltage of 110 kV
	Article 95. Restore power system
Section 8. LOAI	D AND
VOLTAGE CONT	FROLS
	Article 96. Load control
	Article 97. Stop, reducing the power supply
	Article 98. Develop a plan to sack load
	Article 99. Measures to lay off load
	Article 100. Scope and Objectives
	Article 101. General Provisions
	Article 102. Technical Requirements for Metering
	Equipment
	Article 103. Metering Register
	Article 104. Multifunctional Metering Systems
	Article 105. Performing load dismissal
	Article 106. Perform voltage regulators
	Article 107. Monitoring and Remote Control
Section 9. EXCH	IANGE
INFORMATION	IN
OPERATION AN	D
REPORTING REP	GIME
	Article 108. Information exchange form
	Article 109. Information exchange in operation
	Article 110. Notice of unusual situations
	Article 111. Notice of serious incidents
Section 10.	
COORDINATION	N OF
OPERATION	
	Article 112.General responsibility in coordinating
	operation
	Article 113. Coordinate the operation
Section 11. TES	T ON
THE ELECTRIC S	SYSTEM
	Article 114. General requirements for experiments
	on distribution power systems

		Article 115. Cases of experimenting on equipment
		on distribution grid
		Article 116. Cases of experiment of generating
		sets
		Article 117. Responsibility in experimental equip-
		ment on distribution grid
		Article 118. Experimental order at the request of
		the Power Distribution Onit
		Article 119. Experimental order at the request of
		Article 120. Deepensibility often the synamics ant
		Article 120. Responsibility after the experiment
	Section 12. REPORT ON	
	ELECTRICITY SYSTEM	
Chapter VI, ASSESSMENT OF		
ELECTRICITY SYSTEM SECURITY		
		Article 121. General provisions on assessment of
		electricity system security
		Article 122. Reserve capacity and electrical energy
		of electricity system
		Article 123. Assessment of medium-term assess-
		ment of electricity system security
		Article 124. Assessment of short-term assessment
		of electricity system security
Chapter VII, ASSESSMENT OF		
QUALITY OF OPERATION OF		
ELECTRICITY SYSTEM		
		Article 125. General requirements
		Article 126. Performance indicators of electricity
		system and market operator
		Article 127. Performance indicators of network
		operator
		Article 129 Settlement of disputes
		Article 128. Settlement of disputes
		Article 130 Implementation
		Article 130. Imperientation

7. Recommendations for roadmap

Merging the current Tx and Dx circulars could take place in several steps towards a final generator connection code.

The following figure illustrates the three steps recommended to obtaining a combined grid connection code.



The recommended first step is to combine the C25 and C39 circulars into one combined circular, using the recommended structure in section 6.2.

The second step is recommended to restructure the combined circular, including introducing the categories (A, B, C and D) might involve a lot of meetings with various internal as well as external stakeholders in the VN electricity sector. In addition, any missing specifications must be added to the connection requirements so the task of keeping a stable grid does not get out of control. It must be pointed out that the updated / new requirements for grid connection are recommended to be valid only for new connections. The connection agreement must state which document version compliance testing / verification has been approved for. The specifications for step 2 are given in report D3.3.

The actions recommended in step 3 could be included in step 2, but it will depend on the actual situation in the VN electricity sector and the resource availability situation in ERAV. The recommendation to remove the procedural part of the connection code is based om the fact that procedural aspects have different readers than technical aspects, and the procedural part could also be applicable to other sections of the grid code than the grid connection section.

8. References

The following documents are used as references in the report.

#	Description
1.	Circular 25 – "The regulations on electricity transmission system"
2.	Circular 30 – "Amendments to some articles of C25 and C39"
3.	Circular 39 – "The regulations on electricity distribution system"
4.	COMMISSION REGULATION (EU) 2016/631 of 14 April 2016 establishing a network code on
	requirements for grid connection of generators (NC RfG)
5.	Technical regulation 3.3.1 for battery plants, Danish grid connection code for BESS; published
	28.09.2017.
6.	Technical regulation 3.2.3 for Thermal Power Plants, Danish grid connection code for Thermal
	power plants; published 10.01.2017.
7.	Technical regulation 3.2.5 for Wind Power Plants, Danish grid connection code for Wind
	Power Plants; published 22.07.2016.

9. Further reading on grid codes and guiding documents

#	Description & link	
1.	Florence school of regulators - Network Codes - self-study programs:	
	https://fsr.eui.eu/tag/network-codes/	
2.	ENTSO-E implementation Guidance Documents (IGD)	
	https://www.entsoe.eu/network_codes/cnc/cnc-igds/	
3.	Evolution of Electricity Markets in Europe - 9 weeks online course	
	https://fsr.eui.eu/course/eu-electricity-network-codes/	





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