



Manual M14B Attachment C Modifications Phase 1 of 2

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- Make the deliverability procedures more transparent and easier to follow for stakeholders
 - Reorganize and relabel sections
 - Remove superfluous language and add clarification
 - Restructure confusing sentences and correct grammar mistakes
- Correct any conflicts between how the procedures are described and how PJM actually implements them
- Propose a few **minor procedural changes** which will have a red font in this presentation for easy identification

- Phase 1 of 2 will update Manual M14B Attachment C sections C.1 through C.5

Existing Outline	Proposed Outline
C.1 Introduction	C.1 Introduction
C.2 Deliverability Methodologies	C.2 Load Deliverability
C.3 Overview of Deliverability to Load	C.3 Generator Deliverability
C.4 PJM Load Deliverability Procedure - Capacity Emergency Transfer Objective (CETO)	C.4 Long-Term Deliverability
C.5 PJM Load Deliverability Procedure - Capacity Emergency Transfer Limit (CETL)	
C.6 Deliverability of Generation	
C.7 Generator Deliverability Procedure	
C.8 Long-Term Deliverability Analysis	

Existing Outline	Proposed Outline
C.1 Introduction	C.1 Introduction
C.2 Deliverability Methodologies	C.1.1 Purpose of Deliverability Requirements
	C.1.2 Types of Deliverability Requirements

- Reorganized the following sections
 - C.1 “Introduction”
 - C.2 “Deliverability Methodologies”
- The proposed relabeling of these sections is
 - C.1 “Introduction”
 - C.1.1 “Purpose of Deliverability Requirements”
 - C.1.2 “Types of Deliverability Requirements”



Attachment C Load Deliverability Reorganization

Existing Outline	Proposed Outline
C.3 Overview of Deliverability to Load	C.2 Load Deliverability
C.4 PJM Load Deliverability Procedure - Capacity Emergency Transfer Objective (CETO)	C.2.1 Overview of Load Deliverability
C.5 PJM Load Deliverability Procedure - Capacity Emergency Transfer Limit (CETL)	C.2.2 Current Locational Deliverability Area Definitions
C.5.1 Introduction	C.2.3 Base Case Development
C.5.2 Study Objectives	C.2.4 Capacity Emergency Transfer Objective (CETO) Procedure
C.5.3 General Procedures and Assumptions	C.2.5 Capacity Emergency Transfer Limit (CETL) Procedure
C.5.4 Base Case Development	C.2.6 CETO/CETL as an Input to RPM
C.5.5 Dispatch for Load Deliverability Study Area	
C.5.6 Study Results	
C.5.7 CETL Determination	
C.5.8 CETO/CETL as an Input to RPM	

- Reorganized and added clarification to section C.3 “Overview of Deliverability to Load”
- The proposed relabeling of this section is
 - C.2.1 “Overview of Load Deliverability”
 - C.2.1.1 “Purpose of Load Deliverability Test”
 - C.2.1.2 “Locational Deliverability Areas”
 - C.2.1.3 “General Assumptions”
 - C.2.1.3.1 “Independent Study Area Generation Capacity Deficiency”
 - C.2.1.3.2 “Consistency with PJM Emergency Operations Procedures”
 - C.2.1.4 “General Procedures”

- Relocated and relabeled section C.4 “PJM Load Deliverability Procedure - Capacity Emergency Transfer Objective (CETO)”
- Relocated and relabeled section C.5 “PJM Load Deliverability Procedure - Capacity Emergency Transfer Limit (CETL)”
- The new location of these sections is after the sections which identify the LDAs and the base case development procedures
- The proposed relabeling of these sections is
 - C.2.4 “Capacity Emergency Transfer Objective (CETO) Procedure”
 - C.2.5 “Capacity Emergency Transfer Limit (CETL) Procedure”

- Divided the following very long section into multiple sections
 - C.5 “PJM Load Deliverability Procedure - Capacity Emergency Transfer Limit (CETL)”
- Eliminated superfluous section C.5.1 “Introduction”
- Removed heading of section C.5.2 “Study Objectives” and used this section to introduce the CETL procedure
- Moved the first two sections of section C.5.3 “General Procedures and Assumptions” to a general assumptions section at the beginning of the entire load deliverability section
- Moved section C.5.3.3 “Study Area Definitions - Zonal and Global” to a new standalone section C.2.2 “Current Locational Deliverability Area Definitions,” which now appears prior to the CETO and CETL procedure discussion
 - Added footnote to Western Region LDA that inclusion of OVEC is contingent upon their integration into PJM
 - Will update the maps for DPL South, PSEG North and Cleveland LDAs to account for latest topology

- Moved section C.5.4 “Base Case Development” out of the CETL section and into its own separate section C.2.3 “Base Case Development,” which now appears prior to the CETL procedure discussion
- Relocated the following sections to new section 2.3.1 “Load Deliverability Area Assumptions”
 - second paragraph in the introduction to section C.5.4
 - section C.5.4.1 “Study Area Capacity Deficiency Assumptions”
 - section C.5.4.2 “Study Area CETL Base Case Modeling Summary”
- Updated reference from “GUS” to “eGADs” for the basis of EFORd calculations
- Clarified that when historic data is unavailable for behind-the-meter and energy-only generation that these units will be turned off in LDA under study.
- Clarified how to account for the DR power factor when the 90/10 load minus DR is less than the 50/50 load

- Relocated section C.5.4.3 “Procedure for Determining Load Deliverability Facility List” to the CETL procedure subsection C.2.5.1
- Added clarification how transmission facilities that are not on the Load Deliverability Facility List are treated when they appear as limiting facilities CETL calculation
- Added brief explanation of OTDF and TDF
- Added language that non-radial facilities with a low side 345 kV and up will only be considered as CETL limits for an LDA if they have greater than a 2% OTDF
- Clarified how the OTDF for substations during the voltage test are determined
- Clarified that PJM may choose to include specific non-PJM transmission facilities in the load deliverability test in order to account for significant loop flows

- **Removed sentence that states that Load Deliverability Facility List will be locked down prior to each baseline**
 - The 1000s of unique flowgates that qualify as Load Deliverability Facilities may change based on system topology and generation changes
 - Rather than developing and frequently updating a physical copy of the Load Deliverability Facility List, it is far more efficient to simply check if facilities qualify once they become potential CETL limits
 - The decision of whether to include a transmission facility on the Load Deliverability Facility List may involve detailed dialogue between the TO and PJM, and this is best performed once the analysis has identified a transmission limit so that the relationship between the location of the potential transmission limit and the LDA under study can be considered
 - During retools PJM does not ignore system changes that result in redirection of power flows
- Relocated subsections C.5.4.4 “Dispatch for PJM Areas Not in Capacity Emergency” and C.5.4.4.1 “Dispatch for non-PJM Areas Not in Capacity Emergency” to the base case development section

- Relocated section C.5.5 “Dispatch for Load Deliverability Study Area” to the base case development subsection C.2.3.2
- **New procedure added to require both thermal and voltage analysis on both Discrete Outage Case and Mean Dispatch Case**
 - Present procedure does not allow thermal problems to act as CETL limits in the Discrete Outage Case and voltage problems to act as CETL limits in the Mean Dispatch Case
 - Proposed procedure provides additional perspective on CETL conditions by fully examining two very different LDA dispatch patterns
- Relabeled section C.5.5.1 “Procedure to Determine Dispatch for Voltage Analysis” to C.2.3.2.2 “Dispatch Procedure for Discrete Outage Case”
 - Added clarification on how target generation outage value is determined

- Relabeled section C.5.5.2 “Procedure to Determine Dispatch for The Mean Dispatch Case” to C.2.3.2.1 “Dispatch Procedure for Mean Dispatch Case”
 - Moved steps 6, 10 and 11 to the CETL determination subsection C.2.5.2.1 “CETL for Thermal Problems”
- **Removed steps 7, 8 and 9 from section C.5.5.2 and removed section C.6 entirely**
 - The sole purpose of these steps is to derive the median loading on each flowgate
 - Developing the median loadings is a complex, time-consuming process that must be performed at each transfer level before a CETL can be identified
 - Because the median loadings are based on 10,000 different power flow cases they can’t be easily verified
 - The difference between the median loadings and the mean loadings are never more than a few percent and generally much smaller
 - The mean loadings can be easily computed and verified using the Mean Dispatch Case

Primary changes to Sections C.5.7 and C.5.8

- Relocated section C.5.7 “CETL Determination” to the CETL procedure subsection C.2.5.2
- Restated that both voltage and thermal analysis will be performed on both the Discrete Outage and Mean Dispatch Cases and that the lowest CETL among the four analyses will determine the official CETL for the LDA
- Eliminated section C.5.8.1 “Transitional Rules” because the transition was completed 10 years ago

- Address stakeholder feedback on phase 1 of 2 from June Special PC Session and have second review of changes during August 2018 PC Meeting
- Complete phase 2 of 2 for September 2018 PC Meeting to update the remaining deliverability sections in Manual M14 B Attachment C
 - C.6 “Deliverability of Generation”
 - C.7 “Generator Deliverability Procedure”
 - C.8 “Long-Term Deliverability Analysis”