

# TECHNICAL SPECIFICATION



**Energy management system application program interface (EMS-API) –  
Part 600-1: Common Grid Model Exchange Specification (CGMES) – Structure  
and rules**



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INTERNATIONAL  
ELECTROTECHNICAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### ENERGY MANAGEMENT SYSTEM APPLICATION PROGRAM INTERFACE (EMS-API) –

#### Part 600-1: Common Grid Model Exchange Specification (CGMES) – Structure and rules

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The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
57/1815/DTS	57/1871/RVDTS

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

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## INTRODUCTION

The purpose of the Common Grid Model Exchange Specification (CGMES) is to define the interface between Transmission System Operators (TSO) software in order to exchange power system modelling information as required by the European Network of Transmission System Operators for Electricity (ENTSO-E) and TSO business processes.

The CGMES is used as a baseline exchange specification for the implementation of the Common Grid Model (CGM) methodologies in accordance with the requirements for the implementation of various European network codes and guidelines. The CGMES applies to applications dealing with power system data management, as well as applications supporting the following analyses:

- load flow and contingency analyses,
- short circuit calculations,
- market information and transparency,
- capacity calculation for capacity allocation and congestion management, and
- dynamic security assessment.

The conformity of the applications used for operational and system development exchanges with the CGMES is crucial for the needed interoperability of these applications. ENTSO-E therefore developed and approved the CGMES Conformity Assessment Framework as the guiding principles for assessing applications' CGMES conformity. This technical specification relies on the CGMES Conformity Assessment Process operated by ENTSO-E in order to ensure that the CGMES is properly implemented by suppliers of the applications used by TSOs.

The CGMES is a superset of the former ENTSO-E CIM based data exchange standard (Profile 1) which was based on CIM14 (UML14v02) and has been used for certain network models exchanges since 2009. The CGMES reflects TSO requirements (as known by 2014) for accurate modelling of the ENTSO-E area for power flow, short circuit, and dynamics applications whilst also allowing for the exchange of any diagram layouts including GIS data of a grid model.