

D2.1 – SMART GRID STANDARDIZATION DOCUMENTATION MAP



STARGRID EU



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D2.1 – SMART GRID STANDARDIZATION DOCUMENTATION MAP

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GLOSSARY

Acronym	Explanation
AMI	Advanced Metering Infrastructure
AMR	Advanced Meter Reading
ANSI	American National Standards Institute
API	Application Programming Interface
BACS	Building Automation and Control Systems
BMS	Battery Management System
CC	Control Centre
CD	Committee Draft
CHP	Combined Heat and Power
CIM	Common Information Model
CIP	Critical Infrastructure Protection
CIS	Component Interface Specification
COMTRADE	Common Format for Transient Data Exchange
COSEM	Companion Specification for Energy Metering
CT	Current Transformer
DA	Distribution Automation
DEMS	Distributed Energy Management System
DER	Distributed Energy Resources
DLMS	Distribution Line Message Specification
DMS	Distribution Management System
DNP	Distributed Network Protocol
DoE	Department of Energy (USA)
DR	Demand Response
DSO	Distribution System Operator
ECP	Electrical Connection Point
EMC	Electromagnetic Compatibility
EMS	Energy Management System (tech.)
ERP	Enterprise Resource Planning

ETSI	European Telecommunications Standards Institute
EV	Electric Vehicle
FACTS	Flexible Alternating Current Transmission System
FSC	Fixed Series Compensation
GID	Generic Interface Definition
GIS	Geographic Information System
GOOSE	Generic Object Oriented Substation Event
GPS	Global Positioning System
HAN	Home Area Network
HBES	Home and Building Electronic System
HES	Home Electronic System
HSR	High Availability Seamless Automation Ring
HVAC	Heating, Ventilating and Air Conditioning
HVDC	High Voltage Direct Current
ICCP	Inter Control Centre Communication Protocol
IEC	International Electrotechnical Commission
IED	Intelligent Electronic Device
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
ISA	International Society of Automation
ISO	International Organization for Standardization
IT	Information Technology
JTC	Joint Technical Committee (ISO/IEC)
LD	Logical Device
LN	Logical Node
LV	Low Voltage
MDM	Meter Data Management
MRP	Medium Redundancy Protocol
MV	Medium Voltage
MWFM	Mobile Workforce Management
NERC	North American Electric Reliability Corporation (USA)
NIST	National Institute of Standards and Technology (USA)
NSM	Network and System Management

OMS	Outage Management System
PCC	Point of Common Coupling
PHEV	Plug-in Hybrid Electric Vehicle
PMU	Phasor Measurement Unit
POD	Damping of Power Oscillations
PPC	Product Properties and Classification
PQ	Power Quality
PRP	Parallel Redundancy Protocol
PV	Photovoltaic
RAS	Remedial action Scheme
RTU	Remote Terminal Unit
SA	Substation Automation
SB	Sector Board (IEC)
SC	Sub Committee (IEC)
SCADA	Supervisory Control and Data Acquisition
SCL	System Configuration Language
SDO	Standardization Developing Organization
SG	Strategic Group (IEC)
SIDM	System Interfaces for Distribution Management
SIPS	System Integrity Protection Scheme
SMB	Standardization Management Board
SNTP	Simple Network Time Protocol
SOA	Service Oriented Architecture
SSR	Sub Synchronous Resonances
STATCOM	Static Synchronous Compensator
SVC	Static Var Compensator
TASE	Telecontrol Application Service Element
TC	Technical Committee (IEC)
TCP	Transmission Control Protocol
TCSC/TPSC	Thyristor Controlled/Protected Series Compensation
TNA	Transmission Network Application
UML	Unified Modeling Language
V2G	Vehicle to Grid

VPP	Virtual Power Plant
VT	Voltage Transformer
WFM	Workforce Management
XML	Extensible Markup Language

1 EXECUTIVE SUMMARY

This report has been prepared by the STARGRID consortium in the WP2 (“State of the Art: existing standards and smart grids industry initiatives”) of the project. The objective is to get a comprehensive view of the standardization activities and industry initiatives currently in progress for smart grids, being fully aware of the state of art in this issue.

This report constitutes Deliverable D2.1 “Smart Grid Standardization Documentation Map” and runs in parallel to its twin report Deliverable D2.2 “Smart Grid Industry Initiatives Documentation Map”. The separation into two documents serves its purpose of reducing the complexity of the presentation.

Both reports are living documents intended to be extended during the project life time. Latest versions can always be found on the STARGRID website www.stargrid.eu.

In this context “map” means a guidance report that can serve as an inventory of the documents detected and/or collected in WP2 according to an organised scheme and providing also the relevant information of each document and of the group/committee that produced it. No deep analysis is done at this stage since this job will be preformed in WP3 and WP4.

The report covers the activities of the “classical” standardization committees and groups, being focussed on the groups “promoting standardization” (coordinating, generating roadmaps, detecting gaps, etc.) rather than “producing standardization” (issuing the standards and drafts). Anyway, it has been the intention to include also those committees formulating smart grid “core standards”, and future version of this “map” will deepen in this direction.

2 INTRODUCTION

2.1 PURPOSE OF WORK

The main objective of this report is to obtain a comprehensive view of the standardization activities in progress for smart grids at European and International level and implement this view in a “map” containing the involved standardization groups and committees and the different documents produced by this groups. This guidance report follows an organised scheme and provides the relevant information of each document and of the group/committee that produced it. Several annexes are included also for deeper information and consultation.

This standardization activities documentation will serve as the starting point for the critical assessment to be performed in WP3 and WP4. But this map is not only an internal STARGRID tool but also a reference document for smart grid stakeholders.

2.2 CONTRIBUTIONS OF PARTNERS

The report has been prepared mainly by TECNALIA, incorporating contributions by IWES and particularly ASRO that developed the Annexes.

2.3 RELATIONS TO OTHER ACTIVITIES

This report has been prepared in STARGRID WP2, the first technical work package. It will serve as a basis in particular for WP3 “Analysis of existing standards and drafts” and WP4 “Analysis of industry opinion regarding existing standards and drafts”. In these tasks, STARGRID will develop evaluation criteria for standards and specifications, analyse the collected documents accordingly, and incorporate the view and feedback from the affected industries.

The STARGRID consortium expects that it will be useful for external parties interested in current smart grid standardisation activities as well.

2.4 ORGANISATION OF THE DELIVERABLE

The Deliverable is organised as a compilation of forms extracting the basic information plus extensive annexes for deepening this information and for consultation purposes. There are two types of forms: forms associated to the different standardization committees/groups and forms linked to the different documents produced by each of the mentioned groups. The forms have been designed for being self-explicative. However the following notes can help understand some of the fields:

Relevance scale:

VH – Very high; H – High; M – Medium; L – Low; VL – Very low (normally, a very low relevance document is not considered in the map).

Document types:

Standard; Draft Standard; Technical Report; Technical Specification; Analysis Report; Guideline; Code; Recommendation; Roadmap; Work Programme; White Paper; Position Paper; Meeting agenda; Meeting minutes; Meeting presentation; Others.

Available in STARGRID (Y/N):

“N” means that the document has been identified as relevant but, for the moment, no STARGRID partner has access to it.
“Y” means that some partner has access to it.

Domain or System category:

Generation, Transmission, Distribution, DER, Customer (including smart metering, demand side management, smart loads, e-Mobility), Telecommunication, Security, EMC & Power Quality, Smart Grids (general, system approach).

Priority Topic or Use Case:

It refers to the STARGRID Areas of Interest: “Demand response”, “Smart metering” and “DER integration”

Comments:

Comments or information that can help in the future analysis.

Furthermore, a list of keywords is provided for every committee and document, mainly to facilitate the searching in the file repository where the relevant documents have been collected by the STARGRID consortium.

3 CEN-CENELEC-ETSI

3.1 JOINT WORKING GROUP FOR SMART GRIDS

STANDARDIZATION ORGANIZATION			
Acronym	Name		
JWG on SG	Joint Working Group on standards for Smart Grids		
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2010/06		
Ending date	March 2011 (Mandate M490 issue date) Subsequently SGCG was founded		
Website	http://www.cen.eu/cen/Sectors/Sectors/UtilitiesAndEnergy/SmartGrids/Pages/default.aspx		
Contacts			
	Name	Email	Telephone
Convenor	Ralph Sporer	ralph.sporer@siemens.com	+49/9131-732960
Secretary	Catherine Vigneron	cvigneron@cencenelec.eu	
Others			
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none">1. Identification of existing standardization and potential gaps in the European standards portfolio.2. Advise on European requirements relating to Smart Grids standardization and assess ways to address them.3. Establishment of a basis for further investigation and developments in the light of the standardization mandate for smart grids from the European Commission.			
Focus: <ol style="list-style-type: none">1. The work performed is focused on the initiatives by the Smart Grids Task Force of the European Commission.2. Maximum reference to international work wherever this may already suffice for the implementation of Smart Grids in Europe.3. Initially JWG is focused on the smart electricity grid, but may extend its scope into other utilities (gas, water, heat), keeping it aligned with the scope of the European Commission’s Smart Grids Task Force.			

Activities:

1. Drafting of the report “Final report of the CEN/CENELEC/ETSI Joint Working Group on Standards for Smart Grids” in 2011.

KEYWORDS: standardization activities, gaps, recommendations, mandate

3.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JWG 2011 001	Relevance	VH
Standardization organization to which the document is related	CEN/CENELEC/ETSI Joint Working Group on standards for Smart Grids		
Document title	Final report of the CEN/CENELEC/ETSI Joint Working Group on Standards for Smart Grids		
Document reference and/or version	--	Date	2011/05/04
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The aim of this document is to provide a strategic report which outlines the standardization requirements for implementing the European vision of smart grids, especially taking into account the initiatives by the Smart Grids Task Force of the European Commission.</p> <p>It provides an overview of standards, current activities, fields of action, international cooperation and strategic recommendations.</p> <p>The report identifies the necessary steps to be taken and proposes recommendations concerning standardization of smart grids. A prioritization of actions still needs to be performed and the content will be influenced continuously by external events. This is especially true for the standardization mandate. The content and spirit of the mandate need to be included in later versions of the report. A large amount of standardization work has already been done and a vast set of important and mature standards is already in place.</p>		

KEYWORDS: standardization gaps, recommendations, mandate

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID	STG JWG 2011 002	Relevance	VH

ID			
Standardization organization to which the document is related	CEN/CENELEC/ETSI Joint Working Group on standards for Smart Grids		
Document title	Recommendations for smart grid standardization in Europe. Standards for Smart Grids.		
Document reference and/or version	--	Date	2011/05
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>Summary of the recommendations provided in the JWG Final report, this guideline is an extract from that report.</p> <p>The recommendations are related to the following topics; terminology, object identification and classification, reference architecture, system aspects, data communication interfaces, smart grid information security, dependability and functional safety, generation, transmission, distribution, smart metering, industry, home and building, demand response applications, markets and actors.</p>		

KEYWORDS: standardization gaps, recommendations, mandate

3.2 SMART GRIDS COORDINATION GROUP (SGCG)

STANDARDIZATION ORGANIZATION	
Acronym	Name
SGCG	CEN/CENELEC/ETSI Smart Grids Coordination Group
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2011/07/01 (Kick-off meeting) Formerly JWG on SG (June 2010 / March 2011)
Ending date	--
Website	http://www.cen.eu/cen/Sectors/Sectors/UtilitiesAndEnergy/SmartGrids/Pages/default.aspx
Contacts	

	Name	Email	Telephone
Convenor	Ralph Sporer	ralph.sporer@siemens.com	+49/9131-732960
Secretary	Catherine Vigneron	cvigneron@cencenelec.eu	
Others	Johannes Stein WG "Sustainable Processes	johannes.stein@vde.com	
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Advisement on European requirements relating to Smart Grid standardization, and assessment of ways to address them. <p>Focus:</p> <ol style="list-style-type: none"> 1. Further develop the initial report on smart grid standardization in Europe (issued by Joint Working Group on Standards for Smart Grids in 2010). 2. Manage the whole work process concerning the smart grid mandate M/490. 3. Clarify non-technical questions to avoid unnecessary discussions in technical groups. 4. Provide the list of proposed European Standards and other consensus based deliverables to be developed by the ESOs for smart grid functionalities related to the execution of the programs required by the mandate and propose the work program for approval by the ESOs and EC. 5. Provide comments and recommendations to the European Standardization Organizations, related to smart grid standardization, covered by the current mandate. The SG-CG shall not itself produce any draft standardization deliverables. 6. Provide a suitable platform for discussion of smart grid standardization-related issues with the ESOs and European Commission. <p>Activities:</p> <p>In order to develop its work in an efficient manner, the main group SGCG was divided into 4 working Groups. In 2012 each Working Group was the responsible of producing one technical report and the following reports were issued:</p> <ul style="list-style-type: none"> - First Set of Standards (first existing standards, identify and address gaps) - Reference Architecture (technical reference architecture, representing functional information data flow between main domains) - Information security (end-to-end IT-security, data protection and data models) - Sustainable Processes (use case collection, analysis and harmonization) <p>Additionally the report “SGCG – Framework” was drafted in order to provide an overview of the activities and reports of the SG-CG and its individual working groups.</p> <p>A workshop, “Use Case Collection and Analysis for Smart Grids – Motivation, Method, Common Approach within the Work on the Smart Grid Mandate M/490 of the EU Commission to CEN / CENELEC / ETSI”, was held in Brussels (2011/09/26).</p>			

KEYWORDS: standardization, gaps, mandate, use cases, reference architecture, smart grid security

3.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2012 001	Relevance	VH
Standardization organization to which the document is related	CEN/CENELEC/ETSI Smart Grid Coordination Group		
Document title	CEN-CENELEC-ETSI Smart Grid Coordination Group “First Set of Standards “		
Document reference and/or version	-- (v2.0)	Date	2012/11
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>As the result of the mandated work requested through the M/490 mandate, this report intends to build a first list of standards, enabling or supporting the deployment of Smart Grid systems in Europe.</p> <p>This reports aims to provide to any kind of Smart Grid users a selection guide for the most common Smart Grid systems. The relevant set of existing and upcoming standards to be considered, from CEN, CENELEC, ETSI and further from IEC, ISO, ITU or even coming from other bodies when needed.</p> <p>The objective is not to be comprehensive, but more to provide guidance within the galaxy of standards which may apply. Preference is given to consistency wherever possible. Then possibly all available standards may not be reflected in this report.</p> <p>At the end this guide includes about 24 types of Smart Grid systems, more than 400 standard references, coming from more than 50 different bodies. In addition, it also indicates the standardization work which may have started, stating in the most accurate manner, the user impact (use case) this standardization work may have in a near future, in order to fill the identified gaps.</p>		

KEYWORDS: smart grid standardization, gaps, mandate

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2012 002	Relevance	M
Standardization organization	CEN/CENELEC/ETSI		

to which the document is related		Smart Grid Coordination Group	
Document title	CEN-CENELEC-ETSI Smart Grid Coordination Group “Framework Document “		
Document reference and/or version	--	Date	2012/11
Document type	Analysis Report	Available in STAGRID (Y/N)	Y
Domain or system category		Smart Grids	
Priority Topic or Use Case		DER integration, smart metering, demand response	
Brief content description	<p>This document provides an overview of the activities and reports of the SG-CG and its individual working groups. It describes how the individual elements and reports fit together so as to provide the consistent framework for identifying the Smart Grid standards required by the mandate.</p> <p>The relationships between the SG-CG working groups and their contribution to the overall picture and process are explained.</p> <p>This framework includes methodologies and tools that can be used to provide answers to a number of important questions. Part of the work focuses on providing a list of mature standards that can be used today for the implementation of Smart Grids in Europe. Another part focuses on the question, how to close the most important gaps identified in the Joint Working Group (JWG). Also the overall methodology and tools used are described.</p>		

KEYWORDS: mandate, standards framework, gaps

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2012 003	Relevance	VH
Standardization organization to which the document is related	CEN/CENELEC/ETSI Smart Grid Coordination Group		
Document title	CEN-CENELEC-ETSI Smart Grid Coordination Group “Smart Grid Information Security“		
Document reference and/or version	--	Date	2012/11
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		

Brief content description	<p>The objective of this report is to support Smart Grid deployment in Europe providing Smart Grid Information Security guidance and SGIS standards landscape to Smart Grid stakeholders.</p> <p>SGIS essential requirements presented emphasize the importance of the CIA (Confidentiality, Integrity and Availability) triad for Information Security but also underline the varying weight of the Confidentiality, Integrity and Availability as essential requirements and the issue encountered to address Information Security topics for the Smart Grid as a whole.</p> <p>The content presented in this report does not provide a complete and definitive answer to the mandate M/490 objective. This report provides a high level guidance on how standards can be used to develop Smart Grid information security. It also presents concepts useful to all Smart Grid stakeholders to integrate information security into their daily activities.</p> <p>Securing the Smart Grid is a continuous effort. Elements presented in this report are the first steps of the Smart Grid information security journey to achieve end to end security.</p>
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KEYWORDS: information security, data confidentiality, data integrity, data availability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2012 004	Relevance	VH
Standardization organization to which the document is related	CEN/CENELEC/ETSI		
Document title	CEN-CENELEC-ETSI Smart Grid Coordination Group “Smart Grid Reference Architecture”		
Document reference and/or version	-- (v3.0)	Date	2012/11
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The report addresses the M/490 mandate’s deliverable regarding the technical reference architecture and provides the following main results:</p> <ul style="list-style-type: none"> - European Conceptual Model. It is an evolution of the NIST model in order to take into account some specific requirements of the EU context that the NIST model did not address. The major one is the integration of —Distributed Energy Resources (DER). - Architecture Viewpoints. They represent a limited set of ways to represent 		

	<p>abstractions of different stakeholders' views of a Smart Grid system. The viewpoints selected are the Business, Functional, Information, Communication viewpoints.</p> <ul style="list-style-type: none"> - Smart Grids Architecture Model (SGAM) Framework. The architecture framework takes into account already identified relevant aspects [JWG-SG 2010] like interoperability, multi-viewpoints.
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KEYWORDS: reference architecture, European Conceptual Model, DER integration

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2012 005	Relevance	VH
Standardization organization to which the document is related	CEN/CENELEC/ETSI Smart Grid Coordination Group		
Document title	CEN-CENELEC-ETSI Smart Grid Coordination Group "Sustainable processes"		
Document reference and/or version	-- (v1.0)	Date	2012/11
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>Description of use cases implementation in the standardization environment. General methodology and first array of valid examples for further consideration in the technical committees of the standardization organizations.</p> <p>This document includes:</p> <ul style="list-style-type: none"> - Theoretical considerations relating to use case template and structures, classification of use cases according to several criteria and the process of use cases collection and maintenance. - The practical development of Smart Grid use cases clusters along with their conceptual descriptions and related generic use cases, both reflecting use cases collected from the wider Smart Grid stakeholder community. - The introduction and description of a use cases management repository (UCMR) developed as prototype which was subsequently successfully applied by the Working Group. <p>The major topic which was explored during this process was the development of a flexibility concept. The outline put forward in this concept is intended to aid stakeholder understanding and thus considers Smart Grid applications such as demand response. A further conceptual description deals with the process of electrical vehicle (EV) charging under a Smart Grid perspective.</p>		

KEYWORDS: use cases, use case management repository (UCMR)

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2011 006	Relevance	L
Standardization organization to which the document is related	CEN/CENELEC/ETSI Smart Grid Coordination Group		
Document title	"Use Case Collection and Analysis for Smart Grids – Motivation, Method, Common Approach within the Work on the Smart Grid Mandate M/490 of the EU Commission to CEN / CENELEC / ETSI"		
Document reference and/or version	--	Date	2011/09/26
Document type	Others: Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	Presentation of the Workshop held within SGCG activities. The aim of this WS was to collect use cases and analyze them: <ul style="list-style-type: none"> - To identify functional and technical requirements for standards. - To have a unique set for the ESO's (avoid duplication and conflicts). - As input for national definitions (to reach interoperability). 		

KEYWORDS: use cases, standards requirements

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCG 2011 007	Relevance	M
Standardization organization to which the document is related	CEN/CENELEC/ETSI Smart Grid Coordination Group		
Document title	SGCG report Programme of standardization work for the smart grid		
Document reference and/or version	V 1.1	Date	2011/11/10
Document type	Analysis report	Available in STARGRID (Y/N)	Y

Domain or system category	Smart Grids
Priority Topic or Use Case	DER integration, smart metering, demand response
Brief content description	<p>This report aims to answer the M/490 mandate second delivery, proposed to fill the main standard gaps mentioned in the previous SGCG report, “Final Report of the SGCG Report - Standardisation Gaps Prioritisation for the Smart Grid - v2.1, date : 2011-10-19”.</p> <p>This document aims not only to describe the work programme, but also to offer a tool for monitoring and reporting of all these actions</p> <p>This document aims not only to describe the work programme, but also to offer a tool for monitoring and reporting of all these actions. It will also enable capturing/following-up the new needs for standardisation resulting from the re-assessment of smart grid market needs.</p>

KEYWORDS: standardization needs, gaps, work programme, mandate

3.3 SMART METER COORDINATION GROUP (SMCG)

STANDARDIZATION ORGANIZATION			
Acronym	Name		
SMCG	CEN/CENELEC/ETSI Smart Meter Coordination Group		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2009		
Ending date	--		
Website	http://www.cen.eu/cen/Sectors/Sectors/Smartmetering/Pages/default.aspx		
Contacts			
	Name	Email	Telephone
Convenor	Daniel Hec		
Secretary	Catherine Vigneron	cvigneron@cencenelec.eu	
Others			
Scope – Focus – Description of activities			
Scope: 1. Provide a focal point concerning smart metering standardization issues.			
Focus: 1. Meet the needs of the residential (household) and small and medium-sized enterprise (SME)			

sectors

Activities:

1. In response to the first phase of mandate M/441, the SMCG developed the Technical Report, **CEN-CLC-ETSI TR 50572:2011** 'Functional reference architecture for communications in smart metering systems', which identifies the functional entities and interfaces that the communications standards should address. It is intended to support the development of software and hardware architecture and related standards. The report also provides an overview on existing standards and ongoing standardization work. Data privacy and security is also discussed.
2. The second phase of Mandate M/441 requests the ESOs to develop European Standards containing harmonised solutions for additional meter functionalities within an interoperable framework, using where needed the open architecture developed under the first phase of Mandate M/441. To clarify standardization requirements and to ensure consistency in the smart meter dataflow, it is helpful to consider functionalities in details through Use Cases. A Task Force of the CEN-CENELEC ETSI Smart Meters Coordination Group is working on the definition of Use Cases for Smart Metering. It takes input from various sources in Europe, and other continents, that did already preliminary work on Use Cases. The Task Force is finalizing the report "The guidelines for writing Smart Metering Use Cases", containing the definition and a template for Use Cases, the final list of Use Cases to be developed and a work plan.

KEYWORDS: smart metering, reference architecture, use cases, data privacy, data security

3.3.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SMCG 2009 001	Relevance	H
Standardization organization to which the document is related	CEN/CENELEC/ETSI SMCG – Smart Meter Coordination Group		
Document title	Smart Meters Co-ordination Group – Final report (Standardization mandate to CEN, CENELEC and ETSI in the field of measuring instruments for the development of an open architecture for utility meters involving communication protocols enabling interoperability, M/441)		
Document reference and/or version	Final report Version 0.7	Date	2009/12/10
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Smart metering		
Brief content description	The present report constitutes an extensive survey of the current standardization landscape as regards smart metering, and makes specific recommendations for		

	<p>the subjects for which additional standards work may be necessary to ensure interoperability or to fill other gaps in existing standards, and for which TCs in CEN, CENELEC or ETSI should co-ordinate the definition of this further work.</p> <p>The European Commission has issued the mandate M/441 for the standardization of Smart Metering functionalities and communication for usage in Europe for electricity, gas, heat and water applications.</p> <p>The mandate requires the standardization process to ensure interoperability of technologies and applications within a harmonised European market.</p>
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KEYWORDS: smart metering, standardization gaps, interoperability, communications, mandate

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SMCG 2011 002	Relevance	H
Standardization organization to which the document is related	CEN/CENELEC/ETSI SMCG – Smart Meter Coordination Group		
Document title	Functional reference architecture for communications in smart metering systems		
Document reference and/or version	CEN/CLC/ETSI/TR 50572	Date	2011/12
Document type	Technical Report	Available in STARGRID (Y/N)	Y
Domain or system category	Customer, Telecommunications		
Priority Topic or Use Case	Smart metering		
Brief content description	<p>This Technical Report identifies a functional reference architecture for communications relevant for smart metering systems and the standards relevant to meeting the technical/data communications requirements of Mandate M/441, in particular to assist the active participation of consumers in the energy markets.</p> <p>The architecture has been developed drawing on existing and planned implementations but its generic nature should enable it to support future different implementations.</p> <p>The Technical Report also analyses the existing standards and ongoing standardization work.</p>		

KEYWORDS: smart metering, reference architecture, communications

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID	STG SMCG 2013 003	Relevance	H

ID			
Standardization organization to which the document is related	CEN/CENELEC/ETSI SMCG – Smart Meter Coordination Group		
Document title	Report of activities at end 2012 (M/441 phase 2)		
Document reference and/or version	BT N 9154 Draft BT C18/2013	Date	2013/02/13
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Smart metering		
Brief content description	<p>This report documents the work at the end of 2012 undertaken by the European Standards Organisations (ESOs) CEN, CENELEC and ETSI in response to mandate M/441, which was issued in March 2009.</p> <p>It is intended as a guidance note to the work over the period 2009-2012, introducing the various reports and other deliverables over this period of the mandate, guiding the reader on how they are intended to be used and explaining how subsequent on-going standardisation work in the area of smart metering may be taken forward.</p>		

KEYWORDS: smart metering, mandate, interoperable framework, standardization process

4 CEN-CENELEC

4.1 eMOBILITY COORDINATION GROUP (eMCG)

STANDARDIZATION ORGANIZATION	
Acronym	Name
eMCG	CEN/CENELEC eMobility Coordination Group (established as a consequence of <i>Focus Group on European Electro-Mobility</i>)
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	Mid 2010: Focus Group on European Electro-Mobility March 2012: eMobility Coordination Group (eM-CG) kick-off meeting
Ending date	--

Website	http://www.cenelec.eu/standards/Sectors/ElectricVehicles/Pages/default.aspx		
Contacts			
	Name	Email	Telephone
Convenor	David Dossett		
Secretary			
Others	Antonio Moretti		
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Establish the specific standardization requirements for European electro-mobility 2. Support coordination of standardization activities during the critical phase of writing new standards or updating existing standards. <p>Focus:</p> <ol style="list-style-type: none"> 1. Support coordination of standardization activities on Electro-Mobility. 2. Ensure that international standards meet European needs, including (for example) compatibility with national rules for wiring. 3. The eM-CG is responsible for making sure that standards necessary for eMobility are being dealt with in a coherent manner by the relevant technical bodies. 4. Take care to closely link the e-mobility activities with other on-going standardisation activities in the field of smart meters (M/441) and smart grids (M/490). <p>Activities:</p> <ol style="list-style-type: none"> 1. As a reply to Mandate M/468 (charging of electric vehicles), a report on “Standardization for road vehicles and associated infrastructure” was issued (October 2011). 2. List of available standards for the charging of electric vehicles (June 2012) 3. Work programme (December 2012) 4. Coordinate the technical work with close input from the following technical committees: CEN/TC 301, CLC/TC 23BX, CLC/TC 69X, CLC/TC 64. 5. Coordination with the standardisation activities at the international level, a link will be established with the American Standardization Institute (NIST) and the Japanese Standardization Committee (JISC). 			

KEYWORDS: electric vehicle, electro-mobility

4.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG EMCG 2011 001	Relevance	H
Standardization organization to which the document is related	CEN/CENELEC Focus Group on European Electro-Mobility		

Document title	Standardization for road vehicles and associated infrastructure. Report in response to Commission Mandate M/468 concerning the charging of electric vehicles.		
Document reference and/or version	-- V2	Date	2011/10
Document type	Recommendation; Analysis Report; Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>The document makes proposals to the standardization organizations for the further development of existing standards, or in respect of standardization activities under way, or concerning the creation of new standards.</p> <p>The report states the positions of different stakeholder communities concerning electro-mobility standardization before embarking on the “headline” issue of connectors and charging systems.</p> <p>The report briefly considers the issue of “smart charging”, in essence a future development that links the vehicle intimately with the electricity grid. Communication between the vehicle and the infrastructure then merits a chapter to itself. The vehicle batteries are next considered – their technology is fast-developing; but issues such as safety of the installation must remain in the forefront of standards consideration.</p> <p>Some considerations to issues relating to the electromagnetic compatibility (EMC) of the electric vehicle and its charging system with other items of electrical apparatus.</p> <p>Some regulatory aspects are included in the report. A number of annexes provide the essential technical detail.</p>		

KEYWORDS: electric vehicle, electro-mobility, smart charging, electromagnetic compatibility (EMC)

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG EMCG 2012 002	Relevance	H
Standardization organization to which the document is related	CEN/CENELEC Electro-Mobility Coordination Group		
Document title	CEN-CENELEC eMobility Coordination Group – Reply to M/468 List of standards		
Document reference and/or	--	Date	2012/06

version			
Document type	Other: List of standards	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>With their reply to the mandate, CEN and CENELEC committed to have the standards dedicated to the charging of electric vehicles available 18 months after acceptance of the mandate i.e. by mid 2012.</p> <p>As mentioned in the Focus Group Report, there is an impressive portfolio of available standards that frame in the wide Electro-Mobility context. The table provided is limited to those standards that frame directly within the terms of Mandate M/468.</p> <p>The standards are referred to the following topics:</p> <ul style="list-style-type: none"> - Charging system - Connection to the grid - Electrical safety - Smart charging 		

KEYWORDS: electric vehicle, electro-mobility, smart charging, electrical safety

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG EMCG 2012 003	Relevance	M
Standardization organization to which the document is related	CEN/CENELEC Electro-Mobility Coordination Group		
Document title	eMCG_Sec0017_DC_WorkProgramme		
Document reference and/or version	eMCG_Sec0017_DC_WorkProgramme	Date	2012/12
Document type	Work Programme	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>List of references to be developed in next years within eMobility Coordination Group. The data included for each reference are:</p> <ul style="list-style-type: none"> - Reference - Title - Target date for vote 		

	<ul style="list-style-type: none"> - Current status - Next stage
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KEYWORDS: electric vehicle, electro-mobility, charging station, charging cable, EMC, vehicle safety

5 CENELEC

5.1 TECHNICAL COMMITTEE 8X, WORKING GROUP 5

STANDARDIZATION ORGANIZATION			
Acronym	Name		
CLC TC8X/WG5	System aspects of electrical energy supply. Status of Smart Grid Projects in Europe		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2011/05/12 (Inaugural meeting)		
Ending date	--		
Website	http://www.cenelec.eu/dyn/www/f?p=104:29:3428080600824522:::FSP_ORG_ID,FSP_LANG_ID:1077,25#3		
Contacts			
	Name	Email	Telephone
Convenor	John Sinclair (EA Technology Ltd.)		
Secretary	Simonne Botton	Simone.botton@enel.com	
Others			
Scope – Focus – Description of activities			
Scope: 1. The scope of the WG5 is to document the technical contents and regulatory arrangements of the various Smart Grid projects that are currently in operation, or under construction, within Europe, in order to understand the key learning points and the benefits delivered.			
Focus: 1. Provide useful information to those organisations and individuals that are currently engaged or about to become engaged in developing Smart Grids. 2. This information will help to support the development of Standards for the various component parts that make up a Smart Grid. 3. The analysis performed by WG5 is seen as complementary to the work of the CEN/CENELEC/ETSI JWG on Smart Grids. 4. Identification of which standards are required to support the development of Smart Grids. This			

information will be used as an input by the Smart Grids Coordination Group.

Activities:

1. Technical report covering the technical contents and regulatory arrangements of the various Smart Grid projects that are currently in operation, or under construction, within Europe. It is impractical to attempt to include every project within the analysis, so it is assumed that the 32 assessed projects are sufficiently representative to provide information and draw early conclusions. This Technical Report has the reference CLC/FprTR 50608:2013, "Smart grid projects in Europe" and its draft version is available.
2. Prepare the necessary standards framework and coordinate the development, in cooperation with other TC/SCs, of CENELEC standards needed to facilitate the functioning of electricity supply systems in open markets.
3. The main standards/specifications developed/proposed by TC 8x committee in relation to the smart grids are:
 - CLC/FprTS 50549-1:2011, Requirements for the connection of generators above 16 A per phase - Part 1: Connection to the LV distribution system. (Stage: Draft for vote expected 2013/04/30)
 - CLC/FprTS 50549-2:2011, Requirements for the connection of generators above 16 A per phase - Part 2: Connection to the MV distribution system. (Stage: Draft for vote expected 2013/04/30)
 - FprEN 50438: 2013, Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks. (Decision to launch vote. Deadline date: 2013/05/03)
 - EN 50160:2010, Voltage characteristics of electricity supplied by public electricity networks
 - CLC/FprTR 50608: 2013, Smart Grid Projects in Europe. (Stage: Vote circulates. Deadline date: 2013/05/10)

Comments

No information is available on the internet. WG5 does not appear on the CLC/TC8X website.

KEYWORDS: smart grid project, regulatory arrangement

5.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8X 2013 001	Relevance	H
Standardization organization to which the document is related	CENELEC TC8X WG5		
Document title	Technical Report "Smart Grid Projects in Europe"		
Document reference and/or version	prEN TR 50XXX (draft)	Date	2013/01

Document type	Technical report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The intention of this report is to provide useful information to those organisations and individuals that are engaged in developing Smart Grids. It is also intended that this report will be used to support the development of relevant standards by presenting the key learning points from early Smart Grid projects – it is widely accepted that the publication of relevant standards will accelerate the development of Smart Grids.</p> <p>This Technical Report only covers a sample of the Smart Grid projects within Europe; it would be impractical to attempt to include every project. It is assessed that the 32 projects shown in this Technical Report are sufficiently representative to provide information and draw early conclusions.</p> <p>One of the key objectives of this Technical Report is to identify the learning objectives for each of the Smart Grid projects.</p> <p>For each project, current status, results, stakeholders involved, sufficiency of existing standards are explained.</p>		

KEYWORDS: smart grid project, smart grid development

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8X 2011 002	Relevance	VL
Standardization organization to which the document is related	CENELEC TC8X WG5		
Document title	Notes of the TC8X/WG5 First Meeting		
Document reference and/or version	--	Date	2011/05/12
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<ul style="list-style-type: none"> - Discussion on what constitutes a smart grid for the purposes of the project. - Discussion on the trials that are underway in the countries represented at the meeting. - Definition of a list of questions by WG5 in order to be answered for each of the project. 		

KEYWORDS: smart grid projects

5.2 TECHNICAL COMMITTEE 13

STANDARDIZATION ORGANIZATION			
Acronym	Name		
CLC TC13	Equipment for electrical energy measurement and load control		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://www.cenelec.eu/dyn/www/f?p=104:30:3239045089230097::::FSP_ORG_ID,FSP_LANG_ID:63,25		
Contacts			
	Name	Email	Telephone
Convenor	Bernd Schulz		
Secretary	Pascal Tantin		
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Standardization in the field for metering equipment and systems (using whenever possible IEC standards), including smart metering systems, for electrical energy measurement, tariff- and load control, customer information and payment, for use in power stations, along the network and at energy end users, as well as to prepare international standards for meter test equipment and methods. Excluded: Standardization for the interface of metering equipment for interconnection lines and industrial consumers and producers requiring energy management type interfaces to the control system, covered by IEC/TC 57. <p>Focus:</p> <ol style="list-style-type: none"> 1. CLC TC13 is the mirror committee for IEC TC13. In general CLC TC13 adopts IEC standards developed by IEC TC13. 2. TC13 plays a central role for the M/441 mandate holding the responsibility for most communication standards related to the electricity meter. WG02 was founded to take the responsibility on M/441, in particular it has to make sure that under M/441 no new CENELEC standard conflicts with the IEC standards. For that reason, the coordination with IEC is of utmost importance in order to avoid any conflict between European and International standards. 			

Activities:

1. The main standards/specifications developed (or adopted from IEC)/proposed by TC 13 committee in relation to the smart grids are:
 - CLC/prTS 50567-1:2012, Meter data exchange over power lines - Part 1: Lower layer profile using Orthogonal Frequency Division Multiplexing (OFDM) Type 1.
 - CLC/prTS 50567-2:2013, Meter data exchange over power lines - Part 2: Lower layer profile using Orthogonal Frequency Division Multiplexing (OFDM) Type 2.
 - CLC/prTS 52056-8-4: 2012, Electricity metering data exchange - The DLMS/COSEM suite - Part 8-4: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 1 profile.
 - CLC/prTS 52056-8-5: 2012, Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 2 profile.
 - EN 62056 series: Electricity metering - Data exchange for meter reading, tariff and load control.

KEYWORDS: smart meter, metering equipment, load control, tariff, payment

5.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG CLCTC13 2010 001	Relevance	M
Standardization organization to which the document is related	CENELEC TC13		
Document title	Standardization for Smart Metering. CENELEC TC 13 – Electricity metering (OPEN Meter 2nd Workshop)		
Document reference and/or version	--	Date	2010/02/04
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Smart metering		
Brief content description	<p>This presentation was expounded within the OPEN Meter 2nd workshop held in Brussels (February 2010). The document was drafted by Dr. Bernd Schulz, Chairman of CLC/TC13. The main topics covered in this presentation are:</p> <ul style="list-style-type: none"> - CLC/TC13 overview: Main working areas, liaisons, etc. - CLC/TC 13 and the M/441 mandate - CLC/TC 13 and OPEN Meter: what is expected. - Next steps 		
Comments	The main objective of the OPEN Meter project (Open Public Extended Network		

	Metering) is to specify a comprehensive set of open and public standards for AMI, supporting electricity, gas, water and heat metering, based on the agreement of all the relevant stakeholders in this area, and taking into account the real conditions of the utility networks so as to allow for full implementation
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KEYWORDS: advanced metering infrastructure (AMI), smart metering

5.3 TECHNICAL COMMITTEE 205

STANDARDIZATION ORGANIZATION			
Acronym	Name		
CLC TC 205 WG 18	TC 205 Home and Building Electronic Systems (HBES) WG 18 Smart Grids		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	YYYY/MM/DD		
Ending date	--		
Website	http://www.cenelec.eu/dyn/www/f?p=104:14:414684997992982::::FSP_ORG_ID,FSP_LANG_ID:10822,25		
Contacts			
	Name	Email	Telephone
Chairman TC 205	Mr Dominique BECK (FR)		
Secretary	Mr Jürgen TRETTER (DE))		
Convenor WG 18	Jürgen Kuhnert (DE)		
Scope – Focus – Description of activities			
<p>Scope: TC 205: “To prepare standards for all aspects of home and building electronic systems in relation to the Information Society.” [From the CENELEC website] WG 18: “Developing use cases and mapping structure for Smart Grid items in close cooperation with CENELEC TC 57. Covering the HBES related work on Smart Grid.” [From the CENELEC website]</p> <p>Activities: WG 18 is developing the European standard prEN 50491-12, which addresses the customer gateway, and among others provides an abstract information model for home automation that can be mapped to different concrete communication protocols.</p>			

KEYWORDS: home automation, energy management system

5.3.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC205 2012 001	Relevance	H
Standardization organization to which the document is related	CENELEC TC 205		
Document title	Smart Grid interface and framework for Customer Energy Management		
Document reference and/or version	prEN 50491-12 Draft	Date	2012
Document type	Draft standard	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand response		
Comments	Very incomplete draft		

KEYWORDS: home automation, energy management system

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC205 2012 002	Relevance	H
Standardization organization to which the document is related	CENELEC TC 205		
Document title	TC205 approach to the SG User Interface and what is already in the field		
Document reference and/or version	--	Date	2012/11/17
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand response		
Brief description	TC205 view of the customer gateway		

KEYWORDS: home automation, energy management system

6.1 TECHNICAL COMMITTEE 247

STANDARDIZATION ORGANIZATION			
Acronym	Name		
CEN TC247	Building automation, controls and building management		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://www.cen.eu/cen/Sectors/TechnicalCommitteesWorkshops/CENTechnicalCommittees/Pages/default.aspx?param=6228&title=Building%20Automation,%20Controls%20and%20Building%20Management		
Contacts			
	Name	Email	Telephone
Convenor	R. Ullmann		
Secretary	B. Mullis		
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Standardization of individual and combination devices and systems for automatic control of mechanical building service installations, in particular, for heating, ventilating and air-conditioning systems. <p>The TC247 structure is divided into the following working groups:</p> <ul style="list-style-type: none"> - WG 3: Building Automation and Control and Building Management Systems - WG 4: Open System Data Transmission - WG 6: Electronic control equipment for HVAC applications, integrated room automation, controls and management systems <p>Activities:</p> <p>The standards/work currently under development within TC247 are:</p> <ul style="list-style-type: none"> - prEN ISO 16484-7: Building automation and control systems - Part 7: BACS contribution on the energy efficiency of buildings. Under drafting. - FprEN 14908-1:2012: Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 1: Protocol Stack. Approved - FprEN 14908-2:2012: Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 2: Twisted Pair Communication. Approved. - FprEN 14908-3:2012: Open Data Communication in Building Automation, Controls and 			

<p>Building Management - Control Network Protocol - Part 3: Power Line Channel Specification. Approved.</p> <ul style="list-style-type: none"> - FprEN 14908-4:2012: Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 4: IP Communication. Approved. - EN 12098-1:2013: Controls for heating systems - Part 1: Control equipment for hot water heating systems. Approved. - FprEN 12098-3: Controls for heating systems - Part 3: Control equipment for electrical heating systems. Under approval. - prEN 14908-6 rev: Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 6: Application elements. Under drafting. - prEN ISO 16484-5 rev: Building automation and control systems - Part 5: Data communication protocol (ISO 16484-5:2012). Under drafting. - prEN ISO 16484-6 rev: Building automation and control systems (BACS) - Part 6: Data communication conformance testing (ISO 16484-6:2009). Under drafting.
Comments

KEYWORDS: home automation, energy management systems

6.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC247 2012 001	Relevance	M
Standardization organization to which the document is related	CEN TC247		
Document title	General Information about CEN/TC 247 Building Automation, Controls and Building Management		
Document reference and/or version	--	Date	2012/09
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
main or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>Overview of the CEN TC 247 activities and progress.</p> <p>Programme of work for each WG.</p> <p>Organisation and liaisons of CEN/TC247.</p>		
Comments			

KEYWORDS: home automation, energy management system

7 ETSI

7.1 TECHNICAL COMMITTEE M2M

STANDARDIZATION ORGANIZATION			
Acronym	Name		
ETSI TC M2M	M2M (Machine to machine communication)		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2009		
Ending date	--		
Website	http://www.etsi.org/technologies-clusters/technologies/m2m		
Contacts			
	Name	Email	Telephone
Chairman			
Secretary			
Technical Officer			
Scope – Focus – Description of activities			
Scope: Develops a multi-purpose machine to machine communication standard. Targeted application areas include in particular Smart Metering and Energy Management. There are five working groups: WG1: Requirements & Use Cases WG2: Functional Architecture WG3 http://portal.etsi.org/M2M/M2MWG3_ToR.asp : Protocols Group WG4 http://portal.etsi.org/M2M/M2MWG4_ToR.asp : Security WG5 http://portal.etsi.org/M2M/M2MWG5_ToR.asp : Management Activities: Published release one of the M2M specification in 2012, release two expected in 2014. Most technical work is now being done in the oneM2M committees. The published specifications are freely available on the ETSI website, as is a lot of additional information material.			

KEYWORDS: M2M, Smart Metering, Demand Response

6.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG M2M 2012 001	Relevance	M
Standardization organization to which the document is related	ETSI TC M2M		
Document title	ETSI M2M - oneM2M – IoT (aspects of standardization)		
Document reference and/or version	--	Date	2012
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case	Smart Metering, Demand Response		
Brief content description	A presentation on the ETSI M2M standard and the newly installed oneM2M committee		

7.2 oneM2M

INDUSTRY GROUP	
Acronym	Name
oneM2M	oneM2M
Type	Open Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2012
Website	http://www.onem2m.org
Members and Contacts	
Members	Telecommunication standardisation bodies, but also companies. Partner type 1

	members: ARIB, ATIS, CCSA, ETSI, TIA, TTA, TTC. Full list of members: http://www.onem2m.org/participants.cfm
Contacts	See website
Scope - Activities – Relation to other Groups/Standardisation	
Scope: Development of a global M2M standard. For more details see http://www.onem2m.org/scope.cfm . According to the website, the following working groups exist:	
WG 1	Requirements
WG 2	Architecture
WG 4	Security
WG 5	Management, Abstraction and Semantics
Activities: First release planned for end of 2013. Focus currently on the service layer.	
KEYWORDS: M2M, smart metering, home gateway, demand response	

8 IEC

8.1 STANDARDIZATION MANAGEMENT BOARD – STRATEGIC GROUP ON SMART GRID

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC SMB SG3	Standardization Management Board – Strategic Group on Smart Grid		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2008/11/18 (SMB approved its creation)		
Ending date	--		
Website	www.iec.ch/smartgrid/ http://www.iec.ch/smartgrid/development/		
Contacts			
	Name	Email	Telephone
Convenor	Richard Schomberg	richard.schomberg@edf.fr	+1 650 868 5735 (USA) +33 607 854336 (France)
Secretary	Peter J. Lanctot		

Others			
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none"> 1. Provide advice on fast-moving ideas and technologies likely to form the basis for new International Standards or IEC TCs (Technical Committees) in the area of Smart Grid technologies. Focus: <ol style="list-style-type: none"> 1. Development of protocols and model standards to achieve interoperability and security of smart grid devices and systems. 2. Definition of a long term strategic plan for the IEC where future new standards work is needed. Activities: <ol style="list-style-type: none"> 1. Development of the framework and strategic guidance to all Technical Committees involved in Smart Grid work. 2. Definition of the Smart Grid Roadmap which covers standards for interoperability, transmission, distribution, metering, connecting consumers and cyber security. 3. Collaboration with Smart Grid projects around the globe, including NIST (US National Institute of Standards and Technology) 4. SG3 has formed three Task Teams: <ul style="list-style-type: none"> - Smart Grid Roadmap Task Team (development, update and revision of the roadmap). - Use Case Task Team (compile use cases from real world applications). - Generic Reference Architecture Task Team (develop generic reference architecture based on use cases). 			

KEYWORDS: smart grid roadmap, use cases, reference architecture

8.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2011 001	Relevance	M
Standardization organization to which the document is related	IEC SMB SG3		
Document title	SMB SG3 – Smart Grid Executive Summary		
Document reference and/or version	SMB/4424/INF	Date	2011/01/14
Document type	Other: Executive Summary	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		

Brief content description	Review of the main SG3 activities to date: <ul style="list-style-type: none"> - Publication of the Smart Grid Roadmap - The announcement of the online Smart Grid Standard Mapping Solution that will enable smart grid managers to identify IEC smart grid standards, position them in relation to their role in the smart grid, and point out possible interactions and overlaps
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KEYWORDS: standards mapping, roadmap, standards overlaps

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2010 002	Relevance	M
Standardization organization to which the document is related	IEC SMB SG3		
Document title	Report of SMB/SG3, <i>Smart Grid</i> after the meeting held on 2009/11/19-20 in Denver, US.		
Document reference and/or version	SMB/4175/R	Date	2010/01/11
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	Report of SMB/SG3 after the meeting held in Denver. This report comprises two different parts: <ul style="list-style-type: none"> - SG3 decisions submitted to the SMB for formal approval. The Strategic Group recommends that the SMB endorse and approve the 11 high-impact decisions listed in the report. - IEC detailed technical reference document for Smart Grid standardization roadmap discussion. 		

KEYWORDS: smart grid framework, gaps, standards usability, use cases, data model, certification process

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2011 003	Relevance	M
Standardization organization to which the document is related	IEC SMB SG3		
Document title	Report of SMB/SG3, <i>Smart Grid</i> after the meeting held on 2011-02-22 in Geneva,		

	Switzerland and SG3 responses to the 3 CN NPs (SMB Decision 140/21)		
Document reference and/or version	SMB/4496/R	Date	2011/04/29
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	Report of SMB/SG3 after the meeting held in Geneva. This report comprises: <ul style="list-style-type: none"> - SG3 response to SMB decision 140/21. Three CN proposals (on Smart Grid user interface) - Follow up to the SMB request and an update of SG current activities. 		

KEYWORDS: smart grid roadmap, use cases, smart grid user interface, demand response

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2012 004	Relevance	M
Standardization organization to which the document is related	IEC SMB SG3		
Document title	Report of SMB/SG 3, <i>Smart Grid</i> after the meeting held on 2011-10-28 in Melbourne, Australia.		
Document reference and/or version	SMB/4684/R	Date	2012/01/06
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	Report of SMB/SG3 after the meeting held in Melbourne. This report comprises two different parts: <ol style="list-style-type: none"> 1) SG 3 decisions submitted to the SMB for formal approval: <ul style="list-style-type: none"> - Establish Ad hoc Group with non-IEC experts from the non traditional electric sector. - Request to have alternate SG3 members attend SG3 meetings at the same time as primary members. - SG 3 Working Liaison with Korean Smart Grid Standardization Forum. 2) SG3 status. Summarize of the main achievements; e.g. smart grid roadmap, liaisons, Use Case task team. 		

KEYWORDS: smart grid roadmap, smart grid framework, reference architecture, use cases, liaison

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2010 005	Relevance	M
Standardization organization to which the document is related	IEC SMB SG3		
Document title	Report of SMB SG3, <i>Smart Grid</i> following the meeting held 2010/10/13-14 in Seattle, USA.		
Document reference and/or version	SMB/4371/R	Date	2010/12/10
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>Report of SMB/SG3 after the meeting held in Seattle. This report comprises two parts:</p> <ol style="list-style-type: none"> 1) SG 3 Recommendations submitted to the SMB for formal approval: <ul style="list-style-type: none"> - A standard Use Case Template to develop the Use Cases needs to be provided to TC8. - SG3 recommends the SMB to allow SG3 to establish a “working liaison” with ITU-T Study Group 15, as telecommunications is a large part of SG 3’s interest. - SG3 recommends the SMB to expand SG3’s working liaison with NIST so that SG3 can directly accept and evaluate technical request from NIST on certain IEC Standards. 2) For SMB information on follow-up and SG 3 conclusions. 		

KEYWORDS: use cases, conformity assessment, smart grid user interface, roadmap

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG3 2010 006	Relevance	VH
Standardization organization to which the document is related	IEC SMB SG3		
Document title	IEC Smart Grid Standardization Roadmap		
Document reference and/or version	-- Edition 1.0	Date	2010/06

Document type	Roadmap	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The aim of this document is to draft a strategic, but nevertheless technically oriented, reference book which represents the standardization requirements for the IEC Smart Grid Roadmap based on the work developed by IEC SG3.</p> <p>This roadmap presents an inventory of existing (mostly IEC) standards, and puts them into perspective regarding the different Smart Grid applications. Gaps between actual standards and future requirements are analyzed and recommendations for evolution are presented. Different national and international groups have delivered input which, after review and discussion in SG3, has been integrated in this version of the Roadmap.</p> <p>As a living document, this roadmap will be subject to future changes, modifications and additions and will be incorporated into future editions.</p> <p>The main topics covered in this report are:</p> <ul style="list-style-type: none"> - Communication and Security - HVDC/FACTS - Blackout Prevention/EMS - Advanced Distribution Management - Distribution Automation - Smart Substation Automation - Distributed Energy Resources - Advanced Metering Infrastructure - Demand Response and Load Management - Smart Home and Building Automation - Electric Storage - Electromobility and Condition Monitoring 		

KEYWORDS: standardization requirements, roadmap, gaps, recommendations

8.2 STANDARDIZATION MANAGEMENT BOARD – STRATEGIC GROUP ON ELECTROTECHNOLOGY FOR MOBILITY

STANDARDIZATION ORGANIZATION	
Acronym	Name
IEC SMB SG6	Standardization Management Board – Strategic Group on Electrotechnology for Mobility
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded

	<input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	October 2011		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:85:0::::FSP_ORG_ID,FSP_LANG_ID:8762,25		
Contacts			
	Name	Email	Telephone
Convenor	Claude Ricaud		
Secretary	Peter J. Lanctot		
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> To provide recommendations for an IEC strategy encompassing the complete domain of automotive electrotechnics and electromobility. <p>Focus:</p> <ol style="list-style-type: none"> Investigate interaction between plug-in electric vehicle and electricity supply infrastructure Analyse market and industry developments Identify gaps and overlaps in the standards Make sure that appropriate standards are timely delivered Define a means for collaboration between IEC and other Standardization Organizations Monitor the practical application of collaborations already in place, in particular the ISO/IEC Agreement. <p>Activities:</p> <ol style="list-style-type: none"> Three task teams were formed: <ul style="list-style-type: none"> Mapping of current EV standardization Strategic use cases and market models Technology (industry development) Establishment of liaisons with: <ul style="list-style-type: none"> CEN/CENELEC Focus Group on European Electro-mobility ISO TC22 Road vehicles IEC ACOS, Advisory Committee on Safety, organized its 10th Workshop, “Safety aspects in the area of E-mobility” (Frankfurt, 2013 February 20th and 21st) 			

KEYWORDS: electro-mobility, electric vehicle

8.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG SG6 2012 001	Relevance	M
Standardization organization to which the document is related	IEC SMB SG6 – Electrotechnology for Mobility		
Document title	Report of SMB SG 6, Electrotechnology for Mobility, after their meeting held on 3-April-2012- 04..03 in Geneva, Switzerland		
Document reference and/or version	SMB/4796/R	Date	2012/05/08
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>Meeting minutes of the SG6 first meeting held in Geneva, Switzerland, on 2012/04/03.</p> <p>The report summarizes the main discussions and achievements of the 1st Strategic Group 6 meeting which was attended by 17 members. The main covered issues were:</p> <ul style="list-style-type: none"> - Task of SG6 - General Member's discussion and action items: scope and objectives were addressed as part of a round table discussion - Organization and main areas of work for SG6 - Establishment of liaisons 		

KEYWORDS: electro-mobility, electricity supply infrastructure, plug-in electric vehicles

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG6 2013 002	Relevance	L
Standardization organization to which the document is related	IEC		
Document title	IEC 10th ACOS Workshop Safety aspects in the area of E-mobility Frankfurt, Germany, 20 and 21 February 2013		
Document reference and/or version	--	Date	2013/02/20-21

Document type	Meeting agenda	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	<p>Agenda of the IEC 10th ACOS (Advisory committee on Safety) Workshop. Some of the covered issues were:</p> <ul style="list-style-type: none"> - Relevant IEC Basic Safety and Group Safety standards, - Work program IEC/TC 69, “Electric road vehicles and electric industrial trucks” including safety related aspects of DC charging systems for e-vehicles - Safety of batteries - Electrical safety aspects inside e-cars - Functional safety in relation with e-vehicles, - Safety aspects related to an e-vehicle connected to the grid including safety related aspects of DC charging 		

KEYWORDS: electro-mobility, functional safety, electrical safety

8.3 TECHNICAL COMMITTEE 8 – AD-HOC GROUP 4 “SMART GRIDS REQUIREMENTS”

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC/TC8 AHG4	IEC Technical Committee 8, Ad-Hoc Group 4: “Smart Grids Requirements”		
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2010/02/09 (IEC SMB SG3 Mandate) 2011/03/08-09 (Kick-off workshop)		
Ending date	2012/10/03		
Website	www.iec.ch/dyn/www/f?p=103:14:0::::FSP_ORG_ID:1565 www.iec.ch/smartgrid/		
Contacts			
	Name	Email	Telephone
Convenor	Richard Schomberg	richard.schomberg@edf.fr	+1 650 868 5735 (USA) +33 607 854336 (France)
Secretary			
Others			
Scope – Focus – Description of activities			

Scope:

1. Maintain IEC/PAS 62559 “IntelliGrid methodology for developing requirements for energy systems”
2. Launch a large series of small projects each of which will lead to the publication of a generic use case document pertaining to a specific smart grid application.

Activities:

1. Organization of 3 workshops:
 - IEC Smart Grid Use Cases 1st Workshop: Paris, 8-9 March 2011
 - IEC Smart Grid Use Cases 2nd Workshop: Los Angeles, 9-10 June 2011
 - IEC Smart Grid Use Cases 3rd Workshop: [\(Japan\), 7 March 2012? \(pending information\)](#)
2. Formulation of a smart grid common glossary.
3. Definition of processes and organization of a Use Cases repository.
4. Update of the Use Case methodology (IEC PAS 62559), with the intention of publication as a full international standard.
5. Definition of smart grid roles and actors.
6. Development of the Uses Cases considering the existing Uses Cases (especially within IEC), taking into account all the IEC actors from different IEC TCs.
7. Organize information dissemination on Use Cases within IEC.

Comments

Almost no documentation is available about the three workshops (minutes, presentations, etc.).

KEYWORDS: use cases, use case repository, Intelligrid

8.3.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG AHG4 2011 001	Relevance	L
Standardization organization to which the document is related	IEC TC8 AHG4		
Document title	IEC – Smart Grid Use Cases 2 nd Workshop. Requirements related Standards – Use Cases. Draft Agenda		
Document reference and/or version	8/1294/AC	Date	2011/04/22
Document type	Meeting agenda	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			

Brief content description	Draft agenda of the 2 nd Workshop on Smart Grid Use Cases
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KEYWORDS: use cases, intelligrid

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG AHG4 2011 002	Relevance	L
Standardization organization to which the document is related	IEC TC8 AHG4		
Document title	IEC – Smart Grid Use Cases Kick-off Workshop. Agenda		
Document reference and/or version	8/1289/AC	Date	2011/01/28
Document type	Meeting agenda	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Draft agenda of the 1 st Workshop (kick-off) on Smart Grid Use Cases		

KEYWORDS: intelligrid, use cases

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG AHG4 2011 003	Relevance	L
Standardization organization to which the document is related	IEC TC8 AHG4		
Document title	IEC - Smart Grid Use Cases Kick-off Workshop. Chatou – 8/9 March 2011		
Document reference and/or version	--	Date	--
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Executive summary and meeting minutes of the first Smart Grid Use Cases Workshop held in Chatou, Paris, France in March 2011. Some of the topics included:		

	<ul style="list-style-type: none"> - Return of experience on Use Cases practices worldwide - Building-up from existing practices – Break Out sessions - Assessment of break out sessions reports - IEC TC8 AHG4 programme of work
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KEYWORDS: intelligrid, use cases

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG AHG4 2010 004	Relevance	L
Standardization organization to which the document is related	IEC TC8 AHG4		
Document title	IEC – Administrative circular WG AHG4: Smart Grid Requirements - Call for experts		
Document reference and/or version	8/1283/AC	Date	2010/05/14
Document type	Others: Call for experts	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>National Committees are kindly invited to appoint experts, who should have expertise in the field of Smart Grid, system requirements and development of use cases and could make an effective contribution to the work of this WG AHG4. The main features of TC8 – WG AHG4 are briefly explained:</p> <p>Writing standards for requirements is a new concept. Producing standards successfully demands that utilities, retail entities, regulators and distribution and transmission system operators discuss what they use today, how they process the information and to whom they send it.</p> <p>For these purpose and to respond to the SMB SG 3 request, TC 8 will use the existing AHG4 as “Smart Grid Requirements” working group in order to: maintain IEC/PAS 62559 “IntelliGrid methodology for developing requirements for energy systems” and to launch a large series of small projects. Each of them will lead to the publication of a generic use case document pertaining to a specific smart grid application. A task team for each project will be appointed by AHG4.</p>		

KEYWORDS: intelligrid, use cases

8.4 TECHNICAL COMMITTEE 8 – WG5 & WG6

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC TC8 WG5, WG 6	IEC Technical Committee 8, Systems aspects for electrical energy supply WG 5, Methodology & Tools WG 6, Generic Smart Grid requirements		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	1920-1929: Initially the Technical Committee 8, called “Voltages” was established on the power generation/distribution side. The TC8 has been reorganized with the purpose to analyze electricity sector evolution. At present is called “Systems aspects for electrical energy supply”. WG 5 kick-off meeting: 2013/01/22		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0:::FSP_ORG_ID,FSP_LANG_ID:1240,25		
Contacts			
	Name	Email	Telephone
Convenor	Richard Schomberg	richard.schomberg@edf.fr	+1 650 868 5735 (USA) +33 607 854336 (France)
Secretary	Simone Botton		
Others	Johannes Stein (WG5) Arnaud Ulian (WG6)		
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none">To prepare and coordinate, in co-operation with other TC/SCs, the development of international standards and other deliverables with emphasis on overall system aspects of electricity supply systems and acceptable balance between cost and quality for the users of electrical energy. Electricity supply system encompasses transmission and distribution networks and connected user installations (generators and loads) with their network interfaces.Comprehensively and consistently make a difference regarding the challenges of the electricity supply markets that are undergoing fundamental changes. The IEC TC8/WG5 “Methodology and Tools” and WG6 “Generic Smart Grid Requirements”, have been created to replace the previous TC8/AHG4 in order to give a clear working structure to establish the methodology to describe the complexity of the Smart Grid and to define the use cases and the associated generic Smart Grid requirements. TC8/AHG4 was established to define, organize and launch the activity, and subsequently it was transformed into the operational working groups WG5 and WG6. Focus (WG5 and WG6):			

The WG5, “Methodology and Tools”, focuses on:

1. To provide Methodology and Tools for the Use Case Approach in Standardization, with the following standard structure:
 - Part 1: Use Case Approach – Motivation and Processes
 - Part 2: Definition of Use Case Template, Actor List and Requirements List for Energy Systems
 - Part 3: XML schemes related to the use cases template in order to support tools which can provide a better import and export of use cases to UML tools
 - Part 4: Methodology and team organization to develop Use Cases

The Working Group 6, “Generic Smart Grid Requirements”, aims:

1. To launch a large series of small projects, each of them will lead to the publication of a generic use case document pertaining to a specific smart grid application. A task team for each of those projects will be established.
2. To provide “Generic Smart Grid Requirements” with the following standard structure;
 - Part 1: Specific application of Method & Tools for Smart Grid.
 - Part 2: Business Process Generic Use Cases (with options).
 - Part 3: Smart Grid functions.
 - Part 4: Informative Annex: Domain Core Team reports (for traceability).

Activities:

1. To develop and keep up to date the terms and definition of International Electrotechnical Vocabulary
2. To deliver guidelines on network planning and operation, taking into account new challenges from deregulated electrical market and new actors on the network.
3. To develop international criteria for the connection of distributed generation to the network
4. To deliver methodology and generic Use Cases for Smart Grid project managers. TC8 is taking a position of coordinator of the development of Generic Use Cases in collaboration with the relevant TCs.
5. To provide inputs on Smart Grid development to other TCs
6. To maintain major reference standards
7. To create new liaisons with international committees. One of the most already established is the liaison with the IEC Project Committee 118, “Smart Grid user interface”

The main publications/projects related to Smart Grids drafted by this Technical Committee are:

- Project IEC 62559-2: 2013 (Stage: First Committee draft), Use Case Methodology. Part 2 – Definition of Use Case Template, Actor list and Requirement List.
- Project IEC 62749: 2011 (Stage: Approved New Work), Power Quality of Energy Supply - Characteristics of Power Quality of electricity supplied by public networks.
- Project IEC 62786:2012 (Stage: Approved New Work), Smart Grid User Interface: Demand Side Energy Sources Interconnection with the Grid.
- Projects IEC/TR 62511:2013 (Stage: Draft approved for vote), A Guide for the Design of Interconnected Power Systems.
- PNW 8-1317:2013 (Stage: Proposed New Work), Guidelines for the General Planning and Design of Micro-Grids.

- PNW 8-1318: 2013 (Stage: Proposed new work), Technical requirements for the Operation and Control of Micro-Grids.
- IEC/PAS 62559: 2008 (Publicly available specification), IntelliGrid methodology for developing requirements for energy systems.
- IEC/IEEE/PAS 63547:2011 (Publicly Available Specification), Interconnecting distributed resources with electric power systems.

Comments

KEYWORDS: Intelligrid, smart grid requirements, use cases, microgrids, smart grid user interface

8.4.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2008 001	Relevance	VH
Standardization organization to which the document is related	IEC TC8		
Document title	IntelliGrid Methodology for Developing Requirements for Energy Systems. Publicly available specification		
Document reference and/or version	IEC/PAS/62559 (Ed 1.0)	Date	2008/01
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Distribution, Transmission		
Priority Topic or Use Case			
Brief content description	<p>The Specification defines a methodology for power system domain experts to determine and describe their user requirements for automation systems, based on their utility business needs.</p> <p>This methodology was originally developed as part of the IntelliGrid Architecture developed by the Electrical Power Research Institute (EPRI), as a means to implement the “IntelliGrid vision” of the automated, self-healing, and efficient power system of the future.</p> <p>The IntelliGrid methodology is a subset of the science of systems engineering. Systems engineering methodology separates the concepts of “user requirements” from “technical specifications”: user requirements define “what” is needed without reference to any specific designs or technologies, while technical specifications define “how” to implement the automation systems in</p>		

	order to meet the user requirements.
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KEYWORDS: Intelligrid, use cases, technical specifications, user requirements, system engineering methodology

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2012 002	Relevance	L
Standardization organization to which the document is related	IEC TC8		
Document title	Unconfirmed minutes of TC 8 meeting held in Oslo, Norway on 3 October 2012.		
Document reference and/or version	8/1312/RM	Date	2012/11/30
Document type	Meeting Minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, demand response		
Brief content description	Overview of the work performed by the TC8: Update of the programme of work, review stability dates of publications, review liaison – cooperation activity, etc. Only AHG4 and new WG5 and WG6 are of interest.		

KEYWORDS: DER interconnection, use cases, UML tool, XML scheme, smart grid requirements

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2010 003	Relevance	L
Standardization organization to which the document is related	IEC TC8		
Document title	Report to the Standardization Management Board following the meeting of TC8, <i>System aspects of electrical energy supply</i> held in Seoul, Korea, on 2010-04-22.		
Document reference and/or version	SMB/4256/R	Date	2010/05/21
Document type	Meeting report. Strategic Business Plan.	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		

Priority Topic or Use Case	
Brief content description	Brief statement of the results achieved during the meeting held in Seoul. Detailed business plan; Background, Business environment, System approach aspects, Liaisons, Objectives & Strategies, Action Plan, etc.

KEYWORDS: Intelligrid, use cases

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2011 004	Relevance	H
Standardization organization to which the document is related	IEC TC8		
Document title	Smart Grid User Interface, Part 2: Domain Side Energy Source Interconnection with the Grid.		
Document reference and/or version	8/1301/NP	Date	2011/07
Document type	Other: New work item proposal	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>Proposal of a new standard focused on the technical specifications for interconnection of customer domain power. It includes general requirements, power quality issues, power control, voltage regulation, response characteristic of voltage and frequency, maximum current of short circuit, safety and relay protection, communication and information exchange, metering, operation and testing.</p> <p>The requirements this standard state are universally needed for interconnection of customer domain power for planning, design, installation and operation. These specifications and requirements ensure the safety and reliability of utility electric power system.</p> <p>An outline of the standard is attached in the proposal.</p>		

KEYWORDS: interconnection requirements, voltage regulation, power grid planning, customer domain, demand response

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2012 005	Relevance	H

Standardization organization to which the document is related	IEC TC8		
Document title	Use Case Approach. Part 2 – Definition of Use Case Template, Actor list and Requirement List for Energy Systems		
Document reference and/or version	8/1307/NP	Date	2012/06/20
Document type	Other: New Work Item Proposal	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Proposal of new work in IEC derived from the results of AHG4 after three workshops.</p> <p>Based on IEC/PAS 62559 and in relation to other planned parts of this standard, this document will define the structure of a use case template, an actor list and list for detailed requirements. The use of these documents and their relation to each other are described. These documents are developed for energy system with special consideration of smart grids, but they are general enough to be transferred to other domains and systems.</p> <p>However, the use case template may serve not only for the development of standards, but also – as it has been the original purpose of the IEC PAS 62559 - as a helpful method for the realization of projects within complex systems. Also other applications, which need the benefits of a structured requirements engineering and description of functionality, may make use of the suggested template.</p> <p>The document is mainly based on the previous IEC/PAS 62559 standard and shall be read together with other parts of this standard. The use of the actor and technical requirement lists and the use case template as well as their relation to each other is described.</p>		

KEYWORDS: Intelligrid, use cases, use cases repository

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2012 006	Relevance	M
Standardization organization to which the document is related	IEC TC8		
Document title	RESULT OF VOTING ON NEW WORK ITEM PROPOSAL - Smart Grid User Interface - Part 2: Domain Side Energy Source Interconnection with the Grid.		

Document reference and/or version	8/1306/RVN	Date	2012/02/10
Document type	Other: Result of Voting new work item proposal	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The draft of the standard IEC 62786-2 is voted.</p> <p>The proposal of new work is approved and it is introduced in the programme of work under the following title, “Standard for domain side energy source interconnection with the Grid”. Comments from the National Committees are included.</p> <p>The standard draft is attached in the document.</p>		

KEYWORDS: interconnection requirements, voltage regulation, power grid planning, customer domain, demand response

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2012 007	Relevance	M
Standardization organization to which the document is related	IEC TC8		
Document title	RESULT OF VOTING ON NEW WORK ITEM PROPOSAL - Use Case Approach Part 2 - Definition of Use Case Template, Actor list and Requirement List for Energy Systems		
Document reference and/or version	8/1313/RVN	Date	2012/11/30
Document type	Other: Result of Voting new work item proposal	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The proposal of new work IEC 62559-2 is approved and it will be introduced in the programme of work under the title, “IEC 62559 Ed.1: Use Case Approach Part 2 - Definition of Use Case Template, Actor list and Requirement. List for Energy Systems”.</p> <p>The standard draft is not attached in the document.</p> <p>Comments from National Committees are included.</p>		

KEYWORDS: Intelligrid, use cases, XML schemes, UML tools

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC8 2012 008	Relevance	M
Standardization organization to which the document is related	IEC TC8		
Document title	Technical committee No. 8: Systems aspects for electrical energy supply WG 5: Methodology and Tools - Call for experts		
Document reference and/or version	8/1316/AC	Date	2012/12/14
Document type	Others: Call for experts	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The new work item proposal on "Definition of Use Case Template, Actor list and Requirement List for Energy systems" is approved (8/1307/NP and 8/1313/RVN) and the work is allocated to TC 8/WG 5</p> <p>National Committees are invited to appoint experts, who should have expertise in the field of Methodology and Tools for the Use Case approach in standardization and could make an effective contribution to the work of this WG.</p>		
Comments			

8.5 TECHNICAL COMMITTEE 57

STANDARDIZATION ORGANIZATION	
Acronym	Name
IEC TC 57	Power systems management and associated information exchange
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	YYYY/MM/DD
Ending date	--

Website	http://www.iec.ch/dyn/www/?p=103:7:0:::FSP_ORG_ID,FSP_LANG_ID:1273,25		
Contacts			
	Name	Email	Telephone
Chairman	Mr Thierry Lefebvre (FR)		
Secretary	Mr Heiko Englert (DE)		
Technical Officer	Mr Charles Jacquemart		
Scope – Focus – Description of activities			
<p>Scope:</p> <p>“To prepare international standards for power systems control equipment and systems including EMS (Energy Management Systems), SCADA (Supervisory Control And Data Acquisition), distribution automation, teleprotection, and associated information exchange for real-time and non-real-time information, used in the planning, operation and maintenance of power systems. Power systems management comprises control within control centres, substations and individual pieces of primary equipment including telecontrol and interfaces to equipment, systems and databases, which may be outside the scope of TC 57.” [From the IEC website]</p> <p>Structure:</p> <p>The TC 57 committee is structured as follows:</p> <p>WG 3: Telecontrol protocols. IEC 60870 series.</p> <p>WG 9: Distribution automation using distribution line carrier systems. No current projects.</p> <p>WG 10: Power system IED communication and associated data models Generic aspects of IEC 61850. Current project:</p> <ul style="list-style-type: none"> • IEC 61850-7-5: Use of logical nodes to model applications – generic principles • IEC 61850-7-500: Use of logical nodes to model applications in substations • IEC 61850-100-1: Commissioning testing of IEC 61850 based systems • IEC 61850-90-3: Condition monitoring, diagnostic and analysis • IEC 61850-90-4: Network engineering guidelines • IEC 61850-90-11: Logic modeling • IEC 61850-90-12: Guidelines for WAN engineering • IEC 61850-90-14: Modeling of FACTS <p>WG 13: Energy management system application program interface (EMS - API) Common Information Model (CIM) for Transmission. IEC 61970 series.</p> <p>WG 14: System interfaces for distribution management (SIDM) Common Information Model (CIM) for Distribution. IEC 61968 series. Current projects:</p> <ul style="list-style-type: none"> • Part 1 – Interface Architecture & General Recommendations 2nd • Part 100 – Web Services Implementation Profiles • Part 3 – Network Operations - second edition • Part 4 – Records and Asset Management • Part 6 – Maintenance and Construction – currently working on the WMS Interfaces • Part 8 – Customer Support • Part 9 – Meter Reading and Control • Part 11 – CIM Domain Model <p>WG 15: Data and communication security IEC 62351 series. Security for IEC 60870, 61850, 61970, 61968 series.</p> <p>WG 16: Deregulated energy market communications</p>			

Common Information Model (CIM) for Electricity Market Communications. IEC 62325 series.
[WG 17](#): Communications Systems for Distributed Energy Resources (DER)

Standards:

- IEC 61850-7-420 Ed 1.0 Basic communication structure - Distributed energy resources logical nodes
- TR 61850-90-7 Ed 1.0 Object models for power converters in distributed energy resources (DER) systems

Current projects:

- IEC 61850-7-420 Ed. 2
- IEC 61850-8-2 Specific communication service mapping (SCSM) – Mappings to Web Services
- TR 61850-80-3 Mapping to Web Services – Requirement Analysis and Technology Assessment
- TR 61850-90-6 Use of IEC 61850 for Distribution Automation System
- TR 61850-90-8 Object Models for Electrical Mobility
- TR 61850-90-9 Use of IEC 61850 for Electrical Storage Systems
- TR 61850-90-10 Object Models for Scheduling
- TR 61850-90-15 Hierarchical architecture of a DER system

Planned work:

TR 61850-7-520 Distributed Energy Resources – Modelling concepts and guidelines

[WG 18](#): Hydroelectric power plants - Communication for monitoring and control

[WG 19](#): Interoperability within TC 57 in the long term. Coordination body for TC 57.

Standards:

- IEC 62357 Ed. 3 Power system control and associated communications - Reference architecture for object models, services and protocols
- IEC 62361 series: Power systems management and associated information exchange - Interoperability in the long term

Current projects (selection):

- 62361-100: Naming and Design Rules (NDR) XSD to XML mapping
- 62361-101: CIM Profiles
- 62361-102: CIM-61850 Harmonization
- 62357-103: TR Interoperability and Conformance

[WG 20](#): IEC 62488 Power line communication systems for power utility applications will replace existing standards IEC 60063 and IEC 60495.

[WG 21](#): Interfaces and protocol profiles relevant to systems connected to the electrical grid.

Develops Demand Response standard, complex relationship to PC 118.

Current Projects:

- IEC 62746 Ed. 1.0 System interfaces and communication protocol profiles relevant for systems connected to the Smart Grid

Joint Working Groups

[JWG 16](#): DLMS/COSEM – CIM. Managed by [TC 13](#)

[JWG 25](#): Communications for monitoring and control of wind power plants. Managed by [TC 88](#)

ad-Hoc Groups

[AHG 8](#): IPv6

Activities:

TC 57 maintains some of the core Smart Grid standards series, in particular IEC 61850, the Common Information Model (IEC 61970, 61968 and 62325), and the IEC 62351 series on Data & Communication Security.

Comments

KEYWORDS: EMS (Energy Management Systems), SCADA (Supervisory Control And Data Acquisition), distribution automation, teleprotection, Common Information Model (CIM), data security, communications security

8.6 TECHNICAL COMMITTEE 13

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC/TC13	Electrical energy measurement, tariff and load control		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1258,25		
Contacts			
	Name	Email	Telephone
Convenor	Mr Bernd Schulz		
Secretary	Mr Gyoza Kmethy		
Others			
Scope – Focus – Description of activities			
Scope:			
1. Standardization in the field for metering equipment and systems, including smart metering			

systems, for electrical energy measurement, tariff- and load control, customer information and payment, for use in power stations, along the network, and at energy end users, as well as to prepare international standards for meter test equipment and methods. Excluded: Standardization for the interface of metering equipment for interconnection lines and industrial consumers and producers.

Activities:

There are four Working Groups within Technical Committee 13.

In particular, the WG 14, “Electricity metering – Payment systems”, aims to establish Standards, by reference to ISO/OSI Standards, necessary for data exchanges by different communication media, for automatic meter reading, tariff and load control, and consumer information. The media can be distribution line carrier (DLC), telephone (including ISDN), radio or other electrical or optical system and they may be used for local or remote data exchange.

The TC 13 has drafted the IEC 62056 series of standards, “Electricity metering – Data exchange for meter reading, tariff and load control”, which is composed of different parts:

- IEC 62056-9-7: 2013, Communication profile for TCP-UDP/IP networks.
- IEC 62056-21: 2002, Direct local data exchange.
- IEC 62056-31: 1999, Use of local area networks on twisted pair with carrier signalling.
- IEC 62056-41: 1998, Data exchange using wide area networks: Public switched telephone network (PSTN) with LINK+ protocol.
- IEC 62056-42: 2002, Physical layer services and procedures for connection-oriented asynchronous data exchange.
- IEC 62056-46: 2007, Data link layer using HDLC protocol
- IEC 62056-47: 2006, COSEM transport layers for IPv4 networks
- IEC/TS 62056-51: 1998, Application layer protocols

Other relevant standards developed by this Technical Committee are:

- IEC 62052-11: 2003, Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment
- IEC 62053-21: 2003, Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)
- IEC 62053-23: 2003, Electricity metering equipment (a.c.) - Particular requirements - Part 23: Static meters for reactive energy (classes 2 and 3)
- IEC 62054-21: 2004, Electricity metering (a.c.) - Tariff and load control - Part 21: Particular requirements for time switches
- IEC 62055-21: 2005, Electricity metering - Payment systems - Part 21: Framework for standardization
- IEC 62055-31: 2005, Electricity metering - Payment systems - Part 31: Particular requirements - Static payment meters for active energy (classes 1 and 2)

The WG 14 participates actively in the elaboration of the IEC 62056-1, “Electricity metering data exchange - Part 1-0: Smart metering standardization framework”. Its expected publication date is October 2014.

Technical Committee 13 participates in the activities of the European Smart Meter Coordination group (SMCG).

Comments

There is almost no public information available, apart from the IEC website.

KEYWORDS: smart metering, metering equipment, communications, tariff control, load control, payment systems

8.6.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG IECTC13 2011 001	Relevance	M
Standardization organization to which the document is related	IEC TC13		
Document title	Harmonisation between CIM and DLMS Thomas Schaub, Convenor IEC TC13, WG14		
Document reference and/or version	--	Date	2011/05/11
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer, Telecommunications		
Priority Topic or Use Case	DER integration, smart metering		
Brief content description	Meeting presentation elaborated by the TC13 WG14 convenor. Some of the most relevant topics included are: <ul style="list-style-type: none"> - Why CIM and COSEM - IEC TC 13 Smart Metering Standards - European Smart Meters standards M441 - Harmonisation approach according to IEC 61968-9 and 62056-52 		

KEYWORDS: smart metering, data model

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG IECTC13 2010 002	Relevance	M
Standardization organization to which the document is related	IEC TC13		
Document title	IEC 62056 DLMS/COSEM - Overview		
Document reference and/or version	--	Date	2010/12/20
Document type	Meeting presentation	Available in	Y

		STARGRID (Y/N)	
Domain or system category	Customer, Telecommunication		
Priority Topic or Use Case	Smart metering		
Brief content description	<p>This presentation is an overview of the IEC 62056 DLMS/COSEM elaborated by Thomas Schaub (DLMS User Association). The topics analyzed are:</p> <ul style="list-style-type: none"> - DLMS UA Mission, objectives, services - DLMS UA presentation; factsheet, memberships, milestones, workshops - The DLMS/COSEM standards - The “coloured books” - DLMS conformance tester - Electricity metering standards - Water, gas, heat metering standards - The EU smart metering mandate M441 - DLMS UA in international standardization - M441: CENELEC Standards Map - DLMS/COSEM Technology 		

KEYWORDS: smart metering, metering equipment

8.7 TECHNICAL COMMITTEE 69

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC TC 69	IEC Technical Committee 69 “Electric road vehicles and electric industrial trucks”		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	1970's		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1255,25		
Contacts			
	Name	Email	Telephone
Convenor	Cyriacus Andrianus Bleijs		
Secretary	Peter Van den Bossche		
Others			
Scope – Focus – Description of activities			
Scope:			
1. To prepare international standards for road vehicles, totally or partly electrically propelled from self-contained power sources, and for electric industrial trucks.			

Activities:

1. Establishment of many internal liaisons: TC9, Electrical equipment and systems for railways; TC13, electrical energy measurement, tariff- and load control; SC 17D, low-voltage switchgear and controlgear assemblies; TC21, secondary cells and batteries; etc.
2. Establishment of external liaisons with ISO: ISO/TC22, Road vehicles; ISO/TC110, Industrial trucks.
3. Two working groups: WG2, Motors and motor control system; WG 4, Power supplies and charges
4. Definition of new standards related to electric vehicle. Some of the most relevant ones developed up to now:
 - IEC 61851: Electric vehicle conductive charging system
 - IEC 61980: Electric vehicle wireless power transfer systems (WPT)
 - IEC 61981: On board electric power equipment for electric road vehicles
 - IEC 62840: Electric vehicle battery exchange infrastructure safety requirements
 - ISO/IEC 15118: Road Vehicles - Vehicle to grid communication interface

KEYWORDS: electro-mobility, electric vehicle, vehicle to grid (V2G), safety requirements, charging system

8.7.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG TC69 UUUU 001	Relevance	M
Standardization organization to which the document is related	IEC TC69		
Document title	Defining and Developing Standards Peter Van den Bossche - <i>Secretary of IEC TC69</i>		
Document reference and/or version	--	Date	--
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	Meeting presentation elaborated by the Secretary of IEC TC69. Some of the most relevant topics included are: <ul style="list-style-type: none"> - Overview of situation: EV standardization, main actors involved, its past, etc. - Charging infrastructure at IEC TC69 - Charges modes 		

- Accessories: socket-outlet, plug, vehicle connector, vehicle inlet.

KEYWORDS: electro-mobility, charging infrastructure, electric vehicle

8.8 PROJECT COMMITTEE 118

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC PC 118	Smart grid user interface		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2011/11/01		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID:8701		
Contacts			
	Name	Email	Telephone
Chairman	Mr Richard Schomberg (FR)		
Secretary	Mr Like Wang (CN)		
Technical Officer	Mr Charles Jacquemart		
Scope – Focus – Description of activities			
<p>Scope:</p> <p>“Standardization in the field of information exchange for demand response and in connecting demand side equipment and/or systems into the smart grid.” [From the IEC website]</p> <p>PC 118 consists of two working groups:</p> <p>WG 1 Exchange interface between demand-side smart equipment and the grid</p> <p>WG 2 Power demand response</p> <p>Activities:</p> <p>The two working groups are jointly preparing a technical report on the Smart Grid User Interface. For many different regions in the world it gives an overview on</p> <ul style="list-style-type: none"> • Relevant Use Cases • Existing and coming Standards <p>that are relevant to Demand Response. A gap analysis has been performed on the basis of this work, assessing the adequacy of existing standards for the use cases.</p>			

PC 118 is going to publish the **OpenADR 2.0b** specification as a PAS (publicly available specification), despite considerable concerns by TC 57 due to non-compliance of this standard with the Common Information Model and/or the IEC 61850 standard. A PAS is a sort of standard with limited lifetime, responding to an urgent market need where the development of a full-fledged standard based on consent would take too long. Perspectives, the adaptation of OpenADR to the Common Information Model is foreseen.

A risk of overlap between the work of PC 118 and IEC TC 57 WG 21 has been identified. The two groups have concluded a cooperation agreement. Also the need of alignment with WG 16 and WG 17 has been recognised.

Comments

Documents and drafts of PC 118 available at IWES.

KEYWORDS: demand response, information exchange, Common Information Model (CIM)

8.8.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG PC118 2012 001	Relevance	H
Standardization organization to which the document is related	IEC PC 118		
Document title	Strategic Business Plan PC118: Smart Grid User Interface		
Document reference and/or version	SMB/4823/R	Date	2012/06
Document type	Other: Business plan	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand response		
Brief content description	<p>In this document the main scope of PC118 and its structure are detailed.</p> <p>PC 118 focuses on standardization in the field of information exchange for demand response and in connecting demand side equipment and/or systems into the smart grid. For that purpose the following Working Groups has been established:</p> <ul style="list-style-type: none"> - WG1: Exchange interface between demand-side smart equipment and the grid - WG2: Power Demand Response <p>The Business environment, objectives 6 strategies and the action plan for the following 5 years are also analyzed.</p>		

KEYWORDS: demand response, user interface

8.9 TECHNICAL COMMITTEE 59

STANDARDIZATION ORGANIZATION			
Acronym	Name		
IEC TC59	Performance of household and similar electrical appliances		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	--		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0:::FSP_ORG_ID:1275		
Contacts			
	Name	Email	Telephone
Convenor	Fabio Gargantini		
Secretary	Peter Riller		
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <p>To prepare International Standards on methods of measurement of characteristics which are of importance to determine the performance of electrical appliances for household use or of electrical appliances for commercial use and that are of interest for the user. This may include associated aspects related to the use of the appliances and aspects such as the classification, accessibility and usability of appliances, ergonomic characteristics and conditions for the information provided at the point of sale.</p> <p>The technical committee is structured in the following working groups:</p> <p>WG2: Acoustical noise of household appliances</p> <p>WG11: Accessibility and Usability</p> <p>WG15: Connection of household appliances to smart grids and appliances interaction</p> <p>WG16: Performance evaluation method of intelligent mobile robot platform for household and similar applications</p> <p>Activities:</p> <p>The most relevant works currently under development within TC 59 are:</p> <ul style="list-style-type: none"> - IEC 62849 Ed. 1.0: Performance evaluation method of intelligent mobile robot platform for household and similar applications - IEC/TS 62835 Ed. 1.0 : Electric toasters for household and similar use - Methods and measurements for improving accessibility <p>The TC59 has established liaisons with other external committees:</p> <ul style="list-style-type: none"> - ISO/TC 43/SC 1: Noise - CI: Consumers International 			

- EC: European Commission

Comments

KEYWORDS: home automation, electrical appliances

8.10 TECHNICAL COMMITTEE 65

STANDARDIZATION ORGANIZATION

Acronym	Name		
IEC TC65	Industrial-process measurement, control and automation		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	--		
Ending date	--		
Website	http://www.iec.ch/dyn/www/f?p=103:7:0::::FSP_ORG_ID,FSP_LANG_ID:1250,25		
Contacts			
	Name	Email	Telephone
Convenor	Roland Heidel		
Secretary	Rudy Belliardi		
Others			
Scope – Focus – Description of activities			
Scope: To prepare international standards for systems and elements used for industrial-process measurement and control concerning continuous and batch processes. To co-ordinate the standardization of those features of related elements which affect suitability for integration into such systems. The work of standardization is to be carried out in the international fields for equipment and systems operating with electrical, pneumatic, hydraulic, mechanical or other systems of measurement and/or control. The technical committee is structured in the following working groups: WG1: Terms and definitions WG10: Security for industrial process measurement and control - Network and system security WG12: P&I diagrams, P&ID tools and PCE-CAE tools WG15: Documents for the Process Industry WG16: Digital Factory WG17: System interface between industrial facilities and the smart grid WG18: Cause and Effect Table			

Activities:

The most relevant works currently under development within TC 65 are:

- **IEC 62424 am1 Ed. 1.0:** Representation of process control engineering - Request in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools.
- **IEC 62443-2-4 Ed. 1.0:** Security for industrial process measurement and control - Network and system security - Part 2-4: Certification of IACS supplier security policies and practices
- **IEC 62443-3-2 Ed. 1.0:** Industrial communication networks - Network and system security Part 3-2: Security assurance levels for zones and conduits
- **IEC 62443-3-3 Ed. 1.0:** Industrial communication networks - Network and system security Part 3-3: System security requirements and security assurance level
- **IEC 62708 Ed. 1.0:** Documents for electrical and instrumentation projects in the process industry
- **IEC 62832 Ed. 1.0:** Industrial-process measurement, control and automation - Reference model for representation of production facilities (Digital Factory)
- **IEC 62881 Ed. 1.0:** Cause & Effect Tabl
- **IEC/TR 62443-2-3 Ed. 1.0:** Industrial communication networks - Network and system security Part 2-3: Patch management in the IACS environment
- **IEC/TS 62443-1-3 Ed. 1.0:** Industrial communication networks - Network and system security Part 1-3: System security compliance metrics
- **IEC/TS 62872 Ed. 1.0:** Industrial process measurement, control and automation - System interface between Industrial Facilities and the Smart Grid.
- **ISO/IEC 20140-5 Ed. 1.0:** Automation systems and integration - Evaluating energy efficiency and other factors of manufacturing systems that influence the environment - Part 5: Environmental influence evaluation data
- **PNW 65-522 Ed. 1.0 :** Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-2 xx: Particular requirements for electrically operated valve and actuator
- **PNW 65-526 Ed. 1.0:** Life-cycle management for systems and products used in industrial-process measurement, control and automation

The TC65 has established liaisons with other external committees:

- ISO/TC184: Automation systems and integration
- ISO/TC184/SC5: Architecture, communications and integration frameworks
- ITU-T /SG 17: International telecommunication union - Study group 17: Languages and Telecommunicatons Software

Comments

KEYWORDS: industrial process, control, automation

9 DKE (GERMANY)
9.1 DKE STD 1911
STANDARDIZATION ORGANIZATION

Acronym	Name		
DKE STD 1911	Expertise Centre for E-Energy		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://www.vde.com/en/dke/std/KoEn/Pages/ExpertiseCentreforE-Energy.aspx http://www.dke.de/de/std/kompetenzzentren-eenergy/seiten/gremien.aspx		
Contacts			
	Name	Email	Telephone
Chairman			
Secretary			
Technical Officer			
Scope – Focus – Description of activities			
Scope: Steering committee for Smart Grid standardisation activities within DKE. Activities: Issued two Smart Grid standardisation roadmaps (2010 & 2012). Keywords: smart grid roadmap			

9.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG DKE 2013 001	Relevance	M
Standardization organization to which the document is related	DKE		
Document title	The German Roadmap E-Energy/Smart Grid		
Document reference and/or version	V2.0	Date	2013/03
Document type	Roadmap	Available in STARGRID (Y/N)	Y

Domain or system category	Smart Grid
Priority Topic or Use Case	
Brief content description	<p>The aim of this document is to draft a strategic, and nevertheless technically oriented roadmap which represents the standardization requirements for the German vision of the Smart Grid, taking especial account of the BMWi and BMU (Federal Ministries) funding programme E-Energy. In addition, it provides an overview of standards in that context, and of current activities, necessary fields of action, international cooperation and strategic recommendations.</p> <p>The second edition of the roadmap gives an update on current Smart Grid standardisation activities. It explains in detail the development of standards profiles for specific Use Cases and has a section dedicated to the Smart Grid Information Security (SGIS) toolbox developed by the SG-CG.</p>

KEYWORDS: smart grid roadmap

10 ISO/IEC

10.1 ISO/IEC JOINT TECHNICAL COMMITTEE 1 SPECIAL WORKING GROUP ON SMART GRIDS

STANDARDIZATION ORGANIZATION			
Acronym	Name		
ISO/IEC JTC1 SWG04	ISO/IEC Joint Technical Committee 1, Special Working Group on Smart Grid		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2009/10 (JTC 1 Plenary in Tel Aviv, Israel)		
Ending date	--		
Website	http://www.jtc1smartgrid.org/ http://www.jtc1smartgrid.org/documents.htm		
Contacts			
	Name	Email	Telephone
Convenor	Ronald Ambrosio	rfa@us.ibm.com	
Secretary	Jennifer Garner	jgarner@itic.org	
Others			
Scope – Focus – Description of activities			
Scope:			

1. Identify market requirements and standardization gaps within the JTC1 programs of work, especially with respect to interoperability, and recommend actions to JTC 1 and its Subcommittees.
2. Promote use of JTC 1 smart grid standards by other Standards Development Organizations (SDO) and industry when appropriate
3. Coordinate with IEC, ISO, ITU-T and other SDOs and industry groups

Focus:

1. Standards supporting interoperability of Smart electric Grid technology and appropriate extensions to include automated gas, water and other metering systems and interfaces with home and building automation systems that are dependent on the same Smart electric Grid information and communications infrastructure.

Activities:

1. Identify market requirements and standardization gaps for Smart Grid with particular attention to standards supporting the interoperability of Smart Grid technology and needed international standardization.
2. Encourage JTC 1 SCs to address the need for ISO/IEC Smart Grid International Standards.
3. Promote JTC 1 developed International Standards for Smart Grid and encourage them to be recognized and utilized by the industry and SDOs.
4. Coordinate JTC 1 Smart Grid activities with IEC, ISO, ITU-T and other SDOs that are developing standards for Smart Grid, especially the IEC SMB Strategic Group 3 on Smart Grid.
5. Periodically report results and recommendations to JTC 1 SWG-Planning and coordinate ongoing work with related plans.

KEYWORDS: standardization gaps, interoperability, market requirements, building automation, metering systems

10.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JTC1 UUUU 001	Relevance	L
Standardization organization to which the document is related	ISO/IEC JTC1 SWG04		
Document title	Meeting reports (from 2010 to September 2012)		
Document reference and/or version	JTC 1 SWG-SG N 0009 JTC 1 SWG-SG N 0013 JTC 1 SWG-SG N 0018 JTC 1 SWG-SG N 0027 JTC 1 SWG-SG N 0034 JTC 1 SWG-SG N 0040 JTC 1 SWG-SG N 0043 JTC 1 SWG-SG N 0046 JTC 1 SWG-SG N 0050 JTC 1 SWG-SG N 0052 JTC 1 SWG-SG N 0054 JTC 1 SWG-SG N 0056	Date	2010/04/19 2010/05/20 2010/06/29 2010/10/01 2011/05/25 2012/01/12 2012/02/03 2012/02/27 2012/04/12 2012/05/15

	JTC 1 SWG-SG N 0059 JTC 1 SWG-SG N 0061 JTC 1 SWG-SG N 0071		2012/05/30 2012/06/25 2012/07/24 2012/09/05 2012/09/26
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	Meeting minutes. Most of them are available at the website, but not all. They comprise a general overview of the JTCA SWG-SG status.		

KEYWORDS: interoperability, energy management, building automation, metering systems

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JTC1 2011 002	Relevance	M
Standardization organization to which the document is related	ISO/IEC JTC1 SWG04		
Document title	JTC 1 SWG on Smart Grid Convenor's Presentation to the November 2011 JTC 1 Plenary – San Diego, United States.		
Document reference and/or version	JTC 1 SWG-SG N 0037	Date	2011/10/20
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	<p>Brief overview of the performed work.</p> <p>List of recommendations to be developed:</p> <ul style="list-style-type: none"> - Prepare a liaison report to IEC SG3 summarizing activities relevant to smart grids. - Formal submission to IEC SG 3, summarizing all existing ISO/IEC JTC 1 standards that have been identified to date as relevant to smart grids. - Prepare a plan to increase awareness in the global smart grid community of JTC 1 activities that have been identified as relevant to smart grids, but which it has been observed by the SWG-SG that there is insufficient knowledge. 		

KEYWORDS: interoperability, energy management, building automation, metering systems

STARGRID ID	STG JTC1 2010 003	Relevance	H
Standardization organization to which the document is related	ISO/IEC JTC1 SWG04		
Document title	Report of the JTC 1 Special Working Group on Smart Grid (SWG-Smart Grid) to the November 2010 JTC 1 Plenary - Belfast, Northern Ireland		
Document reference and/or version	JTC 1 SWG-SG N 0028	Date	2010/10/01
Document type	Other: Annual report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	<p>The report comprises the following parts:</p> <ul style="list-style-type: none"> - Summary of activities performed during the year 2010. - Status of the JTC 1 Special Working Group on Smart Grid Work Plan : <ul style="list-style-type: none"> ✓ Develop and agree upon a set of smart grid market requirements. ✓ Review of JTC 1 SC programs of work. ✓ Establish formal liaisons with SDOs, key industry groups and smart grid bodies. ✓ Develop JTC 1 smart grid strategic plan recommendations. 		

KEYWORDS: interoperability, standardization gaps, metering systems, home automation

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JTC1 2010 004	Relevance	L
Standardization organization to which the document is related	ISO/IEC JTC1 SWG04		
Document title	Transmittal of JTC 1 N 10407: Resolutions Adopted at the 25th Meeting of ISO/IEC JTC 1, 8-13 November 2010 in Belfast, Northern Ireland.		
Document reference and/or version	JTC 1 SWG-SG N 0030	Date	2010/12/08
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case			

Brief content description	<p>JTC1 recommends SWG-SG to establish the following liaison relationships:</p> <ul style="list-style-type: none"> - SWG Smart Grid and IEC SMB Strategic Group 3 – Smart Grid - SWG Smart Grid and ISO/TC 215/WG 7 - Health Informatics Devices - SWG Smart Grid and CEN/CENELEC/ETSI Joint Working Group on Smart Grid - SWG Smart Grid and CEN/CENELEC/ETSI Joint Working Group on Smart Meters - SWG Smart Grid and Smart Grid Interoperability Panel - SWG Smart Grid and ITU-T Focus Group on Smart Grid
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KEYWORDS: committee liaison

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JTC1 2011 005	Relevance	L
Standardization organization to which the document is related	ISO/IEC JTC1 SWG04		
Document title	Transmittal of JTC 1 N 10933: Resolutions adopted at the 26th meeting of ISO/IEC JTC 1, 7-12 November 2011 in San Diego, California, USA.		
Document reference and/or version	JTC 1 SWG-SG N 0038	Date	2011/11/30
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case			
Brief content description	<p>JTC1 recommends SWG-SG to:</p> <ul style="list-style-type: none"> - Prepare a formal submission to IEC Strategic Group 3 (SG 3) of all existing JTC 1 standards that have been identified to date as relevant to smart grids. - Prepare a liaison report to IEC SG 3 that summarizes all current activities that are relevant to smart grids. - Prepare a plan to increase awareness in the global smart grid community of JTC 1 activities. - Prepare a report that identifies JTC 1 activities for which other SDOs have initiated partially or completely overlapping projects. - Prepare a smart grid education presentation for use within JTC 1. - Review its current Terms of Reference. 		

KEYWORDS: standardization activities, security use cases

11.1 ITU-T FOCUS GROUP ON SMART GRID

STANDARDIZATION ORGANIZATION			
Acronym	Name		
ITU-T FG Smart	ITU-T (International Telecommunication Union-Telecommunication Sector) Focus Group on Smart Grid		
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2010/02		
Ending date	2011/12		
Website	http://www.itu.int/en/ITU-T/focusgroups/smart/Pages/Default.aspx		
Contacts			
	Name	Email	Telephone
Convenor	Mr. Les Brown		
Secretary	Mr. Hiroshi Ota	hiroshi.ota@itu.int	
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Collect and document information and concepts for developing Recommendations to support Smart Grid from a telecommunication/ICT perspective. <p>Focus:</p> <ol style="list-style-type: none"> 1. Identify potential impacts on standards development. 2. Investigate future ITU-T study items and related actions. 3. Familiarize ITU-T and standardization communities with emerging attributes of smart grid. 4. Encourage collaboration between ITU-T and smart grid communities. <p>Activities:</p> <ol style="list-style-type: none"> 1. Update of standards bodies, forums, and consortia dealing with smart grid. 2. Summary of vision and value propositions of smart grid with a focus on telecommunication/ICT aspects. 3. Formulation of terminology and taxonomy necessary to support smart grid 4. Analysis of communications networking requirement functions and capabilities to support smart grid (including QoS/QoE, security and reliability). 5. Gap analysis of standards for communications networking to support smart grid. 6. Identification of use cases of services and reference models for telecommunication/ICT to support smart grid. 			

7. Identification of future ITU-T study items and related actions.
8. As result of the activities performed, five deliverables were drafted:
 - Use Cases for Smart grid: 2011.
 - Requirements of Communication for Smart Grid: 2011.
 - Smart Grid Architecture: 2011.
 - Smart Grid Overview: 2011.
 - Terminology: 2011.
9. Development of the analysis report “Activities in Smart Grid standardization – Repository. April 2011”.
10. Organization of one workshop:
Workshop on Cloud Computing and Smart Grid (Geneva, January 2012)

Comments

The deliverables developed by this Focus Group are publicly available at:

<http://www.itu.int/en/ITU-T/focusgroups/smart/Pages/Default.aspx>

KEYWORDS: telecommunication/ICT for smart grids, standard gaps, use cases, quality of service, reliability, security

11.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG ITUT 2012 001	Relevance	L
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	ITU Workshop on "Cloud Computing and Smart Grid" Geneva, Switzerland, 9 January 2012		
Document reference and/or version	Draft programme	Date	2012/01/09
Document type	Meeting agenda	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case			
Brief content description	Draft agenda of the 1st Workshop on Smart Grid Use Cases (2 nd part of the ITU workshop; 1 st part dealing with “cloud computing”, nothing to do with smart grids). The workshop is focused on the deliverables presentation.		

KEYWORDS: use cases, smart grid terminology, smart grid architecture

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG ITUT 2011 002	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	Smart Grid Architecture Deliverable		
Document reference and/or version	Smart-O-33Rev.6	Date	2011/12/18
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	<p>This document describes the architecture for smart grid.</p> <p>Firstly, the reference architecture is described, including the simplified domain model in ICT perspective and mapped domain model based on NIST smart grid Interoperability framework.</p> <p>Secondly, the smart grid functional architecture and two representative applications, namely “smart metering and load control” and “energy distribution and management” are introduced. Lastly, the deployment models of smart grid are introduced and they consist of the networking and communication techniques, network architecture, and deployment model and implementation.</p>		

KEYWORDS: reference architecture, conceptual model, energy management, smart metering

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG ITUT 2011 003	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	Requirements of communication for Smart Grid Deliverable		
Document reference and/or version	Smart-O-32Rev.6	Date	2011/12/18
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunications, Smart Grids		

Priority Topic or Use Case	DER integration, smart metering, demand response
Brief content description	This document specifies requirements of Smart Grid based on the three different areas defined in overview deliverable including Smart Grid Services/Applications area, Communication area and Physical Equipment area.
Comments	

KEYWORDS: communications for smart grids, quality of service (QoS), gaps analysis

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG ITUT 2011 004	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	Smart Grid Overview Deliverable		
Document reference and/or version	Smart-O-34Rev.4	Date	2011/12/18
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids, Telecommunications		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	<p>Overview of Smart Grids. Specification of roles and key areas of Information and Communication Technology (ICT) for Smart Grid, networks/services architecture, and required capabilities.</p> <p>This document provides an overview of Smart Grid. This Deliverable also provides key concepts and objectives of Smart Grid and identifies architecture overview and fundamental characteristics.</p> <p>This Deliverable specifies roles and key areas of Information and Communication Technology (ICT) for Smart Grid, networks/services architecture, and required capabilities.</p>		

KEYWORDS: communication/ICT for smart grids, conceptual model, network architecture

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG ITUT 2011 005	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		

related			
Document title	Smart Grid Terminology Deliverable		
Document reference and/or version	Smart-O-30Rev.6	Date	2011/12/18
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>This Deliverable is a collection of terms and definitions that other deliverables need to use. It collects the key terms which are closely related with grid and appear in the deliverables on Overview, Use Cases, Requirements and Architecture.</p> <p>The corresponding definitions of these key terms are also provided in this deliverable. Additionally some terms used in different deliverables are harmonized to be unified.</p>		

KEYWORDS: smart grid terminology, harmonised definitions

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG ITUT 2011 006	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	Use Cases for Smart Grid Deliverable		
Document reference and/or version	Smart-O-31Rev.7	Date	2011/12/18
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>This deliverable describes use cases for smart grid according to certain template</p> <p>The objective of this deliverable is to analyse several use cases for smart grid in the ICT perspective and identify requirements and architectural considerations.</p>		

KEYWORDS: use cases, grid domain, customer domain, smart metering, smart grid services/applications

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG ITUT 2011 007	Relevance	H
Standardization organization to which the document is related	ITU-T FG Smart		
Document title	Activities in Smart Grid standardization Repository (Version 2.0, April 2011)		
Document reference and/or version	Version 2.0	Date	2011/04
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grid		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>This repository compiles, in alphabetical order, the smart grid related activities of 20 standards development organizations, consortia, forum and other groups. The content is based on information found on the corresponding websites, in presentation material and news articles.</p> <p>It is meant to be a starting point and running document rather than an exhaustive review.</p> <p>Standards play a key role in the development, deployment and operation of smart grids worldwide. They are a proven tool to safeguarding interoperability, enabling the different components of a grid to exchange information and to mutually understand the information exchanged. This is of particular importance, as the smart grid vision brings together technologies and paradigms of two, formerly distinct, sectors: utilities and ICT.</p>		

KEYWORDS: standardization activities, repository

11.2 ITU-T JOINT COORDINATION ACTIVITY ON SMART GRID AND HOME NETWORKING

STANDARDIZATION ORGANIZATION	
Acronym	Name
ITU JCA-SG&HN	ITU Joint Coordination Activity on Smart Grid and Home Networking
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other

Establishment date	2012/01		
Ending date	--		
Website	http://www.itu.int/en/ITU-T/jca/SGHN/Pages/default.aspx		
Contacts			
	Name	Email	Telephone
Convenor	Mr. Richard Stuart	richard.stuart@ties.itu.int	+1 410 336 3505
Secretary	Mr. Hiroshi Ota	tsbjcasghn@itu.int	+ 41 22 730 6356
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Coordination, both inside and outside of the ITU-T, of standardization work concerning all network aspects of Smart grid and related communication, as well as Home Networking. <p>Focus:</p> <ol style="list-style-type: none"> 1. Stimulation and coordination of all network aspects of Smart Grid and related communication. 2. Standardization activities across the ITU and relevant bodies in this standardization area. 3. Stimulation and coordination of Home Networking standardization activities across the ITU and relevant bodies. <p>Activities:</p> <ol style="list-style-type: none"> 1. Coordination of Smart Grids activities within the ITU. 2. Cooperation from relevant bodies working in the field of Smart Grid and effective two-way communications with these bodies. 3. Coordination of Home Networking activities within the ITU. 4. Cooperation from relevant bodies working in the field of Smart Grid and effective two-way communications with these bodies. 5. Assignments of the work among the relevant ITU-T Study Groups when it is not clear where the work should be carried out. 6. Identification of duplicities, harmonization of the related specifications and identification of areas where specifications are needed. For this purpose the JCA-SG&HN will actively manage the development of specifications in the relevant ITU-T Study Groups. 7. Interaction with JCA-IoT (Joint Coordination Activity on Internet of Things) on topics related to smart grid applications. 8. Until January 2013, four meetings have been held. 9. Some of the most relevant ITU Recommendations concerning smart grids are: <ul style="list-style-type: none"> - ITU-T G.9901: 2012, Narrowband orthogonal frequency division multiplexing power line communication transceivers - Power spectral density specification. - ITU-T G.9903:2012, Narrowband orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks. - ITU-T G.9904: 2012, Narrowband orthogonal frequency division multiplexing power line communication transceivers for PRIME networks - ITU-T G.9955: 2011, Narrow-band OFDM power line communication transceivers - Physical 			

layer specification - ITU-T G.9956: 2011, Narrow-band OFDM power line communication transceivers – Data link layer specification
Comments Almost no documentation is available. A special account is required to access the JCA-SG&HN related documents. The ITU-T recommendations are publicly available on the ITU website: http://www.itu.int/ITU-T/recommendations/index.aspx?ser=G
KEYWORDS: communications/ICT for smart grids, home networking, power line communications

11.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 001	Relevance	L
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	First meeting of Joint Coordination Activity on Smart Grid and Home Networking		
Document reference and/or version	JCA-SG&HN-I-8	Date	2012/05/09
Document type	Others: Meeting announcement	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	Information about the first meeting of JCA-SG&HN.		

KEYWORDS: communications/ICT for smart grids, home networking, power line communications

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 002	Relevance	VL
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	Second meeting of Joint Coordination Activity on Smart Grid and Home Networking (announcement)		

Document reference and/or version	JCA-SG&HN-I-19	Date	2012/07/04
Document type	Others: Meeting announcement	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Information about the second meeting of JCA-SG&HN.		

KEYWORDS: communications/ICT for smart grids, home networking

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 003	Relevance	VL
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	Third meeting of Joint Coordination Activity on Smart Grid and Home Networking		
Document reference and/or version	JCA-SG&HN-I-30	Date	2012/07/31
Document type	Others: Meeting announcement	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Information about the third meeting of JCA-SG&HN.		

KEYWORDS: communications/ICT for smart grids, home networking

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 004	Relevance	L
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	Fourth meeting of Joint Coordination Activity on Smart Grid and Home Networking		
Document	JCA-SG&HN-I-32	Date	2012/09/13

reference and/or version			
Document type	Others: Meeting announcement	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	Smart metering, demand response		
Brief content description	Information about the fourth meeting of JCA-SG&HN.		

KEYWORDS: communications/ICT for smart grids, home networking, power line communications

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 005	Relevance	L
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	IEEE 802 - LAN/MAN Standard Committee - Unconfirmed Minutes. Executive Committee Meeting		
Document reference and/or version	--	Date	2012/07/16
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Minutes of IEEE Executive Committee Meeting. Short review of Smart Grids activities. Some presentations related to that meeting are attached: Dell, ITU JCA-SG&HN.		

KEYWORDS: communications/ICT for smart grids, home networking

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 006	Relevance	VL
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	IEEE - Approved Minutes. Face-to-Face Meeting at Sequoia A of the Grand Californian Hotel during Globecom 2012 and Teleconference via WebEx.		

Document reference and/or version	--	Date	2012/12/04
Document type	Meeting minutes	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Liaison statement on activities related to smart grid from the ITU-T.		

KEYWORDS: communications/ICT for smart grids, home networking

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN UUUU 007	Relevance	M
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	Terms of Reference Joint Coordination Activity on Smart Grid & Home Networking (JCA SG&HN)		
Document reference and/or version	ITU-T\COM-T\TSAG\R\R5E.doc	Date	--
Document type	Others: Terms of Reference	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	The Terms of Reference document in which the most relevant aspects related to JCA-SG&HN are explained: scope, objectives, leadership, participation, administrative support, etc.		

KEYWORDS: communications/ICT for smart grids, home networking

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SG&HN 2012 008	Relevance	L
Standardization organization to which the document is related	ITU JCA-SG&HN		
Document title	List of representatives on Smart Grid		
Document reference and/or	--	Date	2012/10

version			
Document type	Others: Contacts list	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>TSAG, at its meeting of January 2012, established the JCA-SG&HN replacing the JCA on Home Networking (JCA-HN). The scope of this JCA is the coordination, both inside and outside of the ITU-T, of standardization work concerning all network aspects of Smart Grid and related communication as well as Home Networking.</p> <p>With that purpose a list of representatives for Smart Grid has been established.</p> <p>This contacts list is available at the website</p>		

KEYWORDS: communications/ICT for smart grids, home networking

12 NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

12.1 NIST SMART GRID INTEROPERABILITY PANEL

STANDARDIZATION ORGANIZATION			
Acronym	Name		
NIST SGIP	National Institute of Standards and Technology. Smart Grid Interoperability Panel.		
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2009/11 (established to support NIST in its fulfilment of its responsibilities pursuant to the Energy Independence and Security Act of 2007).		
Ending date	2012/12 (The SGIP transitioned to a member-led, industry-based organization, incorporated as “SGIP 2.0, Inc.”).		
Website	http://sgip.org/		
Contacts			
	Name	Email	Telephone
Convenor	Steve Widergren		
Secretary	Gregory Obenchain		
Others			
Scope – Focus – Description of activities			
Scope:			

1. The main scope is to provide a framework for coordinating all Smart Grid stakeholders in an effort to accelerate standards harmonization and advance the Interoperability of Smart Grid devices and systems.

Focus:

1. To oversee activities intended to expedite the development of interoperability and cyber security specifications within standards-setting organizations (SSOs).
2. To provide technical guidance to facilitate the development of standards for a secure, interoperable Smart Grid
3. To specify testing and certification requirements necessary to assess the interoperability of Smart Grid-related equipment.
4. To inform and educate Smart Grid industry on interoperability.

Activities:

1. Technical Activities: Given the complexity and urgency of its mission, the SGIP has several priority-specific committees and working groups:
 - Smart Grid Architecture Committee (SGAC): Maintains a conceptual reference model for the Smart. Grid and develops corresponding high-level architectural principles and requirements.
 - Smart Grid Testing and Certification Committee (SGTCC): Creates and maintains the necessary framework for compliance, interoperability and cybersecurity testing and certification for recommended Smart Grid standards.
 - Cyber Security Working Group (CSWG): Identifies and analyzes security requirements and develops a risk mitigation strategy to ensure the security and integrity of the Smart Grid.
 - Priority Action Plans (PAPs): Currently totalling 16, PAPs address specific standards-related gaps and issues for which resolution is most urgently needed. New PAPs are added as necessary.
 - Domain Expert Working Groups (DEWGs): Numbering seven, DEWGs perform analyses and provide expertise in specific application domains. Current DEWGs are: Transmission and Distribution, Building to Grid, Industry to Grid, Home to Grid, Business and Policy, Vehicle to Grid, Distributed Renewables, Generation, and Storage.
2. Categorized priority actions to define challenges and objectives for developing interoperability for the Smart Grid.
3. Catalogue of standards: SGIP produces and maintains one useful source of information about Smart Grid standards. The Catalogue of Standards serves as a compendium of standards, practices, and guidelines.
4. Three public Workshops:
 - 2009/05/19-20: Second Smart Grid Interoperability Standards Interim Roadmap Public Workshop. Washington DC, USA.
 - 2009/08/3-4: Third Smart Grid Interoperability Standards Interim Roadmap Public Workshop. Washington DC, USA.
 - 2012/08/13-14: NIST – Renewable and Sustainable Energy Institute (RASEI) Smart Grid Workshop. Colorado, USA.
5. Deliverables and works:
 - SGTCC: Interoperability Process Reference Manual (IPRM)

6.	<ul style="list-style-type: none"> - SGTCC: Approved interoperable Standards. - CSWG: <i>Guidelines for Smart Grid Cyber Security</i>. NIST Interagency Report 7628 - August 2010. - <i>NIST Framework and Roadmap for Smart Grid Interoperability Standards</i>, Release 2.0.
	<p>It is an open collaboration site for the entire smart grid community to work with NIST in a technical level to develop a framework for smart grid interoperability standards. The wiki site is overseen by SGIP.</p>
Comments	
<p>It is difficult to identify which work is performed by SGIP and not by other Working Groups, within NIST, related to Smart Grids.</p>	

KEYWORDS: Priority Action Plan, roadmap, reference architecture, conceptual model, testing, certification, cybersecurity, interoperability

12.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2012 001	Relevance	VH
Standardization organization to which the document is related	NIST		
Document title	NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0.		
Document reference and/or version	1108R2 Release 2.0	Date	2012/02
Document type	Roadmap	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>The <i>NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0</i>, builds upon the work in Release 1.0 and is based on updated information and input from relevant stakeholders. It includes:</p> <ul style="list-style-type: none"> - Description of the Smart Grid conceptual reference model and conceptual architectural framework under development by the SGIP's Smart Grid Architecture Committee (SGAC). - Update to the progress of the Priority Action Plans (PAPs) in closing the previously identified high-priority gaps - Listing of new standards emerging from the PAPs that have been added to the list of identified standards and the list of those for further review 		

	<ul style="list-style-type: none"> - Description of the Smart Grid Interoperability Panel (SGIP). - Cybersecurity section. - Certification section.
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KEYWORDS: roadmap, interoperability, conceptual reference model, smart grid architecture, priority action plan, cybersecurity, certification

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2012 002	Relevance	H
Standardization organization to which the document is related	NIST SGIP		
Document title	National Institute of Standards and Technology (NIST) - Smart Grid Advisory Committee (SGAC) – Report.		
Document reference and/or version	--	Date	2012/01/26
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<ul style="list-style-type: none"> - Overview of the SGIP activities during the last years. - Identification of several common emerging themes across the diverse Smart Grid stakeholder landscape: <ul style="list-style-type: none"> ✓ Prioritize, streamline, and leverage NIST Smart Grid activities. ✓ Need for consistent state regulatory support for Smart Grid standards development. ✓ Need to continue the focus on transparency, roles, and responsibilities. ✓ Consolidation of cybersecurity activities and research. ✓ Urgent need for a communication plan and an education and outreach effort regarding importance of interoperability standards and research activities. ✓ Short- to Mid-term Challenges and Recommendations. ✓ Long-term Evolution of the U.S. Smart Grid Effort. 		

KEYWORDS: standardization activities, cybersecurity, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP UUUU 003	Relevance	M
Standardization organization to	NIST SGIP		

which the document is related			
Document title	SGIP responses to recommendations from SGAC report.		
Document reference and/or version	--	Date	--
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	In this presentation SGIP comments the recommendations provided by SGAC in a previous report. These recommendations comprise the following sections: <ul style="list-style-type: none">- General recommendations.- Short to Mid term Challenges and Recommendations.- Smart Grid Research Activities.		

KEYWORDS: Smart Grid research activities, cybersecurity, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2011 004	Relevance	H
Standardization organization to which the document is related	NIST SGIP		
Document title	Standards Catalog		
Document reference and/or version	-- Rev. 1.0	Date	2011/05/23
Document type	Analysis report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>This document describes the purpose and scope of the Catalog, as well as the process and procedures for the management of the SGIP Catalog of Standards (CoS). Procedures are described for the management of the lifecycle of an entry into the Catalog, from its proposed inclusion, to its approval for inclusion, its periodic review for relevance and its possible deprecation and removal from the Catalog.</p> <p>The Catalog is a compendium of standards and practices considered to be relevant for the development and deployment of a robust and interoperable Smart Grid.</p>		

	<p>Described in this document are:</p> <ul style="list-style-type: none"> ✓ Criteria that standards, practices, and guides must meet for inclusion in the Catalog. ✓ Criteria to characterize an entry and initiate the process. ✓ Structure of the Catalog to facilitate searching and understanding the applications and architectural levels targeted in the design of each entry. ✓ Procedures to approve the addition of an entry to the Catalog, maintain and update Catalog entries, and deprecate and/or remove an entry from the Catalog.
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KEYWORDS: standards catalog, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2011 005	Relevance	M
Standardization organization to which the document is related	NIST		
Document title	White paper of NIST and SG-CG on standardization of Smart Grids		
Document reference and/or version	--	Date	2011/09/13
Document type	White paper	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering, demand response		
Brief content description	<p>Both NIST and the SG-CG have mandates to coordinate the development of a standards framework for Smart Grids, which can unlock innovation in the electrical sector. The two organizations outline areas for collaboration in a joint white paper.</p> <p>Standardization of Smart Grids is not “business as usual”. The multi-sectoral nature of Smart Grids, the need for integration of multiple technologies, huge number of stakeholders, the necessary speed, the many international activities and the ever changing technical solutions make it a challenging task for standardization organizations worldwide.</p> <p>This jointly announcement establishes their intentions to work together on Smart Grid standards development, emphasizing common goals and areas of focus.</p> <p>In this document NIST and SG-CG promote a number of common positions and areas of collaboration to ensure a consistent set of standards.</p>		

KEYWORDS: conceptual model, standards framework

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2010 006	Relevance	M
Standardization organization to which the document is related	NIST Smart Grid Interoperability Panel - Cyber Security Working Group		
Document title	Introduction to NISTIR 7628 Guidelines for Smart Grid Cyber Security		
Document reference and/or version	--	Date	2010/09
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case			
Brief content description	<p>This report presents an overview of the NISTIR 7628, Guidelines for Smart Grid Cyber Security; its objective, background and context.</p> <p>The different steps carried out by the Cyber Security Working Group to develop this guideline are described.</p> <p>The three volumes that make up the initial set of guidelines comprises the following topics:</p> <ul style="list-style-type: none"> - The first volume of the report describes the approach, including the risk assessment process, used by the CSWG to identify the high-level security requirements. - The second volume focuses on privacy issues within personal dwellings. - The third volume is a compilation of supporting analyses and references used to develop the high-level security requirements and other tools and resources presented in the first two volumes. 		

KEYWORDS: cybersecurity, privacy, risk assessment

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2010 007	Relevance	H
Standardization organization to which the document is related	NIST Smart Grid Interoperability Panel - Cyber Security Working Group		
Document title	<p>Guidelines for Smart Grid Cyber Security:</p> <p>Vol. 1, Smart Grid Cyber Security Strategy, Architecture and High-Level Requirements.</p> <p>Vol. 2, Privacy and the Smart Grid.</p>		

Vol. 3, Supportive Analyses and References.			
Document reference and/or version	NISTIR 7628	Date	2010/08
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case			
Brief content description	<p>The three-volume report, NISTIR 7628, “Guidelines for Smart Grid Cyber Security”, presents an analytical framework that organizations can use to develop effective cyber security strategies tailored to their particular combinations of Smart Grid-related characteristics, risks, and vulnerabilities.</p> <p>Organizations in the diverse community of Smart Grid stakeholders—from utilities to providers of energy management services to manufacturers of electric vehicles and charging stations—can use the methods and supporting information presented in the report as guidance for assessing risk, and then identifying and applying appropriate security requirements to mitigate that risk.</p> <p>The guidelines are not prescriptive, nor mandatory. They are advisory, intended to facilitate each organization’s efforts to develop a cyber security strategy effectively focused on prevention, detection, response and recovery.</p>		

KEYWORDS: cybersecurity, privacy, risk assessment

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2011 008	Relevance	H
Standardization organization to which the document is related	NIST		
Document title	NIST Priority Action Plan 2 Guidelines for Assessing Wireless Standards for Smart Grid Applications		
Document reference and/or version	NISTIR 7761	Date	2011/02
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case	Smart metering		
Brief content description	The advanced applications and widespread use now foreseen for the smart grid require highly reliable, secure, well designed, and managed communication		

	<p>networks.</p> <p>Applications requirements must be combined with a set of management and security requirements for the life-cycle of the system. These requirements can then be used to assess the suitability of various wireless technologies to meet the requirements in the particular applications environment.</p> <p>This report is a draft of key tools and methods to assist smart grid system designers in making informed decisions about existing and emerging wireless technologies. An initial set of quantified requirements have been brought together for advanced metering infrastructure (AMI) and initial Distribution Automation (DA) communications. These two areas present technological challenges due to their scope and scale. These systems will span widely diverse geographic areas and operating environments and population densities ranging from urban to rural.</p>
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KEYWORDS: wireless technologies, Advance Metering Infrastructure (AMI), distribution automation

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2009 009	Relevance	M
Standardization organization to which the document is related	NIST SGIP		
Document title	Priority Action Plan 01 The Role of the Internet Protocol (IP) in AMI Networks for Smart Grid		
Document reference and/or version	NIST PAP 01	Date	2009/10/24
Document type	Others: technical deliverable	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case			
Brief content description	<p>The Internet Protocol (IP) is rapidly becoming a more popular for interoperable End-to-End Smart Grid Networks. Therefore, it is important to understand the different uses of the IP suite in Internet networking technologies for existing and emerging Smart Grid applications.</p> <p>This document gives the basis for understanding the IP protocol use in Smart Grid and how interoperability can be achieved today using existing open and standards-based protocols and how these protocols can evolve to create more interoperable Smart Grid systems.</p>		

KEYWORDS: Internet protocol, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2012 010	Relevance	M
Standardization organization to which the document is related	NIST SGIP		
Document title	Interoperability Process Reference Manual (IPRM)		
Document reference and/or version	--	Date	2012/01
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The Smart Grid Testing and Certification Committee (SGTCC) has developed and issued the Interoperability Process Reference Manual (IPRM) detailing its recommendations on processes and best practices that enhance the introduction of interoperable products in the market place. These recommendations build upon international standards based processes for interoperability testing and certification.</p> <p>The IPRM is a key foundational element of the SGIP Testing and Certification Framework. It will enable the adoption of consistent and measurable certification and testing policies and procedures across Smart Grid products (utilizing standards) based on the conformance, interoperability, and cybersecurity testing experience and expertise of SGTCC participants, and the widely accepted ISO/IEC 17025 and ISO/IEC 65 international standards for testing laboratory and certification body management systems.</p>		

KEYWORDS: interoperability, testing, certification

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2012 011	Relevance	H
Standardization organization to which the document is related	NIST SGIP		
Document title	Electromagnetic Compatibility and Smart Grid Interoperability Issues.		
Document reference and/or version	2012-005 Version 1.0	Date	2012/12/05

Document type	Analysis Report; Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Introduction to the electromagnetic compatibility (EMC) as an integral process needed for the design of devices that are used in the operation of the Smart Grid.</p> <p>It is an output of the SGIP Electromagnetic Interoperability Issues Working Group.</p> <p>The report examines EMC issues for Smart Grid equipment on both the electric power system delivery and the power customer sides of the Smart Grid meter and summarizes recommendations for EMC standards.</p>		

KEYWORDS: electromagnetic compatibility (EMC), electromagnetic interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP UUUU 012	Relevance	M
Standardization organization to which the document is related	NIST		
Document title	<p>NIST Priority Action Plan 2</p> <p>Guidelines for Assessing Wireless Standards for Smart Grid Applications</p>		
Document reference and/or version	--	Date	--
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case	Smart metering		
Brief content description	<p>This report is a draft of key tools and methods to assist Smart grid system designers in making informed decisions about existing and emerging wireless technologies. An initial set of quantified requirements have been brought together for advanced metering infrastructure (AMI) and initial Distribution Automation (DA) communications. These two areas present technological challenges due to their scope and scale. These systems will span widely diverse geographic areas and operating environments and population densities ranging from urban to rural.</p> <p>The wireless technologies presented here encompass different technologies that range in capabilities, cost, and ability to meet different requirements for</p>		

	advanced power systems applications. System designers are further assisted by the presentation of a set of wireless functionality and characteristics captured in a matrix for existing and emerging standards based wireless technologies. Details of the capabilities are presented in this report as a way for designers to initially sort through the available wireless technology options.
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KEYWORDS: Advance Metering Infrastructure (AMI), distribution automation, wireless technology

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP 2011 013	Relevance	H
Standardization organization to which the document is related	NIST		
Document title	Internet Engineering Task Force (IETF) Request for comments 6272		
Document reference and/or version	ISSN: 2070-1721	Date	2011/06
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Telecommunication		
Priority Topic or Use Case			
Brief content description	<p>This note identifies the key infrastructure protocols of the Internet Protocol Suite for use in the Smart Grid. The target audience is those people seeking guidance on how to construct an appropriate Internet Protocol Suite profile for the Smart Grid. In practice, such a profile would consist of selecting what is needed for Smart Grid deployment from the picture presented.</p> <p>This document provides Smart Grid designers with advice on how to best "profile" the Internet Protocol Suite (IPS) for use in Smart Grids. It provides an overview of the IPS and the key infrastructure protocols that are critical in integrating Smart Grid devices into an IP-based infrastructure.</p> <p>This document is not an Internet Standards Track specification; it is published for informational purposes.</p>		

KEYWORDS: Internet protocol

12.2 NIST SMART GRID INTEROPERABILITY PANEL 2.0

STANDARDIZATION ORGANIZATION	
Acronym	Name

NIST SGIP 2.0	National Institute of Standards and Technology. Smart Grid Interoperability Panel 2.0.		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2012/12 (The SGIP transitioned to a member-led, industry-based organization, incorporated as “SGIP 2.0, Inc.”). 2013/01: SGIP 2.0 Operational		
Ending date	--		
Website	http://sgip.org/		
Contacts			
	Name	Email	Telephone
Convenor	John McDonald		
Secretary	George Bjelovuk		
Others			
Scope – Focus – Description of activities			
<p>The SGIP organization has been replaced by “SGIP 2.0”—a move from a federally funded organization to an industry-financed legal entity that retains a working partnership with government</p> <p>Scope:</p> <ol style="list-style-type: none"> 1. The SGIP supports NIST in its fulfilment of its responsibilities pursuant to the Energy Independence and Security Act of 2007 (“EISA”). <p>Focus:</p> <ol style="list-style-type: none"> 1. To provide the technical guidance and coordination necessary to facilitate standards development for Smart Grid interoperability. 2. To identify and specify the necessary testing and certification requirements, including providing the underlying rationale, to assess the achievement of interoperability using Smart Grid Standards. 3. To oversee the performance of these activities to maintain momentum and achievement. 4. To proactively inform and educate smart grid industry stakeholders on the definition of and the benefits attributable to interoperability (greater emphasis). 5. To conduct an outreach to similar organizations in other countries to help establish global interoperability alignment. <p>Activities:</p> <ol style="list-style-type: none"> 1. “SGIP 2.0 Business Sustainment Plan, Roadmap to the Future of Smart Grid Interoperability” has been drafted. This Plan describes the new organization, the scope of its activity (including continued support of NIST to carry out its EISA mandate), and the potential sources of revenue to support the new organization. 			

KEYWORDS: standards development, testing requirements, certification requirements, smart grids roadmap, interoperability

12.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP2.0 2012 001 form v1	Relevance	M
Standardization organization to which the document is related	NIST Smart Grid Advisory Committee		
Document title	SGAC comments		
Document reference and/or version	--	Date	2012/05/04
Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Consensus-based advice and recommendations regarding the Smart Grid Interoperability Panel 2.0 (SGIP 2.0) "Business Sustainment Plan, Version 1.0: Roadmap to the Future of Smart Grid Interoperability", prepared by the SGIP Business Sustainment Plan Working Group (BSPWG).</p> <p>This recommendation letter is submitted by the National Institute of Standards and Technology (NIST) Smart Grid Federal Advisory Committee (SGAC).</p> <p>The SGAC provides input and advice to NIST on the Smart Grid standards, priorities and gaps.</p>		

KEYWORDS: Smart Grids gaps, priorities, recommendations, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP2.0 2012 002 form v1	Relevance	M
Standardization organization to which the document is related	NIST Smart Grid Advisory Committee		
Document title	SGAC comments		
Document reference and/or version	--	Date	2012/06/25

Document type	Recommendation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Consensus-based advice and recommendations regarding the Smart Grid Interoperability Panel 2.0 (SGIP 2.0) “Business Sustainment Plan, Version 2.0: Roadmap to the Future of Smart Grid Interoperability”, prepared by the SGIP Business Sustainment Plan Working Group (BSPWG).</p> <p>This recommendation letter is submitted by the National Institute of Standards and Technology (NIST) Smart Grid Federal Advisory Committee (SGAC).</p>		

KEYWORDS: recommendations, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGIP2.0 2012 003 form v1	Relevance	H
Standardization organization to which the document is related	NIST SGIP 2.0		
Document title	SGIP 2.0 Business Sustainment Plan Roadmap to the Future of Smart Grid Interoperability.		
Document reference and/or version	-- Version 2.0	Date	2012/06/29
Document type	Roadmap	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The SGIP Governing Board formed the Business Sustainment Plan Working Group to develop a proposal for moving the SGIP forward with significantly reduced government financial support.</p> <p>This Plan describes the new organization, the scope of its activity (including continued support of NIST to carry out its EISA mandate), and the potential sources of revenue to support the new organization.</p> <p>SGIP 2.0 builds upon the foundation established by SGIP 1.0. The transition of the organization shall be sensitive to the principles and style of operations nurtured in SGIP 1.0 so that the membership will feel and experience a high degree of continuity in work processes.</p>		

KEYWORDS: smart grid standardization roadmap

13 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

13.1 ANSI / CONSUMERS ELECTRONICS ASSOCIATION (CEA)

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG ANSI 2013 001	Relevance	M
Standardization organization to which the document is related	ANSI & CEA (Consumer Electronics Association)		
Document title	ANSI/CEA-2045 Modular Communication Interface Specification for Energy Management		
Document reference and/or version		Date	2013/02/01
Document type	Standard	Available in STARGRID (Y/N)	N
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<p>Specifies a port for smart appliances that enables the use of communication modules for various home automation technologies. In this way, the appliance can be integrated in many different home automation networks, based on various standards such as KNX, ZigBee, Z-Wave, etc.</p> <p>The interface can pass through standard demand response signals (OpenADR and ZigBee SEP) directly to the device.</p> <p>A preview is available at http://www.ce.org/CorporateSite/media/Standards-Media/Standards%20Listings/ANSI-CEA-2045-Preview.pdf</p>		

KEYWORDS: home automation, demand response

14 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

14.1 IEEE & SMART GRIDS

STANDARDIZATION ORGANIZATION	
Acronym	Name
IEEE & SG	IEEE & Smart Grid
Status	<input checked="" type="checkbox"/> Active

	<input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://smartgrid.ieee.org/		
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Organize, coordinate, leverage and build upon the strength and experience of all IEEE entities toward the smart grid evolution, by holding several events, publications and standards within their area of focus. <p>Focus:</p> <ol style="list-style-type: none"> 1. To evolve standards. 2. To share best practices. 3. To publish developments. 4. To provide related educational offerings to further the smart grid. <p>Activities:</p> <ol style="list-style-type: none"> 1. <u>Formulation of Smart Grid related standards:</u> More than 100 standards and 40 more in development. For detailed information on these standards, see Table “IEEE Standards_March 2013”. The most relevant ones (approved and proposed) are: <ul style="list-style-type: none"> – IEEE 1815 - 2012: IEEE Standard for Electric Power Systems Communications -- Distributed Network Protocol (DNP3) – IEEE P1815.1: Standard for Exchanging Information Between Networks Implementing IEC 61850 and IEEE Std 1815 (Distributed Network Protocol - DNP3) – IEEE P1854: Guide for smart distribution applications guide – IEEE C37.118-1 – 2011: IEEE Standard for Synchrophasor Measurements for Power Systems – IEEE 1547 – 2003: Standard for Interconnecting Distributed Resources with Electric Power Systems – IEEE C37.238 – 2011: IEEE Standard Profile for Use of IEEE Std. 1588 Precision Time Protocol in Power System Applications – IEEE 1588 – 2008: Precision Clock Synchronization Protocol for Networked Measurement and Control Systems – IEEE 1901 – 2010: IEEE Standard for Broadband over Power Line Networks: Medium Access 			

- Control and Physical Layer Specifications
- P1901.2: Standard for Low Frequency (less than 500 kHz) Narrow Band Power Line Communications for Smart Grid Applications
 - IEEE 1686 – 2007: IEEE Standard for Substation Intelligent Electronic Devices (IEDs) Cyber Security Capabilities
 - P1686 - Standard for Intelligent Electronic Devices (IEDs) Cyber Security Capabilities
 - IEEE 1377 – 2012: IEEE Standard for Utility Industry Metering Communication Protocol Application Layer (End Device Data Tables)
 - IEEE 2030 – 2011: IEEE guide for Smart Grid interoperability of energy technology and information technology operation with electric power system (EPS), end-use applications and loads.
2. IEEE transactions on smart Grid: The *IEEE Transactions on Smart Grid* is intended to be a cross disciplinary and internationally archival journal aimed at disseminating the results of research on smart grid that relates to energy generation, transmission, distribution and delivery. The journal publishes original research on theories, technologies, design, policies, and implementation of smart grid (<http://www.ieee-pes.org/ieee-transactions-on-smart-grid>)
 3. IEEE Spectrum Magazine: This magazine comprises several topics such as aerospace, biomedical, computing, energy, etc. Within energy section, the smart grid is one of the main subjects.
 4. Conferences: Many conferences related to smart grids are scheduled to be held in 2013:
 - ISGT 2013: IEEE Power & Energy Society Innovative Smart Grid Technologies 2013. February 2013, Columbia, USA.
 - 2013 IEEE 8th International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP). April 2013. Melbourne, Australia.
 - 2nd International Workshop on Software Engineering Challenges for the Smart Grid (SE4SG). May 2013. San Francisco, USA.
 - 2013 4th IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG). July 2013. Fayetteville, USA.
 - 2013 IEEE International Conference on Smart Energy Grid Engineering (SEGE). August 2013. Oshawa, Canada.
 - 2013 IEEE International Workshop on Intelligent Energy Systems (IWIES). November 2013. Vienna, Austria.

KEYWORDS: DER interconnection, smart grid interoperability, cybersecurity

14.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG IEEE 2013 001	Relevance	H
Standardization organization to which the document is related	IEEE Smart Grid		
Document title	Approved & Proposed IEEE Smart Grid standards		

Document reference and/or version	--	Date	2013/02
Document type	Other: List of standards	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>This document has been extracted from the IEEE website: http://smartgrid.ieee.org/standards/ieee-approved-proposed-standards-related-to-smart-grid</p> <p>IEEE has more than 100 standards and standards in development relevant to smart grid, including the over 20 IEEE standards named in the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0.</p> <p>In this document a list of those standard is provided and a brief description of each one of them. Approved and proposed standards are included.</p>		

KEYWORDS: interoperability, standardization

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG IEEE 2010 002	Relevance	M
Standardization organization to which the document is related	IEEE PES		
Document title	IEEE Smart Grid Activities		
Document reference and/or version	--	Date	2010
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration		
Brief content description	<p>Overview of the IEEE Smart Grid main activities:</p> <ul style="list-style-type: none"> - IEEE Smart Grid web: A consolidated gateway to smart grid intelligence, education and news. - IEEE Smart Grid standards: More than 100 standards spanning smart grid spectrum - IEEE Smart Grid Conferences: IEEE hosts conferences annually - IEEE Smart Grid Transactions: more than 2,500 smart grid papers in 40 journals - IEEE – PES (Power & Energy Society) Smart Grid activities 		

KEYWORDS: conceptual model, utility-consumer interconnection, power quality, DER interconnection

15 INTERNATIONAL COUNCIL ON LARGE ELECTRIC SYSTEMS (CIGRÉ)

15.1 CIGRÉ STUDY COMMITTEE D2

STANDARDIZATION ORGANIZATION			
Acronym	Name		
CIGRE, SC D2	International Council on Large Electric Systems. Study Committee D2 “Information Systems and Telecommunication”		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date			
Ending date	--		
Website	http://d2.cigre.org/		
Contacts			
	Name	Email	Telephone
Convenor	Carlos Samitier	carlos.samitier@pullnet.com	
Secretary	Maurizio Monti	maurizio.monti@rte-france.com	
Others			
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none">To facilitate and promote the progress of engineering on information and telecommunications systems for electric power systems, as well as the international exchange of information and knowledge in those fields.To add value to this information and knowledge by means of synthesizing state-of-the-art practices and developing recommendations. Focus: <ol style="list-style-type: none">The telecommunication and information needs and services in the Electricity Power Industry (for operational and non-operational applications) such as speech, data, high-speed data, video, video-conferencing, Internet, telecontrol in fixed or mobile environments.The networks, media and devices needed to support the above mentioned services.The transmission methods and the networking required to fulfil in an efficient way those EPI needs.The processes on data collection, validation, storage, retrieval and management.The requirements on information and telecommunication systems and services: flow-control, security, economy, transparency, regulation, quality, delay, integrity etcetera. Activities:			

SC D2 develops technical knowledge using two methods:

- Continuous work on technical issues, conducted by its Working Bodies.
- Discrete events like Colloquiums, Conferences and Meetings, where Papers are produced and discussed.

At present the SC D2 is composed of the following active Working Groups:

- D2.31: Security architecture principles for digital systems in Electric Power Utilities (EPUs).
- D2.32: Optical Cables Links in Power Utilities - Mounting, Commissioning, Maintenance and Management.
- D 2.33: Operation & Maintenance of Telecom network and associated information systems in the Electrical Power Utility.
- D 2.34: Telecommunication and Information Systems for Assuring Business Continuity and Disaster Recovery.
- D 2.35: Scalable Communication Transport Solutions over Optical Networks.
- JWGB5/D 2.46: Application and management of cyber security measures for Protection & Control systems.
- D 2.36: Communication solutions for information exchange in the smart delivery of electrical energy.

The main dissemination activities performed by this Committee are:

- In the odd numbered years SC D2 traditionally holds a Colloquium on selected Preferential Subjects jointly with its annual Meeting.
- The biennial Session held in Paris every even numbered year (covering the full scope of CIGRE, with its 16 Committees).

Comments

There is almost no information available on SC D2 activities.

KEYWORDS: telecommunications, cybersecurity, information exchange

15.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SCD2 2008 001	Relevance	M
Standardization organization to which the document is related	CIGRE WG D2.24		
Document title	CIGRE WG D2.24 EMS Architectures of the 21st Century		
Document reference and/or version	--	Date	2008
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Transmission		

Priority Topic or Use Case	
Brief content description	<p>Presentation of the Working Group D2.24, “Energy Management Systems Architectures for the 21st century”; scope, goals and objectives, design principles, roadmap, business domain architecture, tasks and deliverables, etc.</p> <p>Scope: real-time systems associated with transmission and market operations, extendable to generation and distribution. To set the vision and requirements, not the standards.</p>
Comments	This Working Group is currently disbanded (2011).

KEYWORDS: Energy Management System (EMS), CIM, business domain architecture

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SCD2 2011 002	Relevance	M
Standardization organization to which the document is related	CIGRE Study Committee D2		
Document title	Study Committee D2 Annual Report 2011		
Document reference and/or version	--	Date	2012/01/03
Document type	Other: Annual report	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	DER integration, smart metering		
Brief content description	<p>Description of the most relevant activities related to SC D2 occurred in 2011; Strategic Direction, Technical Activities and Administrative Activities.</p> <p>It is indicated that the creation of a Working Group focused on “Smart Grid and communication of microgrid” will be considered as result of the discussions started in the SC D2 regular meeting.</p>		

KEYWORDS: SCADA, substation automation, security architecture, cybersecurity

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SCD2 2013 003	Relevance	L
Standardization organization to which the document is related	CIGRE SC D2		
Document title	Study Committee D2.		

	Terms of Reference of Working Bodies		
Document reference and/or version	--	Date	2013/03/29
Document type	Others: Terms of Reference	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution, Smart Grids, Telecommunications		
Priority Topic or Use Case	DER integration, smart metering		
Brief content description	<p>This document provides the list of all Working Bodies within SC D2, both disbanded and active ones.</p> <p>Some relevant information about each Working Group is provided, e.g. scope, deliverables and proposed time schedule of the group.</p> <p>Working groups:</p> <ul style="list-style-type: none"> ▪ WGD2.18, Metering, CRM/CIS and revenue protection functions ▪ WGD2.22, Treatment of information security for electric power utilities ▪ WGD2.23, The use of Ethernet technology in the power utility environment ▪ WGD2.24, EMS architecture for the 21st century ▪ WGD2.25, Information and communication systems in the deregulation of the electricity sector ▪ WGD2.26, Telecom service delivery model, architecture, management and support in the electrical power utility ▪ WGD2.27, Power line carrier channel modeling, planning and usage ▪ WGD2.28, Communication architecture for IP-based substation applications ▪ WGD2.29, Communication access to electrical energy consumers and producers ▪ JWGB5/D2.30, Communications for HV substation protection and wide area protection applications ▪ WGD2.31, Security architecture principles for digital systems in electric power utilities (EPUs) ▪ WGD2.32, Optical cables links in power utilities – Mounting, commissioning, maintenance and management ▪ WGD2.33, Operation and maintenance of telecom network and associated information systems in the electrical power utility ▪ WGD2.34, Telecommunication and information systems for assuring business continuity and disaster recovery ▪ WGD2.35, Scalable communication transport solutions over optical networks ▪ WGD2.36, Communication solutions for information exchange in the smart delivery of electrical energy ▪ WGD2.37, Guidelines for outsourcing managed security services using cloud technologies ▪ WGD2.46, Application and management of cyber security measures for protection & control systems 		

KEYWORDS: information security, communication architecture, smart metering

16 AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE)

STANDARDIZATION ORGANIZATION			
Acronym	Name		
ASHRAE	American Society of Heating, Refrigeration and Air-conditioning Engineers		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	--		
Ending date	--		
Website	https://www.ashrae.org/standards-research--technology/standards--guidelines		
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <p>To develop standards for both its members and others professionally concerned with refrigeration processes and the design and maintenance of indoor environments.</p> <p>ASHRAE writes standards for the purpose of establishing consensus for:</p> <ol style="list-style-type: none"> 1) methods of test for use in commerce and 2) performance criteria for use as facilitators with which to guide the industry. <p>Focus:</p> <p>ASHRAE does not write rating standards unless a suitable rating standard will not otherwise be available.</p> <p>Consensus standards are developed and published to define minimum values or acceptable performance, whereas other documents, such as design guides, may be developed and published to encourage enhanced performance.</p> <p>ASHRAE is accredited by the American National Standards Institute (ANSI) and follows ANSI's requirements for due process and standards development.</p> <p>Activities:</p> <p>ASHRAE publishes the following three types of voluntary consensus standards:</p> <ul style="list-style-type: none"> - Method of Measurement or Test - Standard Design 			

- Standard Practice

Comments

17 KOREA

17.1 KOREAN AGENCY FOR TECHNOLOGY AND STANDARDS (KATS)

STANDARDIZATION ORGANIZATION			
Acronym	Name		
KATS	Korean Agency for Technology and Standards Smart Grid Standardization Forum		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2010/06/03 (forum launch ceremony)		
Ending date	--		
Website	http://www.kats.go.kr/english/index.asp		
Contacts			
	Name	Email	Telephone
Convenor	Park Jong-guen		
Secretary			
Others			
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none"> 1. The forum was launched with the aim to support the Jeju Smart Grid Test Bed Consortium's standard development activities and strengthen cooperation with private standardization bodies 			
Focus: <ol style="list-style-type: none"> 1. Establish a smart grid standardization action plan 2. Ensure the successful implementation of smart grids in Korea 3. Ensure the secure interoperability between systems 4. Strengthen the private sector's cooperation for standardization 			

Activities:

1. Six subcommittees on developing standards on the five major smart grid domains designated by the government: Smart power grid, smart consumer, smart transportation, smart renewable, smart electricity service.
2. The most important topics suggested by KATS for consideration include:
 - ✓ The need to understand technical regulations
 - ✓ How standards can have positive and negative effects on competition and international trade
 - ✓ How global interoperability standards can result in new trade barriers

Comments

There is almost no information available.

KEYWORDS: action plan, interoperability

17.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG KATS 2011 001	Relevance	M
Standardization organization to which the document is related	NIST (National Institute of Standards and Technology) KATS (Korean Agency for Technology and Standards)		
Document title	Advancing International Smart Grid Standards Collaboration		
Document reference and/or version	--	Date	2011/07/01
Document type	Others: Article	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>This article explains the progress toward international smart grid interoperability standards collaboration.</p> <p>The international outreach group from NIST drafted a letter of intent to the Korea Smart Grid Standardization Forum (KSGSF) with the goal of coordinating SGIP (Smart Grid Interoperability Panel) standardization efforts with KSGSF standards development activities.</p> <p>The letter of intent proposes an approach for enhancing collaboration to help assure that smart grid interoperability standards are applicable across the widest possible range of global applications.</p>		

KEYWORDS: interoperability, letter of intent, standards collaboration

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG KATS 2010 002	Relevance	VL
Standardization organization to which the document is related	KATS		
Document title	Smart Grid Standardization Forum' Launched - Forum to Support Jeju Smart Grid Bed Consortium		
Document reference and/or version	--	Date	2010/07/14
Document type	Others: Article	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Description of the Smart Grid Standardization Forum launch.</p> <p>This forum will establish a smart grid standardization action plan to ensure the successful implementation of smart grids in Korea, secure interoperability between systems, and strengthen the private sector's cooperation for standardization.</p>		

KEYWORDS: action plan, interoperability

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG KATS 2012 003	Relevance	M
Standardization organization to which the document is related	KATS		
Document title	Korean activities on Smart Grid and Energy Storage System		
Document reference and/or version	--	Date	2012/10/05
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			

Brief content description	<p>Presentation on the Korean activities on Smart Grid and Energy Storage System (ESS).</p> <p>The most relevant topics included are:</p> <ul style="list-style-type: none"> - Brief history - Activities on SG and ESS: <ul style="list-style-type: none"> ✓ JEJU island demonstration project ✓ Master Plan ✓ Standardization System ✓ Framework and Roadmap 1.0 ✓ The Smart Grid promotion law ✓ ESS as the Smart Grid enabler - Next steps
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KEYWORDS: roadmap, energy storage

17.2 KOREAN SMART GRID ASSOCIATION (KSGA)

STANDARDIZATION ORGANIZATION			
Acronym	Name		
KSGA	Korea Smart Grid Association Smart Grid Standardization Forum		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	2009/05/21		
Ending date	--		
Website	http://www.ksmartgrid.org/eng/sub1/sub3.asp		
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
Scope: <ol style="list-style-type: none"> Development of Smart Grid projects and encouragement of the use of Smart Grid electricity transmission system/renewable energy in order to contribute to national economy growth and to higher quality of life. 			
Focus: <ol style="list-style-type: none"> Projects for the establishment of Smart Grid infrastructure 			

2. Research and analysis on Smart Grid 3. Role as a mediator between the government and private-sector stakeholders 4. Standardization project: ✓ Establishing system for development of standardization and infrastructure ✓ Analyzing information & international cooperation on standardization ✓ Creating Smart Grid standards 5. Smart Grid expert training programme
Activities: 1. Organization of the annual Korea Smart Grid Week with the goal of testing the world's finest smart grid technologies and discovering viable business models. In these workshops experts from China, Japan, Korea and the United States share recent research on smart grid technology and standards. Participants discuss global standardization trends for smart grids as well as the standardization efforts of individual participating countries. In addition, participants seek ways to promote international cooperation.
Comments There is almost no information available.

KEYWORDS: smart grid infrastructure, renewable energy, standardization trend

17.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG KSGA 2012 001	Relevance	M
Standardization organization to which the document is related	KSGA		
Document title	Korea Smart Grid Association		
Document reference and/or version	--	Date	2012/07/24
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	Presentation on the Korea Smart Grid Association (KSGA). The most relevant topics included are: <ul style="list-style-type: none"> - Purpose of establishment - Member companies - Major tasks, one of them directly related to standardization activities: 		

	<ul style="list-style-type: none"> ✓ Operating the office of the Korea Smart Grid Standardization Forum ✓ Setting up SG standard & infra on standardization ✓ Analyzing information & making international cooperation on standardization - Involvement in Smart Grid Standardization Forum and Korea Smart Grid Week - Smart Grid cooperation agreements
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KEYWORDS: standardization cooperation, standardization forum

18 JAPAN

18.1 JAPANESE INDUSTRIAL STANDARDS COMMITTEE (JISC). SUBCOMMITTEE ON SMART GRID INTERNATIONAL STANDARDIZATION

STANDARDIZATION ORGANIZATION			
Acronym	Name		
JISC	Japanese Industrial Standards Committee: - Study Group on International Standardization for Next Generation Energy Systems - Subcommittee on Smart Grid International Standardization		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	Study Group on International Standardization for Next Generation Energy Systems (2009) Subcommittee on Smart Grid International Standardization (Early 2012)		
Ending date	--		
Website	http://www.jisc.go.jp/eng/		
Contacts			
	Name	Email	Telephone
Convenor	Tamotsu Nomakuchi		
Secretary			
Others			
Scope – Focus – Description of activities			
Scope: 1. Development of a roadmap for Japan’s contribution to international standardization activities in Smart Grid area.			
Focus: 1. Development of a big picture of the Smart grid 2. Definition of several business fields that make up the big picture			

3. Identification of the key systems in which Japan is interested
4. Selection of 26 focus areas in which Japan can contribute to international standardization
5. Study of standardization strategies for the priority areas

Activities:

1. Make a roadmap for most important areas
2. Take a systems approach
3. Participate in development of standards and regulations
4. Contribute to certification process
5. Coordinate with international standardization initiatives

Comments

There is almost no information available.

KEYWORDS: roadmap, certification process, standardization strategy

18.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG JISC 2012 001	Relevance	L
Standardization organization to which the document is related	JISC		
Document title	Policy on International Standardization in Japan		
Document reference and/or version	--	Date	2012
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>General overview of the policy of standardization in Japan.</p> <p>Description of the most relevant standardization activities. In particular, Promotion of International standardization corresponding to the global issues – Standardization for Smart Grid</p>		

KEYWORDS: standardization activities

STANDARDIZATION ORGANIZATION DOCUMENT

STARGRID ID	STG JISC 2010 002	Relevance	L
Standardization organization to which the document is related	JISC		
Document title	Smart Grid Standardization Activities in Japan		
Document reference and/or version	--	Date	2010/11/11
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The most relevant issues covered in this presentation are:</p> <ul style="list-style-type: none"> - Current situations: Japan's situation, merit and demerit of smart grids, interests of industry, conversion of discussions. - From smart grid to smart community: designing a smart community, roadmap toward smart community. - From R&D to Demonstration: technological progress, plan for demonstration projects, International collaborative projects. - Contributions to international standardization: initiatives for international cooperation, standardization activity around the world, contributions toward international standard. 		

KEYWORDS: standards cooperation, demonstration project

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JISC 2011 003	Relevance	L
Standardization organization to which the document is related	JISC		
Document title	Japan's Activity on International Standardization of Smart Grid		
Document reference and/or version	--	Date	2011/11/17
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			

Brief content description	<p>Overview of the activities on International Standardization activities in Japan.</p> <p>General presentation focused on:</p> <ul style="list-style-type: none"> - Japan's roadmap - Formation and Activity of JSCA - Smart Community project in Japan
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KEYWORDS: standardization activities, roadmap

18.2 JAPAN SMART COMMUNITY ALLIANCE (JSCA)

STANDARDIZATION ORGANIZATION			
Acronym	Name		
JSCA	Japan Smart Community Alliance International Standardization Working Group		
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other		
Establishment date	April 2010		
Ending date	--		
Website	https://www.smart-japan.org/english/tabid/103/Default.aspx		
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
Scope: 1. Promote public-private cooperative activities toward the realization of a smart community by tackling common issues such as dissemination, deployment, and research on Smart Grid standardization.			
Activities: 1. International Standardization Working Group facilitates practical activities in different areas. 2. Development of strategies for future activities. 3. Work to achieve international standardization by identifying global trends in smart grid standardization, especially in Europe and the United States. 4. Collaborative activities with organizations in Europe and the United States. 5. Standardization proposals, focusing on five Sub-Working Group (SWG) specializing in storage			

batteries, grid management, energy management systems, next-generation vehicles and communication interfaces. The five SWG have been integrated into the 26 important technological elements to be standardized, which have been advocated by the Study Group on International Standardization for Smart Grids set up by the Ministry of Economy, Trade and Industry (METI).

6. Actively participating in standardization-related international conferences such as IEC SG3 and NIST SGIP.
7. Accelerate Japan's standardization activities by proposing use cases or standardization drafts through cooperation with overseas organizations such as EPRI.

Comments

There is almost no information available.

Only some presentations about general situation in Japan on Smart Grid standardization activities.

KEYWORDS: smart community, standardization cooperation

18.2.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JSCA 2011 001	Relevance	L
Standardization organization to which the document is related	JSCA		
Document title	Japan Smart Community Alliance – Action Plan for FY2011		
Document reference and/or version	--	Date	2011
Document type	Guideline	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>Based on heightened expectations for Smart Community in terms of large-scale introduction of renewable energy and demand-response controls, the activities to be carried out in 2011 within this alliance are detailed. These activities imply:</p> <ul style="list-style-type: none"> - Working group management: International Strategy WG, International Standardization WG, Roadmap WG, Smart house WG. - Public-Private collaborative missions - Symposiums and exhibitions - Policy proposals and dissemination of information - Consistency with government organizations - Review of JSCA operating structure 		

KEYWORDS: renewable energy, demand response, smart community

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG JSCA 2012 002	Relevance	L
Standardization organization to which the document is related	JSCA		
Document title	Summary by the Smart House Standardization Study Group, JSCA International Standardization WG		
Document reference and/or version	--	Date	2012/02/24
Document type	Others: Information release	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case	Demand response, smart metering		
Brief content description	The Ministry of Economy, Trade and Industry (METI) convened the third meeting of the Smart House Standardization Study Group, which was established to promote standardization of interfaces for smart houses between (1) house energy management system (HEMS) and electrical devices at home and (2) HEMS and smart meters. METI hereby announces the summary of studied subjects so far, that was compiled at the meeting.		

KEYWORDS: demand response, smart metering, home automation, energy management

19 CHINA

19.1 STATE GRID CORPORATION OF CHINA (SGCC). SMART GRID SPECIAL WORKING GROUP

STANDARDIZATION ORGANIZATION	
Acronym	Name
SGCC	State Grid Corporation of China Smart Grid special working group
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned <input type="checkbox"/> Other

Establishment date	2009/03		
Ending date	--		
Website	http://www.sgcc.com.cn/ywlm/index.shtml		
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
Scope: 1. Identify the requirement of smart grid and its gaps with existing standards.			
Focus: 1. Organize an open and well established standard architecture.			
Activities: 1. Study of 781 existing international standards and 769 existing domestic standards. 2. SGCC Research Report on Smart Grid Standard Framework and Roadmap has been released. This smart grid standard framework and roadmap is suitable for China’s national characteristic. 3. Update of this framework based on the future requirements for smart grid construction and technological development. 4. Development of corporate standards. Up to November 2011, 137 corporate smart grid standards were issued. 5. Actively participate in the formation of industrial and national standardization in China. In November 2011, SGCC was involved in the development of 4 China’s national standards and 22 industrial standards in smart grid related fields. Active engagement in developing global smart grid standards. Up to November 2011, SGCC had submitted 13 smart grid international standard proposals to IEC, primarily on smart grid interface, demand response and smart grid dispatching. SGCC has the leading role in developing IEEE’s Standard for Test Procedures for Electric Energy Storage Equipment and Systems for Electric Power Systems Applications.			
Comments			
There is almost no information available.			
KEYWORDS: corporate standards, roadmap			

19.1.1 ASSOCIATED DOCUMENTS

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID	STG SGCC 2011 001	Relevance	L

ID			
Standardization organization to which the document is related	SGCC		
Document title	Smart Grid implementation & standardization in China		
Document reference and/or version	--	Date	2011/11
Document type	Meeting presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The most relevant issues covered in this presentation are:</p> <ul style="list-style-type: none"> - Profile of State Grid Corporation of China - Overview of Smart Grid development in SGCC - The progress of SGCC in Smart Grid standardization 		

KEYWORDS: standardization activities

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCC 2010 002	Relevance	L
Standardization organization to which the document is related	SGCC		
Document title	SGCC Framework and Roadmap for Strong & Smart Grid Standards		
Document reference and/or version	--	Date	2010/06
Document type	Roadmap	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<p>The report expounds the principles, concept model and overall structure of the standard framework, and puts forward a smart grid standard framework and roadmap suitable for China's national characteristics.</p> <p>It consists of 8 domains (overall planning, power generation, transmission, substation, distribution, utilization, dispatching and ICT), 26 technical fields and 92 series of standards.</p> <p>The framework is subjected to amendment based on the future requirement for</p>		

	smart grid construction and technological development.
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KEYWORDS: standards framework, roadmap

STANDARDIZATION ORGANIZATION DOCUMENT			
STARGRID ID	STG SGCC UUUU 003	Relevance	M
Standardization organization to which the document is related	SGCC – European Companies		
Document title	European Business in China – Position paper Smart Grid sub-working group		
Document reference and/or version	--	Date	--
Document type	Position paper	Available in STARGRID (Y/N)	Y
Domain or system category	Smart Grids		
Priority Topic or Use Case			
Brief content description	<ul style="list-style-type: none"> - Introduction to the sub-working group formed in January 2010 to help European companies respond to the market growth and policy changes in China's smart grid sector. - Description of its developments: The framework and roadmap issued by SGCC serves as the guideline to develop corporate smart grid standards, as well as being an important reference for industrial, national and international standards. - Establishment of some key recommendations: Facilitate Smart Grid project participation and coordinate standardization and certification processes. 		

KEYWORDS: standardization roadmap, certification process

19.2 NATIONAL SMART GRID STANDARDIZATION PROMOTION GROUP

STANDARDIZATION ORGANIZATION	
Acronym	Name
NEA/SAC NSGSPG	National Energy Administration and Standardization Administration of China National Smart Grid Standardization Promotion Group
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Disbanded <input type="checkbox"/> Planned

	<input type="checkbox"/> Other		
Establishment date	2010/11		
Ending date	--		
Website			
Contacts			
	Name	Email	Telephone
Convenor			
Secretary			
Others			
Scope – Focus – Description of activities			
<p>Scope:</p> <ol style="list-style-type: none"> 1. Coordinate the efforts carried out by numerous players involved in the development of Smart Grid standards in China. The group is hosted by CEPRI, China Electric Power Research Institute. <p>Focus:</p> <ol style="list-style-type: none"> 1. Formulation of a standard framework and strategic plan. 2. Management and guide for the development of national and industrial standards 3. This working group initiative includes three sub-working areas: <ul style="list-style-type: none"> - Standardization - Grid equipment - International cooperation 			
Comments			
There is no public information available.			

KEYWORDS: standards framework, international cooperation

APPENDIX A: COMMITTEES INFORMATION

This Annex gives further information of the main Technical Committees involved in the preparation of standards to support the smart grid development. It covers IEC, ISO and CENELEC.

IEC TC 1

a) Title of TC: Terminology

b) Scope

TC1 is a semantic committee whose scope is to sanction the terms and definitions used in the different electrotechnical fields and to determine the equivalence of the terms used in the different languages. As a consequence, its task is to prepare the International Electrotechnical Vocabulary (IEV) aiming at the standardization and co-ordination of the terms relating to electrical sciences and techniques for use in the technical language and literature, in technical specifications and in commercial exchanges, and at giving their equivalents in the different languages.

The IEV is subdivided into different Parts. Up to now, more than 80 Parts have been published, classified in the following subjects:

General concepts;

Materials;

Measurement, regulation and calculation;

Electric equipment;

Electronic equipment;

Generation, transmission and distribution of electric energy;

Telecommunications;

Particular applications.

TC 1 has the overall responsibility for preparing the IEV and forwarding the corresponding data, in their French and English versions, to IEC Central Office for its publication. All other IEC Technical Committees must ensure that their own terms and definitions will not be in contradiction with those from the IEV.

As a rule, the preparation of an IEV Part is entrusted by TC 1 to a particular technical committee i.e. either one of the other "semantic" committees or a product committee. In that case, the drafts are prepared by a Joint Working Group of this Technical Committee in co-operation with TC1 Secretariat, and (with the exception of the Committee Draft) are circulated under the control of TC1 and with a TC1 number.

IEC TC 3/CLC SR 3

a) Title of TC: Information structures, documentation and graphical symbols

b) Scope

In the field of installations, systems and product engineering TC 3 deals with information structures, documentation and documents as well as with graphical symbols for use in

diagrams and graphical symbols for use on equipment. The term "information structures" is used to convey the message that the management of information generally is today a dominating aspect of the work compared to earlier focus on manually prepared documents.

The following areas are being dealt with:

- 1) Rules for structuring (of objects, documents and documentation) and rules for identification systems
- 2) Rules for the preparation and presentation of the information content of documents
- 3) Rules for document and documentation management
- 4) Graphical symbols for diagrams
- 5) Graphical symbols for use on equipment
- 6) Information modelling for the application of Computer-Aided systems
- 7) Classification of product concepts according to product properties (data element types)
- 8) Formal definitions associated with objects within their life cycle

c) Subcommittee

IEC/SC 3D/CLC SR 3D - Product properties and classes and their identification

To prepare standards for the electrotechnical and related fields regarding methods and rules associated with the handling of information in computer sensible form, referring to:

- definition of data element types and data sets for use in information models and technical documentation, and for exchange of technical information.

IEC TC 8/CLC TC 8

a) Title of TC: System aspects for electrical energy supply

b) Scope

The TC 8 scope is to prepare and coordinate, in co-operation with other TC/SCs, the development of international standards and other deliverables with emphasis on overall system aspects of electricity supply systems and acceptable balance between cost and quality for the users of electrical energy. Electricity supply system encompasses transmission and distribution networks and connected user installations (generators and loads) with their network interfaces.

The following list contains a couple of examples on system related aspects and elements belonging to the overall process of electricity supply. The purpose of this non-exhaustive list is to illustrate, in which fields expertise is required within TC 8, in order to enable the committee to properly fulfil its given task. It is not meant to be a list of items to be standardized.

Examples for main system aspects to be taken into account are the following:

▶ **Terminology**

▶ **Electrical system reliability:**

- planning,
- operating limits (capability),
- adequacy,
- system security,

▶ **Network responsibility:**

- operational safety,
- security

▶ **Metering**

► **Connection practices:**

- generators,
- loads,
- system characteristics
- system planning data (different opportunities for connection),

► **Data exchange and balancing:**

- data acquisition and aggregation,
- settlement,
- exchange of data, identification schemes,
- billing,
- load profiles.

► **Operation:**

- load/generation balance,
- protection and control,
- fault management,
- contingency planning,
- management of abnormal and emergency conditions (black-out, islanding),
- measurement and monitoring.

► **Communication:**

- operational safety,
- security

► **Charging mechanisms for use of public supply systems**

► **Outsourcing of network related services**

► **Characteristics of energy supply:**

- Nominal values and ranges of variation of voltages, currents and frequencies of generation, transmission, distribution and utilization systems.
- Parameters defining characteristics of energy supplied (continuity, voltage dips, over/under voltages, voltage unbalance, voltage fluctuations, harmonics, inter-harmonics) at the interfaces between HV, MV and LV networks and their users (system operators, generators and consumers).

c) Working Groups of IEC/TC 8

TC 8 has been organized as follow, in order to take into account properly the above described aspects:

■ **Basics for system aspects:**

WG 1: “Terminology”

MT 1: “Maintenance of the standards IEC 60038, IEC 60059 and IEC 60196” Provide the definition of a list of terms permitting a common understanding of essential notions within the TC8 scope.

■ **Criteria for planning and operation performance:**

WG 2: “HV systems and transmission aspects”

WG 2 will take the lead on providing coordination (and/or developing) with respect to technical reports and/or standards related issues surrounding HV, EHV and UHV transmission, generally over 50kV. It will also provide recommendations to the TC8 in coordinating or facilitating the development of IEC documents- technical reports or standards by other TCs to ensure that all facets of HV system aspects are adequately addressed.

WG 3: “MV-LV systems and distribution aspects”

PT 1: “Connection of distributed generation to distribution network”

■ **Requirements for Smart Grid:**

AHG 4: Smart Grid requirements (*disbanded and replaced by WG 5 and WG 6)

WG 5: “Methodology and Tools” – To provide Methodology and Tools for the Use Case

Approach in Standardization, with the following standard structure:

Part 1: Use Case Approach – Motivation and Processes

Part 2: Definition of Use Case Template, Actor List and Requirements List for Energy Systems

Part 3: XML schemes related to the use cases template in order to support tools which can provide a better import and export of use cases to UML tools

Part 4: Methodology and team organization to develop Use Cases

WG 6: “Generic Smart Grid Requirements”

To launch a large series of small projects, each of them will lead to the publication of a generic use case document pertaining to a specific smart grid application. A task team for each of those projects will be established. Relevant experts from application domain TCs or from outside will be recruited to provide “Generic Smart Grid Requirements” with the following proposed standard structure:

Part 1: Specific application of Method & Tools for Smart Grid

Part 2: Business Process Generic Use Cases (with options)

Part 3: Smart Grid functions

Part 4: informative Annex: Domain Core Team reports (for traceability).

d) Working Group(s) of CLC/TC 8X

CLC/TC 8X/WG 01: Physical characteristics of electrical energy (former BTTF 68-6) – is responsible to prepare standards concerning “Voltage characteristics of electric TV supplied by public distribution systems” (CLC EN 50160)

CLC/TC 8X/WG 03: Requirements for connection of generators to distribution networks - connection criteria to public distribution networks; - protection criteria (control, switching and protection equipment) - safety criteria; - installation criteria

CLC/TC 8X/WG 04: Ah WG 38 - Endorsement of IEC 60038 as European Standard – is responsible to prepare the withdrawal of CLC HD472 and CENELEC Guide 6 as well as the Common Modifications needed to endorse IEC 60038 as EN, such as removal of voltages not applicable in Europe

CLC/TC 8X/WG 06: System aspects for HVDC grid - to host UK NP To prepare actions to respond to the EC Mandate to come To coordinate with IEC AHG4 “Smart Grid requirements”.

IEC TC 13/CLC TC 13

a) Title of TC: Electrical energy measurement, tariff- and load control

b) Scope

TC 13 is responsible for electrical energy measurement, tariff- and load control. Electricity metering equipment is used to measure and control electrical energy and demand in power stations, along the transmission, distribution and supply network, and at industrial, commercial and residential customers. Metering systems provide data for various purposes including but not limited to billing, market and network operation, energy

management, and customer information

c) Working Group(s) of IEC

The work is carried out in four working groups:

WG 11: “Electricity metering equipment” - is responsible to develop standards for requirements, type test and acceptance test for electricity metering equipment.

WG 13: “Dependability of electricity metering equipment” - is responsible to develop standards relating to the dependability of electricity metering equipment.

WG 14: “Data exchange for meter reading, tariff and load control” – is responsible to establish Standards, by reference to ISO/OSI Standards, necessary for data exchanges by different communication media, for automatic meter reading, tariff and load control, and consumer information. The media can be either distribution line carrier (DLC), telephone (including ISDN), radio or other electrical or optical system and they may be used for local or remote data exchange.

WG 15: “Electricity metering - Payment systems” – is responsible to prepare standards on payment electricity metering systems (excluding the use of coin operated meters) taking account of the aspects of secure revenue collection and considering existing systems in IEC member countries.

d) Working Group(s) of CLC

CLC/TC 13/WG 01: Electricity meters for active energy of class a, b and c – is responsible to prepare harmonized European Standards for electricity meters for active energy to cover the following Essential Requirements of the Measuring Instruments Directive 2004/22/EC (MID): allowable errors, climatic, mechanical and EMC environments, repeatability, discrimination and sensitivity, suitability, protection against corruption, information to be borne by and to accompany the instrument, indication of result.

CLC/TC 13/WG 02: Data models and protocols for additional functionality of and data exchange in interoperable multi-utility smart metering systems – is responsible to prepare standards and technical reports for data models and protocols for additional functionality of and data exchange in interoperable multi-utility smart metering systems, with a special emphasis on flexibility of the architecture, functional extensibility, scalability, interoperability and data security.

IEC TC 17/CLC TC 17AC

a) Title of TC: High-voltage switchgear and controlgear

b) Scope

The scope of TC 17AC is to establish and maintain standards on

- high-voltage switchgear and controlgear for rated voltages > 1 kV AC or > 1.5 kV DC,
- prefabricated assemblies of switchgear and associated components,
- gas-insulated transmission lines.

IEC TC 21/ TC 21X

a) Title of TC: Secondary cells and batteries

b) Scope

To prepare product standards for all secondary cells and batteries, irrespective of type or application. The requirements cover all aspects: safety installation principles, performance, dimensions, labelling. All electrochemical systems are considered. To support other technical committees standardizing application oriented systems using secondary cells and batteries.

IEC TC 22/CLC TC 22X

a) Title of TC: Power Electronic Systems and Equipment

b) Scope

TC 22 is the IEC Technical Committee that is responsible for all standards on power electronic converters. All aspects like definitions, naming conventions, safety aspects (electrical, thermal, energy and functional) for their applications, insulation, testing, system integration, energy management and efficiency and electromagnetic compatibility are included.

Product related basic standards applicable to all kinds of power electronic converters are under direct responsibility of TC 22. The subcommittees of TC 22 cover important product groups like shown in their titles. Characteristic for most of these product groups is the dominance of the power electronic converter within the product/system. For such products the subcommittees cover also the system aspects.

The group safety function of TC 22 also covers many aspects of power electronic converters incorporated in systems, which are covered by separate technical committees. TC 22 is prepared to start new subcommittees for new fields of applications and is also open for an active cooperation with other Technical Committees dealing with products or systems incorporating power electronic converters.

c) Subcommittee

IEC/SC 22F - Power electronics for electrical transmission and distribution systems

Standardization of electronic power conversion and/or semiconductor switching equipment and systems including the means for their control, protection, monitoring, cooling and other auxiliary systems and their application to electrical transmission and distribution systems.

NOTE Typical examples are power electronic equipment for flexible a.c. power transmission (controlled series capacitors, unified power flow controllers, etc), converters and associated equipment for high-voltage direct current (HVDC) systems irrespective of d.c. voltage level,

reactive power compensation means (static VAR compensators, STATCOM, etc), power electronic equipment for smart grids, connection to electrical transmission and distribution systems of renewable and distributed power generation (wind farms, solar stations, etc) including the standardization of system-related features of d.c. systems with d.c. voltages 100 kV and lower, as well as other applications where power electronics is used, e.g., phase shifters and active filters

IEC TC 38/CLC TC 38

a) Title of TC: Instrument Transformers

b) Scope

Standardisation in the field of AC and/or DC current and/or voltage instrument transformers, including their subparts like (but not limited to) sensing devices, signal treatment, data conversion and analog or digital interfacing. More recently TC38 has started the issue of the new layout of Instrument Transformers Standards, including a General Requirements document and several Specific Requirements documents.

c) Working Group(s)

WG 34: "Specific Clauses for Combined Transformers - future IEC 61869-4"- is responsible to rewrite the existing 60044-3 product standard to bring into line with the new Common Clause document

WG 35: "Specific Clauses for Capacitive Voltage Transformers - Future IEC 61869-5" " - is responsible to rewrite the existing 60044-5 product standard to bring into line with the new Common Clause document

WG 37: "Specific Clauses for Electronic Voltage Transformers (future IEC 61869-7), for Electronic Current Transformers (future IEC 61869-8) and Digital Interface for Instrument Transformers (future IEC 61869-9) - is responsible to rewrite the existing 60044-7 and 60044-8 product standards to bring into line with the new Common Clause document

WG 42: "Ferroresonance oscillation in Substations" - is responsible to prepare a Technical Report, to be published as IEC 61869-102 TR: Ferroresonance oscillation in Substations

WG 45: "Standard Mathematical Models for Instrument Transformers" - is responsible to prepare Standard Mathematical Models for Instrument Transformers, to be used for network simulations and protective relays testing purpose

WG 46: "Current and Voltage sensors or detectors to be used for fault passage indication purposes" - is responsible to develop international standards on current and voltage sensors or detectors, to be used for fault passage indication purposes

WG 47: "Evolution of IT ratings for the modern market" - is responsible to prepare the evolution of ratings and associated requirements contained in TC38 standards, to take into account the technological evolution of devices traditionally connected to Instrument Transformers (meters, protective relays, etc.) as well as the new needs associated to emerging new applications (e.g. power quality measurement).

IEC TC 57/CLC TC 57

a) Title of TC: Power system management and associated information exchange

b) Scope

To prepare international standards for power systems control equipment and systems including EMS (Energy Management Systems), SCADA (Supervisory Control And Data Acquisition), distribution automation, teleprotection, and associated information exchange for real-time and non-real-time information, used in the planning, operation and maintenance of power systems. The special conditions in a high voltage environment have to be taken into consideration.

c) Working Groups

WG 01: "Smart grid mandate M/490"

To address the European mandate M/490 standardisation request, i.e.

To prepare the work packages for IEC TC57 and co-ordinate European experts working at IEC level to produce the expected material

In order to avoid parallel work in IEC TC57 and CENELEC TC57, the work shall be preferably done on IEC level. In detail formal standards (IS documents) shall be published by IEC, technical reports may be published by CENELEC

To bring – if necessary – new work item proposals (through national committees or secretary) to IEC TC57 - To update the standardisation programme of work, as requested by the SGCG-FSS team, for the part concerning TC57

To contribute to promote the IEC TC57 deliverables in the SGCG - "First set of standards" report. The working group shall be disbanded after mandate's end.

WG 03: "Telecontrol protocols"

WG 09: "Distribution automation using distribution line carrier systems"

WG 10: "Power system IED communication and associated data models To develop communication standards for substations - Functional architecture and general requirements" - is responsible to develop communication standards for substations - Functional architecture and general requirements.

WG 13: "Energy management system application program interface (EMS - API)" - is responsible to produce standard interface specifications for "plug-in" applications for an electric utility power control center. Energy Management System (EMS) or other system performing the same or similar functions. A "plug-in" application is defined to be software that may be installed on a system with minimal effort and no modification of source code. This standard facilitates installation of the same application program on different platforms by reducing the efforts currently required.

WG 14: "System interfaces for distribution management (SIDM)" - is responsible to identify and establish requirements for standard interfaces of a Distribution Management System (DMS) based on an interface architecture. The standard is the first in a series of standards that, taken as a whole, define interfaces for the major elements of Distribution Management Systems. Subsequent standards will be developed in accordance with the interfaces defined in this task.

WG 15: "Data and communication security"

WG 16: "Deregulated energy market communications"

WG 17: "Communications systems for distributed energy resources (DER)"

WG 18: "Hydroelectric power plants – Communication for monitoring and control"

WG 19: “Interoperability within TC 57 on long term”;
 WG 20: “Planning of (single-sideband) power line carrier systems”
 WG 21: “System interfaces and communication protocol profiles relev.

IEC TC 64/CLC TC 64
a) Title of TC: Electrical installations and protection against electric shock
b) Scope

The present scope of IEC TC 64 is to prepare International Standards - concerning protection against electric shock arising from equipment, from installations and from systems without limit of voltage; - for the design, erection foreseeable correct use and verification of all kind of electrical installations at supply voltage up to 1 kV a.c. or 1,5 kV d.c., except those installations covered by the following IEC committees: TC 9, TC 18, TC 44, TC 97, TC 99. The standards will not cover individual items of electrical equipment other than their selection for use, taking into consideration the appropriate products characteristics and classifications. TC64 has got the safety pilot function: protection against electric shock. Therefore the respective publications in this field have the status of Basic Safety Publications.

IEC TC 65/CLC TC 65X
a) Title of TC: Industrial-process measurement, control and automation
b) Scope

To prepare international standards for systems and elements used for industrial process measurement, control and automation. To coordinate standardization activities which affect integration of components and functions into such systems including safety and security aspects. This work of standardization is to be carried out in the international fields for equipment and systems.

c) Subcommittees and working groups

IEC SC65A/CLC SR 65A - System aspects

To prepare international standards regarding the generic aspects of systems used in industrial process measurement, control and manufacturing automation: operational conditions (including EMC), methodology for the assessment of systems, functional safety, etc. WG 14: “Functional Safety Guide: IEC 61508-0” - is responsible to preparation of an introductory guide to IEC 61508 in accordance with 65A/318/NP

IEC SC65E/CLC SR 65E - Devices and integration in enterprise systems

To prepare international standards specifying:

- (1) Device integration with industrial automation systems;
- (2) Industrial automation systems integration with enterprise systems.

WG 2: “Product properties & classification” - is responsible to develop document(s) that provide a method for standardizing the descriptions of process control devices (measuring equipment) and specifies how to use the device descriptions for electronic data exchange between two computer

systems, e.g. one of a customer and one of a supplier, applying properties and lists of properties

WG 3: “Commissioning”

WG 4: “Field device tool interface specification” - This specification shall define the interfaces for both the vertical and the horizontal data flow, called Function Control and Data Access, in the framework of a Client-Server architecture.

WG 7: “Function blocks for process control and EDDL” - The WG shall address the following aspects to develop the function blocks for process control: - architecture of a device connected to the Fieldbus, - domain specific function blocks specification, - domain specific devices description, - communication mapping onto Fieldbus.

WG 8: “OPC” - Standardize a client/server software interface between client applications and industrial automation/control systems. Provide a secure, robust interface that allows the client application to browse the objects of an industrial automation or control system, to read and write properties of its objects, to invoke methods on its objects, and to subscribe to its alarms, events, and properties.

WG 9: “AutomationML - Engineering Data Exchange Format” - This working group specifies an engineering data exchange format for the engineering of data between different engineering tools (e.g. between CAE-tools and PLC-programming tools)

IEC TC 69/CLC TC 69X

a) Title of TC: Electric road vehicles and industrial trucks

b) Scope

TC69 aims to prepare international standards for road vehicles, totally or partially electrically powered from self-contained power sources, including charging infrastructure for these vehicles, and for electric industrial trucks. New developments for the 21st century, with the advent of hybrid and fuel cell vehicles, create new opportunities for the continuation of the work of TC69, maintaining its published standards and preparing new documents in the areas where such is deemed useful.

c) Working group of IEC

WG 4: “Power supplies and chargers” - Revision of IEC 60718; Connection of the vehicle to the AC supply; Connection of the vehicle to off-board charge including buffer batteries; Road side energy supply; EMC; Functional safety; Plugs and sockets; Additional supply to the vehicle for heating, cooling, etc.; Communication between the battery and the charger- Inductive coupling for battery charging.

d) Working groups of CLC

CLC/TC 69X/WG 01: A.C. charging - International standardization work for a.c. energy supply to EVs shall generally be done in the relevant IEC TC69 WG4 (concerning IEC 61851-family) in close cooperation with IEC/SC 23H/PT62196 (a.c. accessories). WG1 of CENELEC/TC69X shall deal with European specific items on a.c. charging, possibly identifying necessary differences between IEC and EN level, but intentionally keeping them as small as possible.

CLC/TC 69X/WG 02: D.C. charging - International standardization work for d.c. energy supply shall generally be done in the relevant IEC project teams (i.e. IEC/TC69/PT61851-23 and -24) in close

cooperation with IEC/SC 23H/PT62196 (regarding d.c. coupler). WG2 of CENELEC/TC69X shall deal with European specific items on d.c. charging, possibly identifying necessary differences between IEC and EN level, but intentionally keeping them as small as possible.

CLC/TC 69X/WG 03: Inductive charging - International standardization work for Wireless power transfer shall generally be done in the relevant IEC project teams (i.e. IEC/TC69/PT61980) in close cooperation with ISO where appropriate WG3 of CENELEC/TC69X shall deal with European specific items on Wireless power transfer, possibly identifying necessary differences between IEC and EN level, but intentionally keeping them as small as possible.

CLC/TC 69X/WG 04: EMC - International Standardisation work for the EMC topic shall generally be done in the relevant IEC project teams (i.e. IEC/TC69/PT61851-21 – the EMC project team) in close cooperation with IEC SC 77A and IEC SC 77B. WG4 of CENELEC/TC69X shall deal with European specific items on EMC problems due to the special grid conditions and regulations (e.g. EN 50160 (power quality), entso-e grid codes, EMC directive) in Europe and identifying necessary differences between IEC and EN level, but intentionally keeping them as small as possible. Close cooperation with CLC TC 210 and CLC TC 8X shall be established.

IEC TC 77/CLC SR 77

a) Title of TC: Electromagnetic compatibility

b) Scope

Standardization - to prepare standards and technical reports - in the field of electromagnetic compatibility (EMC), with particular emphasis on general application and use by product committees. (Horizontal function).

The scope covers the following aspects of EMC:

- Immunity and related items, over the whole frequency range: basic and generic standards,
- emission in the low frequency range ($f \leq 9$ kHz, e.g. harmonics and voltage fluctuations): basic, generic and product (family) standards,
- emission in the high frequency range ($f > 9$ kHz): disturbances not covered by CISPR 10 (1992), in co-ordination with CISPR (e.g. mains signaling).

Product immunity standards are not included. However, at the request of product committees, TC 77 may also prepare such standards under the co-ordination of ACEC. Horizontal Safety Function: Electromagnetic compatibility in so far as safety aspects are involved.

c) Subcommittees

IEC SC 77A/CLC SR 77A - EMC - Low frequency phenomena

IEC SC 77B/CLC SR 77B - High frequency phenomena

IEC SC 77C/CLC SR 77C - High power transient phenomena

IEC TC 82/CLC TC 82

a) Title of TC: Solar photovoltaic energy systems

b) Scope

To prepare international standards for systems of photovoltaic conversion of solar energy into electrical energy and for all the elements in the entire photovoltaic energy system. In this context, the concept "photovoltaic energy system" includes the entire field from light input to a solar cell to and including the interface with the electrical system(s) to which energy is supplied.

c) Working groups

WG 1: "Glossary"

WG 2: "Modules, non-concentrating" - is responsible to develop international standards for non-concentrating, terrestrial photovoltaic modules. These standards will be in the general areas of photoelectric performance, environmental test, quality assurance. The standards ultimately produced should be universal and non-restrictive in their application, taking into account different environments and manufacturing technologies. In addition to the basic electrical and mechanical characteristics, standards will be written for other important factors such as module thermal performance, high voltage performance, fault resistance and fault-tolerant design.

WG 3: "Systems" - is responsible to give general instructions for the photovoltaic system design, construction and maintenance. For each particular user's application, each activity should be the object of a separate study area. The Working Group should incorporate the existing standards on the functional blocks that are different from the photovoltaic array field, and promote the production of new specific standards when necessary.

WG 6: "Balance-of-system components" - is responsible to develop international standards for balance-of-system components for PV systems. These standards will be in the general areas of performance, safety, environmental durability (reliability), quality assurance and quality assessment criteria. The standards ultimately produced should be universal and non-restrictive in their application, taking into account different environments and manufacturing technologies. In addition to the basic electrical and mechanical characteristics, standards will be written for other important factors such as thermal performance, electromagnetic interference, and climate applicability/rating.

WG 7: "Concentrator modules" - is responsible to develop international standards for photovoltaic concentrators and receivers. These standards will be in the general areas of safety, photoelectric performance and environmental reliability tests. The standards ultimately produced should be universal and non-restrictive in their application, taking into account different environments and manufacturing technologies. In addition to the basic electrical and mechanical characteristics, standards will be written for other important factors such as thermal performance, high voltage performance, fault resistance and fault-tolerant design.

IEC TC 88/CLC TC 88

a) Title of TC: Wind turbines

b) Scope

To prepare international standards for wind turbines that convert wind energy into electrical energy. These standards address design requirements, engineering integrity, measurement techniques and test procedures. Their purpose is to provide a basis for design, quality assurance

and certification. The standards are concerned with all subsystems of wind turbines, such as mechanical and internal electrical systems, support structures and control and protection systems. They are intended to be used together with appropriate IEC/ISO standards”.

c) Working groups

WG 3: “Design requirements for offshore wind turbines” - is responsible to develop a standard on the design requirements for offshore wind turbines

WG 27: “Wind turbines - Electrical simulation models for wind power generation” - is responsible to define standard dynamic simulation models for wind turbines and wind farms, which are intended for use in power system and grid stability analyses, and should be applicable for dynamic simulations of power system events such as short circuits (low voltage ride through), loss of generation or loads, and system separation. The proposed work shall develop a standard consisting of two parts with the following scope.

Part 1 shall specify dynamic simulation models for the generic wind turbine topologies/ concepts / configurations on the market. The standard shall define the generic terms and parameters with the purpose of specifying the electrical characteristics of a wind turbine at the connection terminals. In addition the standard shall specify a metrology to create models for future wind turbine concepts.

The standard shall include procedures for validation of the models specified. The simulation models shall refer to the wind turbine connection terminals. The validation procedures shall include tests as specified in IEC 61400-21, Ed. 2, focusing response to voltage dips and set-point requests.

The electrical simulation models shall be developed to the outmost degree of independency from applied simulation tools. If simulation tool considerations are required they shall be separated in the models by a clear tool interface definition.

Part 2 shall specify dynamic simulation models for the generic wind farm topologies / configurations on the market including wind farm control and auxiliary equipment. In addition the standard shall specify a metrology to create models for future wind farm configurations.

The standard shall include procedures for validation of the specified models. The simulation models shall refer to the wind farm point of common coupling. The electrical simulation models shall be developed to the outmost degree of independency from the applied simulation tools. If specific simulation tool considerations are required they shall be separated in the models by a clear tool interface definition

IEC TC 95/CLC SR 95

a) Title of TC: Measuring relays and protection equipment

b) Scope

Standardization of measuring relays and protection equipment used in the various fields of electrical engineering covered by the IEC, taking into account combinations of devices to form schemes for power system protection including the control, monitoring and process interface equipment used with those systems.

c) Ad-Hoc Groups

AHG 2: “New protection requirements for the smart grid”

IEC TC 105/CLC SR 105
a) Title of TC: Fuel cell technologies
b) Scope

The present activities comprise six main elements:

to prepare International Standards for stationary fuel cell systems, especially for distributed small power generators and combined heat and power systems (CHPs)

to prepare International Standards for FC components and FC modules

to prepare International Standards for portable and transportable fuel cell systems,

to prepare International Standards for fuel cell systems for auxiliary power units and for propulsion other than road vehicles, including ships, aircrafts, and material handling equipment e.g. forklifts

to prepare International Standards for fuel cell systems and their integration into local infrastructures, devices and hybrid systems, especially with batteries and on the longer term with heat engines.

to follow up new developments of fuel cell and related technologies for an early detection of standardization needs as for batteries, especially for flow batteries

IEC TC 114/CLC SR 114
a) Title of TC: Marine energy - Wave, tidal and other water current converters
b) Scope

To prepare international standards for marine energy conversion systems. The primary focus will be on conversion of wave, tidal and other water current energy into electrical energy, although other conversion methods, systems and products are included. Tidal barrage and dam installations, as covered by TC 4, are excluded. The standards produced by TC 114 will address: system definition; performance measurement of wave, tidal and water current energy converters; resource characterization and assessment; design and safety requirements; power quality; manufacturing and factory testing.

c) CISPR Subcommittees:

CIS/A: "Radio-interference measurements and statistical methods"

Standardization of:

measuring instruments, ancillary apparatus and test sites;

measuring methods common to several applications;

NOTE The method of connection, arrangement and use of equipment for the measurement of a particular source of disturbance is primarily the responsibility of the subcommittee dealing with that source, but liaison is maintained with Subcommittee A to achieve the maximum coordination. treatment of uncertainties in CISPR compliance tests

sampling methods used in statistical interpretation of disturbance measurement results and used in correlating the measurement of disturbance with its effect on signal reception;

Evaluation of proposals for methods of measurement developed by other CISPR subcommittees, and consideration of those proposals for publication in CISPR basic or product standards.

CIS/I: “Electromagnetic compatibility of information technology equipment, multimedia equipment and receivers”

Standardization in the field of EMC to establish limits and particular methods of measurement for the control of radio frequency disturbances from immunity of Multimedia Equipment including Information Technology Equipment , Radio and TV Broadcast Receivers and Associated Equipment. The radio transmission aspects of MME transceivers and transmitters are excluded from the work of CISPR/I and are activities handled by other international standards organizations such as ITU-R.

IEC PC 118

a) Title of PC: Smart Grid User Interface

b) Scope

Standardization in the field of information exchange for demand response and in connecting demand side equipment and/or systems into the smart grid. PC 118 is set up to develop a harmonized and consistent suite of standards for the Users (right circle):

- ▶ In order to ensure the maximum IEC added value to the industry, and from a standard point of view, PC 118 will focus on demand side smart systems and/or energy monitoring equipments, control and management targeting at high efficiency interactions with the power grid from a User side viewpoint, while TC 57/WG21 [Interfaces and protocol profiles relevant to systems connected to the power grid] focuses on information exchange from a power grid viewpoint. More generally TC 57 (in collaboration with TC 13, TC 69, TC 8, etc...) is dealing with information exchange for the grid considering many other interfaces than User Interfaces, typically : heavy industry, bulk storage, EV charging stations connected to the distribution grid, distributed energy plants, bulk generation, ...)
- ▶ Smart grid user interface related standards prepared by other technical committees of the IEC (including IEC/ISO JTC1) shall be used where applicable. PC 118 shall apply analytical approach and Use Cases developed by IEC TC 8 for smart grid requirements. PC 118 shall use IEC CIM and IEC 61850, and will develop new information models in view of demand side needs and characteristics. PC 118 shall consider IEC TC 57, TC 13, TC 59, TC 69, TC 72, TC 100, IEC/ISO JTC1 SC25, TC 56, TC 65, etc... related architectures and standards.
- ▶ PC 118 should also consider smart grid user interface related standards prepared by other organizations such as ISO and ITU.

c) Working groups

WG1: Exchange interface between demand-side smart equipment and the grid

WG2: Power Demand Response

The following objectives of IEC PC 118 are established:

- ▶ Unify and standardize information model and communication protocol of large

amount of systems/equipments at user side to make them interact with power grid effectively.

► Develop standards to:

- Facilitate value added service provided for users by using grid side resources.
- Ensure the availability of standardised “Interface for information exchange between power grid and user side smart equipment”.
- Ensure the availability of standardised interface to support “Demand response” application.
- Ensure the openness and interoperability of formulated standards.
- Emphasise the safety of network and privacy of users.
- Ensure the quality, consistency and testability of standards for effective certification.

ISO/IEC JTC 1

ISO/IEC JTC 1/SC 6

Title of Subcommittee: Telecommunications and information exchange between systems

Standardization in the field of telecommunications dealing with the exchange of information between open systems including system functions, procedures, parameters, and equipment, as well as the conditions for their use. This standardization includes both the lower layers that support the physical, data link, network, and transport protocol and services as well as the upper layers that support the application protocols and services such as Directory and ASN.1. A vital aspect of this work is done in effective cooperation with ITU-T and other worldwide and regional standardization bodies including IEEE and IETF.

ISO/IEC JTC 1/SC 25

Title of Subcommittee: Interconnection of information technology equipment

Standardization of microprocessor systems; and of interfaces, protocols and associated interconnecting media for information technology equipment, generally for commercial and residential environments, for embedded and distributed computing environments, storage systems, and other input/output components. Development of standards for telecommunication networks and interfaces to telecommunication networks is excluded.

ISO/IEC JTC 1/SC 27

Title of Subcommittee: Information technology - Security techniques

The development of standards for the protection of information and ICT. This includes generic methods, techniques and guidelines to address both security and privacy aspects, such as:

Security requirements capture methodology;

Management of information and ICT security; in particular information security management systems (ISMS), security processes, security controls and services;

Cryptographic and other security mechanisms, including but not limited to mechanisms for protecting the accountability, availability, integrity and confidentiality of information;

Security management support documentation including terminology, guidelines as well as procedures for the registration of security components;
 Security aspects of identity management, biometrics and privacy;
 Conformance assessment, accreditation and auditing requirements in the area of information security;
 Security evaluation criteria and methodology.
 SC 27 engages in active liaison and collaboration with appropriate bodies to ensure the proper development and application of SC 27 standards and technical reports in relevant areas.

CENELEC TC 205

a) Title of TC: Home and Building Electronic Systems (HBES)

b) Scope

Home and Building Electronic System is a communication system on which elements or entities of several applications are distributed within the built environment and logically linked together via one or more networks. They consist of a specialized form of automated, decentralised and distributed process control, dedicated to the needs of home and building applications.

c) Working groups

CLC/TC 205/WG 18: "Smart grids" - is responsible to developing use cases and mapping structure for Smart Grid items in close cooperation with CENELEC TC 57. Covering the HBES related work on Smart Grid.

d) Subcommittee

CLC/SC 205A - Mains communicating systems

To prepare harmonized standards for communication systems using electricity supply lines or the wiring of buildings as a transmission medium and using frequencies above

3 kHz. This includes the allocation of frequency bands for signal transmissions on the mains

CLC/SC 205A/WG 10: "High frequency power lines" - is responsible to define standards for high-frequency power-line which will comply with existing regulations in normal (typical) conditions and which will be consistent with EN 50065-1. This will include conducted emissions, radiated emission and immunity, both internal and external to premises as well as methods of measurement and perturbations on lower frequency bands. This should also include co-existence of systems as appropriate i.e. between external and internal systems and between different internal systems.

Liaisons: CLC/TC 210, ETSI PLT, CISPR, TC 77, CLC/TC 100X, CLC/TC 23E, CLC/TC 64, TC 57/WG09.

The joint ETSI/CENELEC working group will cover some of these liaisons.

CENELEC TC 210

a) Title of TC: Electromagnetic Compatibility (EMC)

b) Scope

To prepare EMC standards and guidelines with particular emphasis on the application of the EMC Directive and other EC Directives that contain EMC references and to coordinate all EMC activities in CENELEC.

CEN TC 247**a) Title of TC: Building Automation, Controls and Building Management****b) Scope**

CEN/TC247 is responsible for the standardization of Building Automation and Controls (BAC) and Building Management (BM) including Open Data Communication for residential and non-residential buildings. These standards include the definitions, requirements, functionality and test methods of building automation products and systems for automatic control of building services installations and the primary integration measures including application interfaces, systems and services to ensure an efficient technical, commercial and infrastructural building management.

c) Working groups

CEN/TC 247/WG 3: “Building Automation and Control and Building Management Systems” - standardisation of building automation and control systems and building management for non-residential buildings. These standards include the definitions, requirements, functionality, and implementation including integration. Standardisation of building management systems integration and of technical building management services. These standards include the definitions, requirements, and functionality.

CEN/TC 247/WG 4: “Open System Data Transmission” - Standardisation of methods for Open Data Communication between products and / or systems in Building Automation and Control, as well as in Building Management

CEN/TC 247/WG 6: “Electronic control equipment for HVAC applications, integrated room automation, controls and management systems” - Standardization of electronic devices and functions for automation and controls HVAC for room, zone or central systems, including integrated room automation, controls and management devices for combined building services such as HVAC, lighting, window blind/shade, electrical power and other trades, by communication functions*. The equipment can be single or multi-functional, stand alone or connected to a data network.

APPENDIX B: LIST OF SMART GRID-RELATED STANDARDS

This Annex contains the International (IEC, ISO), European (CENELEC, CEN, ETSI) and IEEE mature standards and coming standards (drafts) and also ITU publications. The Annex will be updated on a 3 months basis.

B.1 EUROPEAN AND IEC STANDARDS

No	EN REFERENCE	IEC REFERENCE	TITLE	IEC, CENELEC, ETSI, Technical Committees	Remarks: European Mandat* M/ International Drafts /Current stage	RELEVANCE	TOPICS
1	EN 55022:2010	CISPR 22:2008 (MOD)	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	IEC/SC CISPR/I		Low	EMC
2	EN 55024:2010	CISPR 24:2010 (EQV) + corrigendum Jun. 2011 (EQV)	Information technology equipment - Immunity characteristics - Limits and methods of measurement	IEC/SC CISPR/I		Low	EMC
3	EN 55032:2012	CISPR 32:2012 (IDT)	Electromagnetic compatibility of multimedia equipment - Emission requirements	IEC/SC CISPR/I		Low	EMC
4	FprEN 55035:2012	CISPR 35:201X (CISPR/I/412/CDV) (EQV)	Electromagnetic compatibility of multimedia equipment - Immunity requirements	IEC/SC CISPR/I	DRAFT/ 5060 (Voting results established and sent to TC)	Low	EMC
5	EN 60038:2011	IEC 60038:2009, modified	CENELEC standard voltages	IEC/TC 8		High	Power Quality
6		IEC 60050-101:1998	International Electrotechnical Vocabulary. Part 101: Mathematics	IEC/TC 1		Low	Terminology
7		IEC 60050-102:2007	International Electrotechnical Vocabulary - Part 102: Mathematics - General concepts and linear algebra	IEC/TC 1		Low	Terminology
8		IEC 60050-103:2009	International Electrotechnical Vocabulary - Part 103: Mathematics - Functions	IEC/TC 1		Low	Terminology

9		IEC 60050-111:1996	International Electrotechnical Vocabulary. Chapitre 111: Physics and chemistry	IEC/TC 1		Low	Terminology
10		IEC 60050-111:1996/A1:2005	International Electrotechnical Vocabulary Chapitre 111: Physics and chemistry	IEC/TC 1		Low	Terminology
11		IEC 60050-112:2010	International Electrotechnical Vocabulary - Part 112: Quantities and units	IEC/TC 1		Low	Terminology
12		IEC 60050-113:2011	International Electrotechnical Vocabulary - Part 113: Physics for electrotechnology	IEC/TC 1		Low	Terminology
13		IEC 60050-121:/A2:2008	International Electrotechnical Vocabulary - Part 121: Electromagnetism	IEC/TC 1		Low	Terminology
14		IEC 60050-121:1998	International Electrotechnical Vocabulary. Part 121: Electromagnetism	IEC/TC 1		Low	Terminology
15		IEC 60050-131:/A1:2008	International Electrotechnical Vocabulary - Part 131: Circuit theory	IEC/TC 1		Low	Terminology
16		IEC 60050-131:2002	International Electrotechnical Vocabulary. Part 131: Circuit theory	IEC/TC 1		Low	Terminology
17		IEC 60050-141:2004	International electrotechnical vocabulary. Part 141: Polyphase systems and circuits	IEC/TC 1		Low	Terminology
18		IEC 60050-161:1990	International electrotechnical vocabulary. Chapter 161: Electromagnetic compatibility	IEC/TC 1		Low	Terminology
19		IEC 60050-161:1990/A1:1997	International electrotechnical vocabulary Chapter 161: Electromagnetic compatibility	IEC/TC 1		Low	Terminology
20		IEC 60050-161:1990/A2:1998	International electrotechnical vocabulary. Chapter 161: Electromagnetic compatibility	IEC/TC 1		Low	Terminology
21		IEC 60050-191:1990	International electrotechnical vocabulary. Chapter 191: Dependability and quality of service	IEC/TC 1		Low	Terminology
22		IEC 60050-191:1990/A1:1999	International Electrotechnical Vocabulary Chapter 191: Dependability and quality of service	IEC/TC 1		Low	Terminology
23		IEC 60050-191:1990/A2:2002	International Electrotechnical Vocabulary Chapter 191: Dependability and quality of service	IEC/TC 1		Low	Terminology
24		IEC 60050-195:1998	International Electrotechnical Vocabulary. Part	IEC/TC 1		Low	Terminology

			195: Earthing and protection against electrical shock				
25		IEC 60050-195:1998/A1:2001	International Electrotechnical Vocabulary. Part 195: Earthing and protection against electrical shock	IEC/TC 1		Low	Terminology
26		IEC 60050-212:2010	International Electrotechnical Vocabulary - Part 212: Electrical insulating solids, liquids and gases	IEC/TC 1		Low	Terminology
27		IEC 60050-221:1990	International electrotechnical vocabulary. Chapter 221: Magnetic materials and components	IEC/TC 1		Low	Terminology
28		IEC 60050-221:1990/A3 :2007	International Electrotechnical Vocabulary - Part 221: Magnetic materials and components	IEC/TC 1		Low	Terminology
29		IEC 60050-300:2001	Electrical and electronic measurements and measuring instruments	IEC/TC 1		Low	Terminology
30		IEC 60050-321:1986	International Electrotechnical Vocabulary. Chapter 321: Instrument transformers	IEC/TC 1		Low	Terminology
31		IEC 60050-351:2006	International Electrotechnical Vocabulary - Part 351: Control technology	IEC/TC 1		Low	Terminology
32		IEC 60050-371:1984	International electrotechnical vocabulary. Chapter 371: Telecontrol	IEC/TC 1		Low	Terminology
33		IEC 60050-371:1984/A1:1997	International electrotechnical vocabulary. Chapter 371: Telecontrol	IEC/TC 1		Low	Terminology
34		IEC 60050-393:2003	International electrotechnical vocabulary. Part 393: Nuclear instrumentation. Physical phenomena and basic concepts	IEC/TC 1		Low	Terminology
35		IEC 60050-394:2007	International Electrotechnical Vocabulary - Part 394: Nuclear instrumentation - Instruments, systems, equipment and detectors	IEC/TC 1		Low	Terminology
36		IEC 60050-411:1996	International Electrotechnical Vocabulary. Chapter 411: Rotating machines	IEC/TC 1		Medium	Terminology
37		IEC 60050-411:1996/A1:2007	International Electrotechnical Vocabulary - Part 411: Rotating machinery	IEC/TC 1		Medium	Terminology

38		IEC 60050-415:1999	International electrotechnical vocabulary. Chapter 415: Wind turbine generator systems	IEC/TC 1		Medium	Terminology
39		IEC 60050-421:1990	International Electrotechnical Vocabulary. Chapter 421: Power transformers and reactors	IEC/TC 1		Medium	Terminology
40		IEC 60050-426:2008	International Electrotechnical Vocabulary - Chapter 426: Equipment for explosive atmospheres	IEC/TC 1		Medium	Terminology
41		IEC 60050-431:1980	International Electrotechnical Vocabulary Chapter 431: Transducers	IEC/TC 1		Medium	Terminology
42		IEC 60050-436:1990	International electrotechnical vocabulary. Chapter 436: Power capacitors	IEC/TC 1		Medium	Terminology
43		IEC 60050-441:1984	International Electrotechnical Vocabulary. Chapter 441: Switchgear, controlgear and fuses	IEC/TC 1		Medium	Terminology
44		IEC 60050- 441:1984/A1:2000	International electrotechnical vocabulary Chapter 441: Switchgear, controlgear and fuses	IEC/TC 1		Medium	Terminology
45		IEC 60050-442:1998	International electrotechnical vocabulary - Part 442: Electrical accessories	IEC/TC 1		Medium	Terminology
46		IEC 60050-444:2002	International Electrotechnical Vocabulary. Part 444: Elementary relays	IEC/TC 1		Medium	Terminology
47		IEC 60050-445:2010	International Electrotechnical Vocabulary - Part 445: Time relays	IEC/TC 1		Medium	Terminology
48		IEC 60050-446:1983	International Electrotechnical Vocabulary. Part 446: Electrical relays	IEC/TC 1		Medium	Terminology
49		IEC 60050-447:2010	International Electrotechnical Vocabulary - Part 447: Measuring relays	IEC/TC 1		Medium	Terminology
50		IEC 60050-448:1987	International electrotechnical vocabulary. Chapter 448: Power system protection	IEC/TC 1		Medium	Terminology
51		IEC 60050-461:2008	International Electrotechnical Vocabulary - Part 461: Electric cables	IEC/TC 1		Medium	Terminology
52		IEC 60050-466:1990	International Electrotechnical Vocabulary. Chapter 466: Overhead lines	IEC/TC 1		Medium	Terminology
53		IEC 60050-471:2007	International Electrotechnical Vocabulary (IEV)	IEC/TC 1		Medium	Terminology

			- Chapter 471: Insulators				
54		IEC 60050-482:2004	International Electrotechnical Vocabulary Part 482: Primary and secondary cells and batteries	IEC/TC 1		Medium	Terminology
55		IEC 60050-521:2002	International electrotechnical vocabulary. Chapter 521: Semiconductor devices and integrated circuits	IEC/TC 1		Medium	Terminology
56		IEC 60050-531:1974	International electrotechnical vocabulary. Chapitre 531: Electronic tubes	IEC/TC 1		Low	Terminology
57		IEC 60050-541:1990	International Electrotechnical Vocabulary. Chapter 541: Printed circuits	IEC/TC 1		Low	Terminology
58		IEC 60050-561:1991	International Electrotechnical Vocabulary Chapter 561: Piezoelectric devices for frequency control and selection	IEC/TC 1		Low	Terminology
59		IEC 60050-561:1991/A1:1995	International Electrotechnical Vocabulary Chapter 561: Piezoelectric devices for frequency control and selection. Section 561-06: Surface acoustic wave filters	IEC/TC 1		Low	Terminology
60		IEC 60050-581:2008	International Electrotechnical Vocabulary - Part 581: Electromechanical components for electronic equipment	IEC/TC 1		Low	Terminology
61		IEC 60050-601:1985	International electrotechnical vocabulary. Chapter 601: Generation, transmission and distribution of electricity - General	IEC/TC 1		Medium	Terminology
62		IEC 60050-601:1985/A1:1998	International electrotechnical vocabulary. Chapter 601: Generation, transmission and distribution of electricity - General	IEC/TC 1		Medium	Terminology
63		IEC 60050-602:1983	International electrotechnical vocabulary. Chapter 602: Generation, transmission and distribution of electricity - Generation	IEC/TC 1		Medium	Terminology
64		IEC 60050-603:1986	International electrotechnical vocabulary. Chapitre 603: Generation, transmission and distribution of electricity - Power system planning and management	IEC/TC 1		Medium	Terminology
65		IEC 60050-	Amendment 1 - International Electrotechnical	IEC/TC 1		Medium	Terminology

		603:1986/A1:1998	Vocabulary. Chapter 603: Generation, transmission and distribution of electricity - Power systems planning and management				
66		IEC 60050-604:1987	International electrotechnical vocabulary. Chapter 604: Production, transmission and distribution of electricity. Operation	IEC/TC 1		Medium	Terminology
67		IEC 60050-604:1987/A1:1998	International electrotechnical vocabulary Chapter 604: Generation, transmission and distribution of electricity - Operation	IEC/TC 1		Medium	Terminology
68		IEC 60050-605:1983	International Electrotechnical Vocabulary. Chapter 605: Generation, transmission and distribution of electricity. Substations	IEC/TC 1		Medium	Terminology
69		IEC 60050-617:2009	International Electrotechnical Vocabulary - Part 617: Organization/Market of electricity	IEC/TC 8		High	Roadmap - terminology
70		IEC 60050-617:2009/A1:2011	International Electrotechnical Vocabulary - Part 617: Organization/Market of electricity	IEC/TC 1		High	Roadmap - terminology
71		IEC 60050-702:1992	Vocabulaire electrotechnique international. Chapitre 702: Oscillations, signaux et dispositifs associes	IEC/TC 1		Low	Terminology
72		IEC 60050-716-1:1995	International electrotechnical vocabulary.Chapter 716-1: Integrated digital network (ISDN). Part 1: General aspects	IEC/TC 1		High	Roadmap - terminology
73		IEC 60050-732:2010	International Electrotechnical Vocabulary - Part 732: Computer network technology	IEC/TC 1		Low	Terminology
74		IEC 60050-802:2011	International Electrotechnical Vocabulary - Part 802: Ultrasonics	IEC/TC 1		Low	Terminology
75		IEC 60050-811:1991	International electrotechnical vocabulary. Chapter 811: Electric traction	IEC/TC 1		Low	Terminology
76		IEC 60050-826:1982	International Electrotechnical Vocabulary. Chapter 826: Electrical installations of building	IEC/TC 1		Medium	Terminology
77		IEC 60050-851:2008	International Electrotechnical Vocabulary - Part 851: Electric welding	IEC/TC 1		Low	Terminology
78		IEC 60050-881:1983	International Electrotechnical Vocabulary. Part 881: Radiology and radiological physics	IEC/TC 1		Low	Terminology

79		IEC 60050-891:1998	International Electrotechnical Vocabulary. Part 891: Electrobiology	IEC/TC 1		Low	Terminology
80	EN 60255-24:2001	IEC 60255-24:2001 (EQV)	Electrical relays - Part 24: Common format for transient data exchange (COMTRADE) for power systems	IEC/TC 95		Low	Electrical Relays
81	EN 60309-1:1999	IEC 60309-1:1999 (EQV)	Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements	IEC/SC 23H		High	Electrical vehicle charging
82	EN 60309-1:1999/A1:2007	IEC 60309-1:1999/A1:2005, modified	Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements	IEC/SC 23H		High	Electrical vehicle charging
83	HD 60364-4-41:2007	IEC 60364-4-41:2005 (MOD)	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	IEC/TC 64		Medium	Electrical installations of buildings
84	HD 60364-5-51:2009	IEC 60364-5-51:2005 (MOD)	Electrical installations of buildings - Part 5-51: Selection and erection of electrical equipment - Common rules	IEC/TC 64		Medium	Electrical installations of buildings
85		IEC 60364-5-53:2001	Electrical installations of buildings. Part 5-53: Selection and erection of electrical equipment. Isolation, switching and control	IEC/TC 64		Medium	Electrical installations of buildings
86	HD 60364-5-534:2008	IEC 60364-5-53:2001/A1:2002 (Clause 534), modified	Low-voltage electrical installations - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control - Clause 534: Devices for protection against overvoltages	IEC/TC 64		Medium	Electrical installations of buildings
87	prHD 60364-5-53	IEC 60364-5-53:2002 (ed3.1)	Selection and erection of electrical equipment to provide protection, isolation, switching, control and monitoring in the field of the low voltage electrical installations (to be checked)	IEC/TC 64	DRAFT / 3099 (Decision to send to enquiry / accelerate procedure and launch vote)	Medium	Electrical installations of buildings
88		PNW 64-1886 Ed. 1.0	Smart Low-Voltage Electrical Installations	IEC/TC 65	PNW (Proposed New Work)		Electrical installations of buildings

89	HD 60364-5-54:2011	IEC 60364-5-54:2011 (EQV)	Low-voltage electrical installations -- Part 5-54: Selection and erection of electrical equipment - Earthing arrangements and protective conductors	IEC/TC 64		Medium	Electrical installations of buildings
90	HD 60364-5-551:2010	IEC 60364-5-55:2001/A2:2008 (CLAUSE 551) (EQV)	Low-voltage electrical installations -- Part 5-55: Selection and erection of electrical equipment - Other equipment -- Clause 551: Low-voltage generating sets	IEC/TC 64		Medium	Electrical installations of buildings
91	EN 60633:1999	IEC 60633:1998	Terminology for high-voltage direct current (HVDC) transmission	SC 22F		Medium	HVDC - High Voltage Direct Current
92	EN 60633:1999/A1:2009	IEC 60633:1998/A1:2009	Terminology for high-voltage direct current (HVDC) transmission	IEC/TC 22		Medium	HVDC - High Voltage Direct Current
93	EN 60834-1:1999	IEC 60834-1:1999 (EQV)	Teleprotection equipment of power systems - Performance and testing - Part 1: Command systems	IEC/TC 57		Low	Teleprotection equipment of power systems
94	EN 60870-5-1:1993	IEC 60870-5-1:1990 (EQV)	Telecontrol equipment and systems. Part 5: Transmission protocols - Section One: Transmission frame formats	IEC/TC 57		High	Telecontrol
95	EN 60870-5-101:2003	IEC 60870-5-101:2003 (EQV)	Telecontrol equipment and systems - Part 5-101: Transmission protocols - Companion standard for basic telecontrol tasks	IEC/TC 57		High	Telecontrol
96	EN 60870-5-102:1996	IEC 60870-5-102:1996 (EQV)	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 102: Companion standard for the transmission of integrated totals in electric power systems	IEC/TC 57		High	Telecontrol
97	EN 60870-5-103:1998	IEC 60870-5-103:1997 (EQV)	Telecontrol equipment and systems - Part 5-103: Transmission protocols - Companion standard for the informative interface of	IEC/TC 57		High	Telecontrol

			protection equipment				
98	EN 60870-5-104:2006	IEC 60870-5-104:2006 (EQV)	Telecontrol equipment and systems - Part 5-104: Transmission protocols - Network access for IEC 60870-5-101 using standard transport profiles	IEC/TC 57		High	Telecontrol
99	EN 60870-5-2:1993	IEC 60870-5-2:1992 (EQV)	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 2: Link transmission procedures	IEC/TC 57		High	Telecontrol
100	EN 60870-5-3:1992	IEC 60870-5-3:1992 (EQV)	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 3: General structure of application data	IEC/TC 57		High	Telecontrol
101	EN 60870-5-4:1993	IEC 60870-5-4:1993 (EQV)	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 4: Definition and coding of application information elements	IEC/TC 57		High	Telecontrol
102	EN 60870-5-5:1995	IEC 60870-5-5:1995 (EQV)	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 5: Basic application functions	IEC/TC 57		High	Telecontrol
103	EN 60870-6-2:1995	IEC 60870-6-2:1995 (EQV)	Telecontrol equipment and systems - Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Section 2: Use of basic standards (OSI layers 1-4)	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
104	EN 60870-6-501:1996	IEC 60870-6-501:1995 (EQV)	Telecontrol equipment and systems - Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Section 501: TASE.1 Service definitions	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
105	EN 60870-6-502:1996	IEC 60870-6-502:1995 (EQV)	Telecontrol equipment and systems - Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Section 502: TASE.1 Protocol definitions	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
106	EN 60870-6-	IEC 60870-6-	Telecontrol equipment and systems - Part 6-	IEC/TC 57		High	TASE2 -

	503:2002	503:2002 (EQV)	503: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Services and protocol				Telecontrol Application Service Element
107	EN 60870-6-601:1995	IEC 60870-6-601:1994 (EQV)	Telecontrol equipment and systems - Part 6: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Section 601: Functional profile for providing the connection-oriented transport service in an end system connected via permanent access to a packet switched data network	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
108	EN 60870-6-701:1998	IEC 60870-6-701:1998 (EQV)	Telecontrol equipment and systems - Part 6-701: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Functional profile for providing the TASE.1 application service in end systems	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
109	EN 60870-6-702:1998	IEC 60870-6-702:1998 (EQV)	Telecontrol equipment and systems - Part 6-702: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - Functional profile for providing the TASE.2 application service in end systems	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
110	EN 60870-6-802:2002	IEC 60870-6-802:2002 (EQV)	Telecontrol equipment and systems - Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Object models	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
111	EN 60870-6-802:2002/A1:2005	IEC 60870-6-802:2002/A1:2005 (EQV)	Telecontrol equipment and systems -- Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Object models	IEC/TC 57		High	TASE2 - Telecontrol Application Service Element
112	EN 60904-1:2006	IEC 60904-1:2006 (EQV)	Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics	IEC/TC 82		Medium	Solar voltaic
113	EN 60904-10:2010	IEC 60904-10:2009	Photovoltaic devices - Part 10: Methods of	IEC/TC 82		Medium	Solar voltaic

		(EQV)	linearity measurement				
114	EN 60904-2:2007	IEC 60904-2:2007 (EQV)	Photovoltaic devices - Part 2: Requirements for reference solar devices	IEC/TC 82		Medium	Solar voltaic
115	EN 60904-3:2008	IEC 60904-3:2008 (EQV)	Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	IEC/TC 82		Medium	Solar voltaic
116	EN 60904-4:2009	IEC 60904-4:2009 (EQV)	Photovoltaic devices - Part 4: Reference solar devices - Procedures for establishing calibration traceability	IEC/TC 82		Medium	Solar voltaic
117	EN 60904-5:2011	IEC 60904-5:2011 (EQV)	Photovoltaic devices - Part 5: Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method	IEC/TC 82		Medium	Solar voltaic
118	EN 60904-7:2009	IEC 60904-7:2008 (EQV)	Photovoltaic devices - Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices	IEC/TC 82		Medium	Solar voltaic
119	EN 60904-8:1998	IEC 60904-8:1998 (EQV)	Photovoltaic devices - Part 8: Measurement of spectral response of a photovoltaic (PV) device	IEC/TC 82		Medium	Solar voltaic
120	FprEN 60904-8:2012	IEC 60904-8:201X (82/732/CDV) (EQV)	Photovoltaic devices - Part 8: Measurement of spectral response of a photovoltaic (PV) device	IEC/TC 82	DRAFT (supersedes EN 60904-8:1998) / 5060 (Voting results established and sent to TC)	Medium	Solar voltaic
121	EN 60904-9:2007	IEC 60904-9:2007 (EQV)	Photovoltaic devices - Part 9: Solar simulator performance requirements	IEC/TC 82		Medium	Solar voltaic
122	EN 61000-2-12:2003	IEC 61000-2-12:2003 (EQV)	Electromagnetic compatibility (EMC) - Part 2-12: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power supply systems	IEC/SC 77A ; CLC/TC 210		Low	Electromagnetic compatibility (EMC)
123	EN 61000-2-2:2002	IEC 61000-2-2:2002 (EQV)	Electromagnetic compatibility (EMC) - Part 2-2: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)

			systems				
124	EN 61000-3-11:2000	IEC 61000-3-11:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
125	EN 61000-3-12:2011	IEC 61000-3-12:2011 (EQV) + IS1:2012 (EQV)	Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
126	EN 61000-3-2:2006	IEC 61000-3-2:2005 (EQV)	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
127	EN 61000-3-2:2006/A1:2009	IEC 61000-3-2:2005/A1:2008 (EQV)	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
128	EN 61000-3-2:2006/A2:2009	IEC 61000-3-2:2005/A2:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
129	EN 61000-3-3:2008	IEC 61000-3-3:2008 (EQV)	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
130	FprEN 61000-3-3:2013	IEC 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated	IEC/SC 77A	DRAFT (supersedes EN 61000-3-3:2008) / 5099 (Project ratified - Proceed to	Low	Electromagnetic compatibility (EMC)

			current <= 16 A per phase and not subject to conditional connection		publication phase)		
131	EN 61000-4-1:2007	IEC 61000-4-1:2006 (EQV)	Electromagnetic compatibility (EMC) - Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series	IEC/TC 77		Low	Electromagnetic compatibility (EMC)
132	EN 61000-4-10:1993	IEC 61000-4-10:1993 (EQV)	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 10: Damped oscillatory magnetic field immunity test. Basic EMC Publication	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
133	EN 61000-4-10:1993/A1:2001	IEC 61000-4-10:1993/A1:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 10: Damped oscillatory magnetic field immunity test. Basic EMC Publication	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
134	EN 61000-4-11:2004	IEC 61000-4-11:2004 (EQV)	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
135	EN 61000-4-12:2006	IEC 61000-4-12:2006 (EQV)	Electromagnetic compatibility (EMC) - Part 4-12: Testing and measurement techniques - Ring wave immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
136	EN 61000-4-13:2002	IEC 61000-4-13:2002 (EQV)	Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
137	EN 61000-4-13:2002/A1:2009	IEC 61000-4-13:2002/A1:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
138	EN 61000-4-14:1999	IEC 61000-4-14:1999 (EQV)	Electromagnetic compatibility (EMC) - Part 4-14: Testing and measurement techniques -	IEC/SC 77A		Low	Electromagnetic

			Voltage fluctuation immunity test for equipment with input current not exceeding 16 A per phase				compatibility (EMC)
139	EN 61000-4-14:1999/A1:2004	IEC 61000-4-14:1999/A1:2001 (EQV)	Electromagnetic compatibility (EMC) - Part 4-14: Testing and measurement techniques - Voltage fluctuation immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
140	EN 61000-4-14:1999/A2:2009	IEC 61000-4-14:1999/A2:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-14: Testing and measurement techniques - Voltage fluctuation immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
141	EN 61000-4-15:2011	IEC 61000-4-15:2010 (EQV) + corrigendum Mar. 2012 (EQV)	Electromagnetic compatibility (EMC) - Part 4-15: Testing and measurement techniques - Flickermeter - Functional and design specifications	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
142	EN 61000-4-16:1998	IEC 61000-4-16:1998 (EQV)	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
143	EN 61000-4-16:1998/A1:2004	IEC 61000-4-16:1998/A1:2001 (EQV)	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
144	EN 61000-4-16:1998/A2:2011	IEC 61000-4-16:1998/A2:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
145	EN 61000-4-17:1999	IEC 61000-4-17:1999 (EQV)	Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques -	IEC/SC 77A		Low	Electromagnetic

			Ripple on d.c. input power port immunity test				compatibility (EMC)
146	EN 61000-4-17:1999/A1:2004	IEC 61000-4-17:1999/A1:2001 (EQV)	Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
147	EN 61000-4-17:1999/A2:2009	IEC 61000-4-17:1999/A2:2008 (EQV)	Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
148	EN 61000-4-18:2007	IEC 61000-4-18:2006 (EQV)	Electromagnetic compatibility (EMC) -- Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
149	EN 61000-4-18:2007/A1:2010	IEC 61000-4-18:2006/A1:2010 (EQV)	Electromagnetic compatibility (EMC) -- Part 4-18: Testing and measurement techniques - Damped oscillatory wave immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
150	EN 61000-4-2:2009	IEC 61000-4-2:2008 (EQV)	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
151	EN 61000-4-20:2010	IEC 61000-4-20:2010 (EQV)	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
152	EN 61000-4-21:2011	IEC 61000-4-21:2011 (EQV)	Electromagnetic compatibility (EMC) - Part 4-21: Testing and measurement techniques - Reverberation chamber test methods	CIS/A		Low	Electromagnetic compatibility (EMC)
153	EN 61000-4-23:2000	IEC 61000-4-23:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 4-23: Testing and measurement techniques - Test methods for protective devices for HEMP and other radiated disturbances	IEC/SC 77C		Low	Electromagnetic compatibility (EMC)

154	EN 61000-4-24:1997	IEC 61000-4-24:1997 (EQV)	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 24: Test methods for protective devices for HEMP conducted disturbance - Basic EMC Publication	IEC/SC 77C; CLC/TC 210		Low	Electromagnetic compatibility (EMC)
155		prIEC 61000-4-24:201X	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 24: Test methods for protective devices for HEMP conducted disturbance	IEC/SC 77C	DRAFT / 1st Committee Draft	Low	Electromagnetic compatibility (EMC)
156	EN 61000-4-25:2002	IEC 61000-4-25:2001 (EQV)	Electromagnetic compatibility (EMC) - Part 4-25: Testing and measurement techniques - HEMP immunity test methods for equipment and systems	IEC/SC 77C		Low	Electromagnetic compatibility (EMC)
157	EN 61000-4-25:2002/A1:2012	IEC 61000-4-25:2001/A1:2012 (EQV)	Electromagnetic compatibility (EMC) - Part 4-25: Testing and measurement techniques - HEMP immunity test methods for equipment and systems	IEC/SC 77C		Low	Electromagnetic compatibility (EMC)
158	EN 61000-4-27:2000	IEC 61000-4-27:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 4-27: Testing and measurement techniques - Unbalance, immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
159	EN 61000-4-27:2000/A1:2009	IEC 61000-4-27:2000/A1:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-27: Testing and measurement techniques - Unbalance, immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
160	EN 61000-4-28:2000	IEC 61000-4-28:1999 (EQV)	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
161	EN 61000-4-28:2000/A1:2004	IEC 61000-4-28:1999/A1:2001 (EQV)	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)

			exceeding 16 A per phase				
162	EN 61000-4-28:2000/A2:2009	IEC 61000-4-28:1999/A2:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
163	EN 61000-4-29:2000	IEC 61000-4-29:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
164	EN 61000-4-3:2006	IEC 61000-4-3:2006 (EQV)	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
165	EN 61000-4-3:2006/A1:2008	IEC 61000-4-3:2006/A1:2007 (EQV)	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
166	EN 61000-4-3:2006/A2:2010	IEC 61000-4-3:2006/A2:2010 (EQV)	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
167	EN 61000-4-30:2009	IEC 61000-4-30:2008 (EQV)	Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
168		IEC 61000-4-33:2005	Electromagnetic compatibility (EMC) - Part 4-33: Testing and measurement techniques - Measurement methods for high-power transient parameters	IEC/SC 77C		Low	Electromagnetic compatibility (EMC)
169	EN 61000-4-34:2007	IEC 61000-4-34:2005 (EQV)	Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage	IEC/SC 77A		Low	Electromagnetic compatibility

			variations immunity tests for equipment with mains current more than 16 A per phase				y (EMC)
170	EN 61000-4-34:2007/A1:2009	IEC 61000-4-34:2005/A1:2009 (EQV)	Electromagnetic compatibility (EMC) -- Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
171	EN 61000-4-4:2012	IEC 61000-4-4:2012 (EQV)	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
172	EN 61000-4-5:2006	IEC 61000-4-5:2005 (EQV)	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	IEC/SC 77B		Low	Electromagnetic compatibility (EMC)
173	FprEN 61000-4-6:2012	IEC 61000-4-6:201X (77B/675/CDV) (EQV)	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Conducted disturbances, induced by radio-frequency fields immunity test	IEC/SC 77B; CLC/TC 210	DRAFT (supersedes EN 61000-4-6:2009) / 5060 (Voting results established and sent to TC)	Low	Electromagnetic compatibility (EMC)
174	EN 61000-4-7:2002	IEC 61000-4-7:2002 (EQV)	Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
175	EN 61000-4-7:2002/A1:2009	IEC 61000-4-7:2002/A1:2008 (EQV)	Electromagnetic compatibility (EMC) -- Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
176	EN 61000-4-8:2010	IEC 61000-4-8:2009 (EQV)	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power	IEC/SC 77A		Low	Electromagnetic

			frequency magnetic field immunity test				compatibilit y (EMC)
177	EN 61000-4-9:1993	IEC 61000-4-9:1993 (EQV)	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 9: Pulse magnetic field immunity test. Basic EMC Publication	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
178	EN 61000-4-9:1993/A1:2001	IEC 61000-4-9:1993/A1:2000 (EQV)	Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Pulse magnetic field immunity test	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
179	EN 61000-6-1:2007	IEC 61000-6-1:2005 (EQV)	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
180	EN 61000-6-2:2005	IEC 61000-6-2:2005 (EQV)	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
181	EN 61000-6-3:2007	IEC 61000-6-3:2006 (EQV)	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
182	EN 61000-6-3:2007/A1:2011; EN 61000-6-3:2007/A1:2011/AC: 2012	IEC 61000-6-3:2006/A1:2010 (EQV)	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
183	EN 61000-6-4:2007	IEC 61000-6-4:2006 (EQV)	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit y (EMC)
184	EN 61000-6-4:2007/A1:2011	IEC 61000-6-4:2006/A1:2010 (EQV)	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	IEC/SC 77A		Low	Electromagn etic compatibilit

							y (EMC)
185	EN 61010-2-201:2013	IEC 61010-2-201:2013 (EQV)	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-201: Particular requirements for control equipment	IEC/TC 65		Medium	Industrial process measurement and control
186	EN 61131-1:2003	IEC 61131-1:2003 (EQV)	Programmable controllers - Part 1: General information	IEC/SC 65B		Medium	Industrial process measurement and control
187	EN 61131-3:2013	IEC 61131-3:2013 (EQV)	Programmable controllers - Part 3: Programming languages	IEC/SC 65B		Medium	Industrial process measurement and control
188	EN 61131-5:2001	IEC 61131-5:2000 (EQV)	Programmable controllers - Part 5: Communications	IEC/SC 65B		Medium	Industrial process measurement and control
189	EN 61131-6:2012	IEC 61131-6:2012 (EQV)	Programmable controllers - Part 6: Functional safety	IEC/SC 65B		Medium	Industrial process measurement and control
190	EN 61131-7:2000	IEC 61131-7:2000 (EQV)	Programmable controllers - Part 7: Fuzzy control programming	IEC/SC 65B		Medium	Industrial process measurement and control
191	FprEN 61131-9:2013	IEC 61131-9:201X (65B/874/FDIS) (EQV)	Programmable controllers - Part 9: Single-drop digital communication interface for small sensors and actuators (SDCI)	IEC/SC 65B	DRAFT / 5020 (Vote circulated)	Medium	Industrial process measurement

							nt and control
192	EN 61140:2002	IEC 61140:2001 (EQV)	Protection against electric shock - Common aspects for installation and equipment	IEC/TC 64		Medium	Low Voltage-protection against electric shock
193	EN 61140:2002/A1:2006	IEC 61140:2001/A1:2004 (MOD)	Protection against electric shock - Common aspects for installation and equipment	IEC/TC 64		Medium	Low Voltage-protection against electric shock
194	FprEN 61158-1:2012	IEC 61158-1:201X (65C/696/CDV) (EQV)	Industrial communication networks - Fieldbus specifications - Part 1: Overview and Guidance for the IEC 61158 and IEC 61784 series	IEC/SC 65C; CLC/TC 65X	DRAFT / 5060 (Voting results established and sent to TC)		Communicat ion layer
195	FprEN 61158-2:2012	IEC 61158-2:201X (65C/697/CDV) (EQV)	Industrial communication networks - Fieldbus specifications - Part 2 Physical layer specification and service definition	IEC/SC 65C; CLC/TC 65X	DRAFT / 5060 (Voting results established and sent to TC)		Communicat ion layer
196	EN 61158-3-1:2008	IEC 61158-3-1:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-1: Data-link layer service definition - Type 1 elements	IEC/SC 65C			Communicat ion layer
197	EN 61158-3-11:2008	IEC 61158-3-11:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-11: Data-link layer service definition - Type 11 elements	IEC/SC 65C			Communicat ion layer
198	EN 61158-3-12:2012	IEC 61158-3-12:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-12: Data-link layer service definition - Type 12 elements	IEC/SC 65C			Communicat ion layer
199	EN 61158-3-13:2008	IEC 61158-3-13:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-13: Data-link layer service definition - Type 13 elements	IEC/SC 65C			Communicat ion layer
200	EN 61158-3-14:2012	IEC 61158-3-14:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-14: Data-link layer	IEC/SC 65C			Communicat ion layer

			service definition - Type 14 elements				
201	EN 61158-3-16:2008	IEC 61158-3-16:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-16: Data-link layer service definition - Type 16 elements	IEC/SC 65C			Communication layer
202	EN 61158-3-17:2008	IEC 61158-3-17:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-17: Data-link layer service definition - Type 17 elements	IEC/SC 65C			Communication layer
203	EN 61158-3-18:2008	IEC 61158-3-18:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-18: Data-link layer service definition - Type 18 elements	IEC/SC 65C			Communication layer
204	EN 61158-3-19:2008	IEC 61158-3-19:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-19: Data-link layer service definition - Type 19 elements	IEC/SC 65C			Communication layer
205	EN 61158-3-2:2008	IEC 61158-3-2:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-2: Data-link layer service definition - Type 2 elements	IEC/SC 65C			Communication layer
206	EN 61158-3-21:2012	IEC 61158-3-21:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-21: Data-link layer service definition - Type 21 elements	IEC/SC 65C			Communication layer
207	EN 61158-3-22:2012	IEC 61158-3-22:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-22: Data-link layer service definition - Type 22 elements	IEC/SC 65C			Communication layer
208	EN 61158-3-3:2008	IEC 61158-3-3:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-3: Data-link layer service definition - Type 3 elements	IEC/SC 65C			Communication layer
209	EN 61158-3-4:2008	IEC 61158-3-4:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-4: Data-link layer service definition - Type 4 elements	IEC/SC 65C			Communication layer
210	EN 61158-3-7:2008	IEC 61158-3-7:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-7: Data-link layer service definition - Type 7 elements	IEC/SC 65C			Communication layer
211	EN 61158-3-8:2008	IEC 61158-3-8:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 3-8: Data-link layer service definition - Type 8 elements	IEC/SC 65C			Communication layer

212	FprEN 61158-3-X:2012	IEC 61158-3-X:201X (65C/698/CDV) (EQV) *Approved for FDIS	Industrial communication networks - Fieldbus specifications - Part 3-x: Data-link layer service definition - Type x elements	IEC/SC 65C	DRAFT / 5060 (Voting results established and sent to TC)		Communication layer
213	FprEN 61158-4-X:2012	IEC 61158-4-X:201X (65C/699/CDV) (EQV) *Project plan: FDIS 2013-07	Industrial communication networks - Fieldbus specifications - Part 4-x: Data link layer protocol specification - Type x elements	IEC/SC 65C	DRAFT / 5060 (Voting results established and sent to TC)		Communication layer
214	EN 61158-4-1:2008	IEC 61158-4-1:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-1: Data-link layer protocol specification - Type 1 elements	IEC/SC 65C			Communication layer
215	EN 61158-4-2:2012	IEC 61158-4-2:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-2: Data-link layer protocol specification - Type 2 elements	IEC/SC 65C			Communication layer
216	EN 61158-4-3:2012	IEC 61158-4-3:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-3: Data-link layer protocol specification - Type 3 elements	IEC/SC 65C			Communication layer
217	EN 61158-4-4:2008	IEC 61158-4-4:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-4: Data-link layer protocol specification - Type 4 elements	IEC/SC 65C			Communication layer
218	EN 61158-4-7:2008	IEC 61158-4-7:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-7: Data-link layer protocol specification - Type 7 elements	IEC/SC 65C			Communication layer
219	EN 61158-4-8:2008	IEC 61158-4-8:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-8: Data-link layer protocol specification - Type 8 elements	IEC/SC 65C			Communication layer
220	EN 61158-4-11:2012	IEC 61158-4-11:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-11: Data-link layer protocol specification - Type 11 elements	IEC/SC 65C			Communication layer
221	EN 61158-4-12:2012	IEC 61158-4-12:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-12: Data-link layer protocol specification - Type 12 elements	IEC/SC 65C			Communication layer
222	EN 61158-4-13:2008	IEC 61158-4-13:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-13: Data-link layer	IEC/SC 65C			Communication layer

			protocol specification - Type 13 elements				
223	EN 61158-4-14:2012	IEC 61158-4-14:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-14: Data-link layer protocol specification - Type 14 elements	IEC/SC 65C			Communication layer
224	EN 61158-4-16:2008	IEC 61158-4-16:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-16: Data-link layer protocol specification - Type 16 elements	IEC/SC 65C			Communication layer
225	EN 61158-4-17:2008	IEC 61158-4-17:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-17: Data-link layer protocol specification - Type 17 elements	IEC/SC 65C			Communication layer
226	EN 61158-4-18:2012	IEC 61158-4-18:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-18: Data-link layer protocol specification - Type 18 elements	IEC/SC 65C			Communication layer
227	EN 61158-4-19:2012	IEC 61158-4-19:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-19: Data-link layer protocol specification - Type 19 elements	IEC/SC 65C			Communication layer
228	EN 61158-4-21:2012	IEC 61158-4-21:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-21: Data-link layer protocol specification - Type 21 elements	IEC/SC 65C			Communication layer
229	EN 61158-4-22:2012	IEC 61158-4-22:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 4-22: Data-link layer protocol specification - Type 22 elements	IEC/SC 65C			Communication layer
230	EN 61158-5-2:2012	IEC 61158-5-2:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-2: Application layer service definition - Type 2 elements	IEC/SC 65C			Communication layer
231	EN 61158-5-3:2012	IEC 61158-5-3:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-3: Application layer service definition - Type 3 elements	IEC/SC 65C			Communication layer
232	EN 61158-5-4:2008	IEC 61158-5-4:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-4: Application layer service definition - Type 4 elements	IEC/SC 65C			Communication layer
233	EN 61158-5-5:2008	IEC 61158-5-5:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-5: Application layer service definition - Type 5 elements	IEC/SC 65C			Communication layer

234	EN 61158-5-7:2008	IEC 61158-5-7:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-7: Application layer service definition - Type 7 elements	IEC/SC 65C			Communication layer
235	EN 61158-5-8:2008	IEC 61158-5-8:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-8: Application layer service definition - Type 8 elements	IEC/SC 65C			Communication layer
236	EN 61158-5-9:2008	IEC 61158-5-9:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-9: Application layer service definition - Type 9 elements	IEC/SC 65C			Communication layer
237	EN 61158-5-10:2012	IEC 61158-5-10:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-10: Application layer service definition - Type 10 elements	IEC/SC 65C			Communication layer
238	EN 61158-5-11:2008	IEC 61158-5-11:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-11: Application layer service definition - Type 11 elements	IEC/SC 65C			Communication layer
239	EN 61158-5-12:2012	IEC 61158-5-12:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-12: Application layer service definition - Type 12 elements	IEC/SC 65C			Communication layer
240	EN 61158-5-13:2008	IEC 61158-5-13:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-13: Application layer service definition - Type 13 elements	IEC/SC 65C			Communication layer
241	EN 61158-5-14:2012	IEC 61158-5-14:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-14: Application layer service definition - Type 14 elements	IEC/SC 65C			Communication layer
242	EN 61158-5-15:2012	IEC 61158-5-15:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-15: Application layer service definition - Type 15 elements	IEC/SC 65C			Communication layer
243	EN 61158-5-16:2008	IEC 61158-5-16:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-16: Application layer service definition - Type 16 elements	IEC/SC 65C			Communication layer
244	EN 61158-5-17:2008	IEC 61158-5-17:2007 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-17: Application layer service definition - Type 17 elements	IEC/SC 65C			Communication layer
245	EN 61158-5-18:2012	IEC 61158-5-18:2010	Industrial communication networks - Fieldbus	IEC/SC 65C			Communication

		(EQV)	specifications - Part 5-18: Application layer service definition - Type 18 elements				ion layer
246	EN 61158-5-19:2012	IEC 61158-5-19:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-19: Application layer service definition - Type 19 elements	IEC/SC 65C			Communication layer
247	EN 61158-5-20:2012	IEC 61158-5-20:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-20: Application layer service definition - Type 20 elements	IEC/SC 65C			Communication layer
248	EN 61158-5-21:2012	IEC 61158-5-21:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-21: Application layer service definition - Type 21 elements	IEC/SC 65C			Communication layer
249	EN 61158-5-22:2012	IEC 61158-5-22:2010 (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-22: Application layer service definition - Type 22 elements	IEC/SC 65C			Communication layer
250	FprEN 61158-5-X:2012	IEC 61158-5-X:201X (65C/700/CDV) (EQV)	Industrial communication networks - Fieldbus specifications - Part 5-x: Application layer service definition - Type x elements	IEC/SC 65C	DRAFT / 5060 (Voting results established and sent to TC)		Communication layer
251	EN 61158-6-2:2012	IEC 61158-6-2:2010	Industrial communication networks - Fieldbus specifications - Part 6-2: Application layer protocol specification - Type 2 elements	IEC/SC 65C			Communication layer
252	EN 61158-6-20:2012	IEC 61158-6-20:2010	Industrial communication networks - Fieldbus specifications - Part 6-20: Application layer protocol specification - Type 20 elements	IEC/SC 65C			Communication layer
253	EN 61158-6-21:2012	IEC 61158-6-21:2010	Industrial communication networks - Fieldbus specifications - Part 6-21: Application layer protocol specification - Type 21 elements	IEC/SC 65C			Communication layer
254	EN 61158-6-22:2012	IEC 61158-6-22:2010	Industrial communication networks - Fieldbus specifications -- Part 6-22: Application layer protocol specification - Type 22 elements	IEC/SC 65C			Communication layer
255	EN 61158-6-3:2012	IEC 61158-6-3:2010	Industrial communication networks - Fieldbus specifications - Part 6-3: Application layer protocol specification - Type 3 elements	IEC/SC 65C			Communication layer
256	EN 61158-6-4:2008	IEC 61158-6-4:2007	Industrial communication networks - Fieldbus specifications - Part 6-4: Application layer	IEC/SC 65C			Communication layer

			protocol specification - Type 4 elements				
257	EN 61158-6-5:2008	IEC 61158-6-5:2007	Industrial communication networks - Fieldbus specifications - Part 6-5: Application layer protocol specification - Type 5 elements	IEC/SC 65C			Communication layer
258	EN 61158-6-7:2008	IEC 61158-6-7:2007	Industrial communication networks - Fieldbus specifications - Part 6-7: Application layer protocol specification - Type 7 elements	IEC/SC 65C			Communication layer
259	EN 61158-6-8:2008	IEC 61158-6-8:2007	Industrial communication networks - Fieldbus specifications - Part 6-8: Application layer protocol specification - Type 8 elements	IEC/SC 65C			Communication layer
260	EN 61158-6-9:2012	IEC 61158-6-9:2010	Industrial communication networks - Fieldbus specifications - Part 6-9: Application layer protocol specification - Type 9 elements	IEC/SC 65C			Communication layer
261	FprEN 61158-6-X:2012	IEC 61158-6-X:201X (65C/701/CDV) (EQV)	Industrial communication networks - Fieldbus specifications - Part 6-x: Application layer protocol specification - Type x elements	IEC/SC 65C	DRAFT / 5060 (Voting results established and sent to TC)		Communication layer
262	EN 61194:1995	IEC 61194:1992 (MOD)	Characteristic parameters of stand-alone photovoltaic (PV) systems	IEC/TC 82		Medium	Solar voltaic
263		IEC 61334-3-1:1998	Distribution automation using distribution line carrier systems - Part 3-1: Mains signalling requirements - Frequency bands and output levels	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
264	EN 61334-3-21:1996	IEC 61334-3-21:1996 (EQV)	Distribution automation using distribution line carrier systems - Part 3: Mains signalling requirements - Section 21: MV phase-to-phase isolated capacitive coupling device	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
265	EN 61334-3-22:2001	IEC 61334-3-22:2001 (EQV)	Distribution automation using distribution line carrier systems - Part 3-22: Mains signalling requirements - MV phase-to-earth and screen-to-earth intrusive coupling devices	IEC/TC 57		High	Distribution Line Message Specification (DLMS)

266	EN 61334-4-1:1996	IEC 61334-4-1:1996 (EQV)	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 1: Reference model of the communication system	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
267	EN 61334-4-32:1996	IEC 61334-4-32:1996 (EQV)	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 32: Data link layer - Logical link control (LLC)	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
268	EN 61334-4-33:1998	IEC 61334-4-33:1998 (EQV)	Distribution automation using distribution line carrier systems - Part 4-33: Data communication protocols - Data link layer - Connection oriented protocol	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
269	EN 61334-4-41:1996	IEC 61334-4-41:1996 (EQV)	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 41: Application protocol - Distribution line message specification	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
270	EN 61334-4-42:1996	IEC 61334-4-42:1996 (EQV)	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 42: Application protocols - Application layer	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
271	EN 61334-4-511:2000	IEC 61334-4-511:2000 (EQV)	Distribution automation using distribution line carrier systems - Part 4-511: Data communication protocols - Systems management - CIASE protocol	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
272	EN 61334-4-512:2002	IEC 61334-4-512:2001 (EQV)	Distribution automation using distribution line carrier systems - Part 4-512: Data communication protocols - System management using profile 61334-5-1 -	IEC/TC 57		High	Distribution Line Message Specification

			Management Information Base (MIB)				(DLMS)
273	EN 61334-4-61:1998	IEC 61334-4-61:1998 (EQV)	Distribution automation using distribution line carrier systems - Part 4-61: Data communication protocols - Network layer - Connectionless protocol	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
274	EN 61334-5-1:2001	IEC 61334-5-1:2001 (EQV)	Distribution automation using distribution line carrier systems - Part 5-1: Lower layer profiles - The spread frequency shift keying (S-FSK) profile	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
275	EN 61334-6:2000	IEC 61334-6:2000 (EQV)	Distribution automation using distribution line carrier systems - Part 6: A-XDR encoding rule	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
276	EN 61360-5:2004	IEC 61360-5:2004 (EQV)	Standard data element types with associated classification scheme for electric components - Part 5: Extensions to the EXPRESS dictionary schema	IEC/SC 3D			
277	EN 61400-1:2005	IEC 61400-1:2005 (EQV)	Wind turbines - Part 1: Design requirements	IEC/TC 88		High	Wind Turbines
278	EN 61400-1:2005/A1:2010	IEC 61400-1:2005/A1:2010 (EQV)	Wind turbines -- Part 1: Design requirements	IEC/TC 88		High	Wind Turbines
279	EN 61400-11:2013	IEC 61400-11:2002 (EQV)	Wind turbine generator systems - Part 11: Acoustic noise measurement techniques	IEC/TC 88		High	Wind Turbines
280	EN 61400-12-1:2006	IEC 61400-12-1:2005 (EQV)	Wind turbines - Part 12-1: Power performance measurements of electricity producing wind turbines	IEC/TC 88		High	Wind Turbines
281	FprEN 61400-12-2:2011	IEC 61400-12-2:201X (88/409/CDV) (EQV)	Wind turbines - Part 12-2: Power performance of electricity producing wind turbines based on nacelle anemometry	IEC/TC 88	DRAFT (supersedes EN 61400-11:2003 + A1:2006) / 5020 (Vote circulated)	High	Wind Turbines

282	EN 61400-2:2006	IEC 61400-2: 2006	Wind turbines - Part 2: Design requirements for small wind turbines	IEC/TC 88		High	Wind Turbines
283	FprEN 61400-2:2012	IEC 61400-2:201X (88/437/CDV) (EQV)	Wind turbines - Part 2: Small wind turbines	IEC/TC 88	DRAFT / 5060 (Voting results established and sent to TC)		
284	EN 61400-21:2008	IEC 61400-21:2008 (EQV)	Wind turbines - Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines	IEC/TC 88		High	Wind Turbines
285	FprEN 61400-23:2011	IEC 61400-23:201X (88/420/CDV) (EQV)	Wind turbine generator systems - Part 23: Full-scale structural testing of rotor blades	IEC/TC 88	DRAFT / 5060 (Voting results established and sent to TC)	High	Wind Turbines
286	EN 61400-24:2010	IEC 61400-24:2010 (EQV)	Wind turbines - Part 24: Lightning protection	IEC/TC 88		High	Wind Turbines
287	EN 61400-25-1:2007	IEC 61400-25-1:2006 (EQV)	Wind turbines - Part 25-1: Communications for monitoring and control of wind power plants - Overall description of principles and models	IEC/TC 88		High	Wind Turbines
288	EN 61400-25-2:2007	IEC 61400-25-2:2006 (EQV)	Wind turbines - Part 25-2: Communications for monitoring and control of wind power plants - Information models	IEC/TC 88		High	Wind Turbines
289	EN 61400-25-3:2007	IEC 61400-25-3:2006 (EQV)	Wind turbines - Part 25-3: Communications for monitoring and control of wind power plants - Information exchange models	IEC/TC 88		High	Wind Turbines
290	EN 61400-25-4:2008	IEC 61400-25-4:2008 (EQV)	Wind turbines - Part 25-4: Communications for monitoring and control of wind power plants - Mapping to communication profile	IEC/TC 88		High	Wind Turbines
291	EN 61400-25-5:2007	IEC 61400-25-5:2006 (EQV)	Wind turbines - Part 25-5: Communications for monitoring and control of wind power plants - Conformance testing	IEC/TC 88		High	Wind Turbines
292	EN 61400-25-6:2011	IEC 61400-25-6:2010 (EQV)	Wind turbines -- Part 25-6: Communications for monitoring and control of wind power plants - Logical node classes and data classes for condition monitoring	IEC/TC 88		High	Wind Turbines
293	EN 61400-3:2009	IEC 61400-3:2009 (EQV)	Wind turbines - Part 3: Design requirements for offshore wind turbines	IEC/TC 88		High	Wind Turbines

294	FprEN 50308		Wind turbines - Protective measures - Requirements for design, operation and maintenance	IEC/TC 88	DRAFT/4099 (Decision to launch vote) NOTE: If no draft received by end of March 2013, project will be deleted		
295	FprEN 61400-4:2012	IEC 61400-4:201X (88/438/FDIS) (EQV)	Wind turbines - Part 4: Design requirements for wind turbine gearboxes	IEC/TC 88	DRAFT / 5099 (Project ratified - Proceed to publication phase)	High	Wind Turbines
296	EN 61499-2:2013	IEC 61499-2:2012 (EQV)	Function blocks - Part 2: Software tool requirements	IEC/SC 65B		Medium	Industrial automation systems
297	EN 61499-1:2013	IEC 61499-1:2012 (EQV)	Function blocks - Part 1: Architecture	IEC/SC 65B			
298	EN 61508-1:2010	IEC 61508-1:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic safety-related systems
299	EN 61508-2:2010	IEC 61508-2:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems -- Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable

							electronic safety-related systems
300	EN 61508-3:2010	IEC 61508-3:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic safety-related systems
301	EN 61508-4:2010	IEC 61508-4:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic safety-related systems
302	EN 61508-5:2010	IEC 61508-5:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 5: Examples of methods for the determination of safety integrity levels	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic

							safety-related systems
303	EN 61508-6:2010	IEC 61508-6:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic safety-related systems
304	EN 61508-7:2010	IEC 61508-7:2010 (EQV)	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 7: Overview of techniques and measures	IEC/TC 65/SC 65A		High	Wind Turbines&Functional safety of electrical/electronic/programmable electronic safety-related systems
305	EN 61512-1:1999	IEC 61512-1:1997 (EQV)	Batch control - Part 1: Models and terminology	IEC/TC 65/SC 65A		Low	Industrial process measurement and control / IT applications in industry
306	EN 61512-2:2002	IEC 61512-2:2001 (EQV)	Batch control - Part 2: Data structures and guidelines for languages	IEC/TC 65/SC 65A		Low	Industrial process

							measurement and control / IT applications in industry
307	EN 61512-3:2008	IEC 61512-3:2008 (EQV)	Batch control - Part 3: General and site recipe models and representation	IEC/TC 65/SC 65A		Medium	Industrial process measurement and control / IT applications in industry
308	EN 61512-4:2010	IEC 61512-4:2009 (EQV)	Batch control - Part 4: Batch production records	IEC/TC 65/SC 65A		Medium	Industrial process measurement and control / IT applications in industry
309		IEEE/IEC 61588-2009	Precision Clock Synchronization Protocol for Networked Measurement and Control Systems	IEC/SC 65C			
310	EN 61724:1998	IEC 61724:1998 (EQV)	Photovoltaic system performance monitoring - Guidelines for measurement	IEC/TC 82		Medium	Solar voltaic
311	EN 61727:1995	IEC 61727:1995 (EQV)	Photovoltaic (PV) systems - Characteristics of the utility interface	IEC/TC 82		Medium	Solar voltaic
312	EN 61730-1:2007	IEC 61730-1:2004 (MOD)	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction	IEC/TC 82		Medium	Solar voltaic
313	EN 61730-1:2007/A1:2012	IEC 61730-1:2004/A1:2011 (EQV)	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction	IEC/TC 82		Medium	Solar voltaic
314	EN 61730-2:2007	IEC 61730-2:2004 (MOD)	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	IEC/TC 82		Medium	Solar voltaic
315	EN 61730-2:2007/A1:2012	IEC 61730-2:2004/A1:2011	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing	IEC/TC 82		Medium	Solar voltaic

		(EQV)					
316	EN 61784-1:2010	IEC 61784-1:2010 (EQV)	Industrial communication networks - Profiles - Part 1: Fieldbus profiles	IEC/TC 65/SC 65C		Medium	Industrial process measurement and control
317	EN 61803:1999	IEC 61803:1999 (EQV)	Determination of power losses in high-voltage direct current (HVDC) converter stations	IEC/SC 22F		Low	HVDC - High Voltage Direct Current
318	EN 61803:1999/A1:2010	IEC 61803:1999/A1:2010 (EQV)	Determination of power losses in high-voltage direct current (HVDC) converter stations	IEC/SC 22F		Low	HVDC - High Voltage Direct Current
319	EN 61804-2:2007	IEC 61804-2:2006	Function blocks (FB) for process control Part 2: Specification of FB concept	IEC/TC 65/SC 65E		Medium	Industrial process measurement and control
320	EN 61804-3:2011	IEC 61804-3:2010 (EQV)	Function Blocks (FB) for process control - Part 3: Electronic Device Description Language (EDDL)	IEC/TC 65/SC 65E		Medium	Industrial process measurement and control
321	EN 61850-10:2005	IEC 61850-10:2005 (EQV)	Communication networks and systems in substations - Part 10: Conformance testing	IEC/TC 57		Core	Substation Automation (Object models, self-describing, high-speed relaying, process bus)
322	FprEN 61850-10:2012	IEC 61850-10:201X (57/1284/FDIS)	Communication networks and systems for power utility automation - Part 10:	IEC/TC 57	DRAFT (supersedes EN 61850-10:2005) /	Core	Substation Automation

		(EQV)	Conformance testing		5099 (Project ratified - Proceed to publication phase)		
323	EN 61850-3:2002	IEC 61850-3:2002 (EQV)	Communication networks and systems in substations - Part 3: General requirements	IEC/TC 57		Core	Substation Automation
324	FprEN 61850-3:2012	IEC 61850-3:201X (57/1246/CDV) (EQV)	Communication networks and systems for power utility automation - Part 3: General requirements	IEC/TC 57	DRAFT (supersedes EN 61850-3:2002) / 5060 (Voting results established and sent to TC)	Core	Substation Automation
325	EN 61850-4:2011	IEC 61850-4:2011 (EQV)	Communication networks and systems in substations - Part 4: System and DRAFT management	IEC/TC 57		Core	Substation Automation
326	EN 61850-5:2003	IEC 61850-5:2003 (EQV)	Communication networks and systems in substations - Part 5: Communication requirements for functions and device models	IEC/TC 57		Core	Substation Automation
327	EN 61850-5:2013	IEC 61850-5:2013 (EQV)	Communication networks and systems for power utility automation - Part 5: Communication requirements for functions and device models	IEC/TC 57		Core	Substation Automation
328	EN 61850-6:2010	IEC 61850-6:2009 (EQV)	Communication networks and systems for power utility automation - Part 6: Configuration description language for communication in electrical substations related to IEDs	IEC/TC 57		Core	Substation Automation
329	EN 61850-7-1:2011	IEC 61850-7-1:2011 (EQV)	Communication networks and systems for power utility automation - Part 7-1: Basic communication structure - Principles and models	IEC/TC 57		Core	Substation Automation
330	EN 61850-7-2:2010	IEC 61850-7-2:2010 (EQV)	Communication networks and systems for power utility automation - Part 7-2: Basic information and communication structure - Abstract communication service interface (ACSI)	IEC/TC 57		Core	Substation Automation

331	EN 61850-7-3:2011	IEC 61850-7-3:2010 (EQV)	Communication networks and systems in substations - Part 7-3: Basic communication structure for substation and feeder equipment - Common data classes	IEC/TC 57		Core	Substation Automation
332	EN 61850-7-4:2010	IEC 61850-7-4:2010 (EQV)	Communication networks and systems for power utility automation - Part 7-4: Basic communication structure - Compatible logical node classes and data object classes	IEC/TC 57		Core	Substation Automation
333	EN 61850-7-410:2007	IEC 61850-7-410:2007 (EQV)	Communication networks and systems for power utility automation - Part 7-410: Hydroelectric power plants - Communication for monitoring and control	IEC/TC 57		High	Hydro Power
334	EN 61850-7-410:2013	IEC 61850-7-410:2012 (EQV)	Communication networks and systems for power utility automation - Part 7-410: Basic communication structure - Hydroelectric power plants - Communication for monitoring and control	IEC/TC 57		High	Hydro Power
335	EN 61850-7-420:2009	IEC 61850-7-420:2009	Communication networks and systems for power utility automation - Part 7-420: Basic communication structure - Distributed energy resources logical nodes	IEC/TC 57		Low	Information models for DER
336	EN 61850-8-1:2011	IEC 61850-8-1:2011 (EQV)	Communication networks and systems in substations - Part 8-1: Specific Communication Service Mapping (SCSM) - Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3	IEC/TC 57		Core	Substation Automation
337	EN 61850-9-1:2003	IEC 61850-9-1:2003 (EQV)	Communication networks and systems in substations - Part 9-1: Specific Communication Service Mapping (SCSM) - Sampled values over serial unidirectional multidrop point to point link	IEC/TC 57		Core	Substation Automation
338	EN 61850-9-2:2011	IEC 61850-9-2:2011 (EQV)	Communication networks and systems in substations - Part 9-2: Specific Communication Service Mapping (SCSM) - Sampled values over	IEC/TC 57		Core	Substation Automation

			ISO/IEC 8802-3				
339	EN 61851-1:2011	IEC 61851-1:2010	Electric vehicle conductive charging system - Part 1: General requirements	IEC/TC 69; CLC/TC 69		High	Electrical vehicle charging
340		IEC 61851-1 Ed.3 (*1CD)	Electric vehicle conductive charging system - Part 1: General requirements	IEC/TC 69; CLC/TC 69	DRAFT /2st Committee Draft	High	Electrical vehicle charging
341	EN 61851-21:2002	IEC 61851-21:2001	Electric vehicle conductive charging system - Part 21: Electric vehicle requirements for conductive connection to an a.c./d.c. supply	IEC/TC 69; CLC/TC 69		High	Electrical vehicle charging
342	EN 61851-22:2002	IEC 61851-22:2001	Electric vehicle conductive charging system - Part 22: AC electric vehicle charging station	IEC/TC 69; CLC/TC 69		High	Electrical vehicle charging
343	FprEN 61851-23:201X	IEC 61851-23:201X (69/227/CDV) (EQV)	Electric vehicle conductive charging system - Part 23: D.C. electric vehicle charging station	CLC TC 69/ IECTC 69	DRAFT *M468/ 5060 (Voting results established and sent to TC)	High	Electrical vehicle charging
344	FprEN 61851-24:2012	IEC 61851-24:201X (69/223/CDV) (EQV)	Electric vehicle conductive charging system - Part 24: Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging	CLC TC 69/ IECTC 69	DRAFT *M468/ 5060 (Voting results established and sent to TC)	High	Electrical vehicle charging
345	EN 61869-1:2009	IEC 61869-1:2007, modified	Instrument transformers - Part 1: General requirements	IEC/TC 38		Medium	Instrument transformers
346	EN 61869-2:2012	IEC 61869-2:2012 (EQV)	Instrument transformers - Part 2: Additional requirements for current transformers	IEC/TC 38		Medium	Instrument transformers
347	EN 61869-3:2011	IEC 61869-3:2011	Instrument transformers - Part 3: Specific requirements for inductive voltage transformers	IEC/TC 38		Medium	Instrument transformers
348	FprEN 61869-4:2012	IEC 61869-4:201X (38/434/CDV) (EQV)	Instrument transformers - Part 4: Combined transformers	IEC/TC 38	DRAFT / 5060 (Voting results established and sent to TC)	Medium	Instrument transformers
349	EN 61869-5:2011	IEC 61869-5:2011	Instrument transformers - Part 5: Specific requirements for Capacitive Voltage Transformers	IEC/TC 38		Medium	Instrument transformers

350	EN 61954:2011	IEC 61954:2011	Power electronics for electrical transmission and distribution systems - Testing of thyristor valves for static VAR compensators	IEC/TC 22/SC 22F		Low	Power electronics for electrical transmission and distribution systems
351	EN 61968-1:2004	IEC 61968-1:2003 (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general requirements	IEC/TC 57		Core	Distribution Management (for the residential and small business customers)
352	EN 61968-1:2013	IEC 61968-1:2012 (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general requirements	IEC/TC 57		Core	Distribution Management
353	FprEN 61968-100:2013	IEC 61968-100:201X (57/1244/CDV) (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 100: Implementation profiles	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)	Core	Distribution Management - OSI layers of communication network
354	EN 61968-11:2010	IEC 61968-11:2010	Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution	IEC/TC 57		Core	Distribution Management
355	EN 61968-11:2013	IEC 61968-11:2013 (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution	IEC/TC 57		Core	Distribution Management
356	EN 61968-13:2008	IEC 61968-13:2008 (EQV)	Application integration at electric utilities - System interfaces for distribution management	IEC/TC 57		Core	Distribution Management

			- Part 13: CIM RDF Model exchange format for distribution				t
357	EN 61968-3:2004	IEC 61968-3:2004 (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for network operations	IEC/TC 57		Core	Distribution Management
358	EN 61968-4:2007	IEC 61968-4:2007 (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 4: Interfaces for records and asset management	IEC/TC 57		Core	Distribution Management
359	EN 61968-9:2009	IEC 61968-9:2009	Application integration at electric utilities - System interfaces for distribution management - Part 9: Interfaces for meter reading and control	IEC/TC 57		Core	Distribution Management
360	FprEN 61968-9:2012	IEC 61968-9:201X (57/1243/CDV) (EQV)	Application integration at electric utilities - System interfaces for distribution management - Part 9: Interfaces for meter reading and control	IEC/TC 57	DRAFT (supersedes EN 61968-9:2009) / 5060 (Voting results established and sent to TC)	Core	Distribution Management
361	EN 61970-1:2006	IEC 61970-1:2005 (EQV)	Energy management system application program interface (EMS-API) -- Part 1: Guidelines and general requirements	IEC/TC 57		Core	Common Information Model / Generic Interface Definitions
362	EN 61970-301:2011	IEC 61970-301:2011 (EQV)	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	IEC/TC 57		Core	Common Information Model / Generic Interface Definitions
363	FprEN 61970-301:2013	IEC 61970-301:2013 (EQV)	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	IEC/TC 57	DRAFT (supersedes EN 61970-301:2011) / 5060 (Voting results established and sent	Core	Common Information Model / Generic

					to TC)		Interface Definitions
364	EN 61970-402:2008	IEC 61970-402:2008 (EQV)	Energy management system application program interface (EMS-API) - Part 402: Common services	IEC/TC 57		Core	Common Information Model & EMS-API
365	EN 61970-403:2008	IEC 61970-403:2008 (EQV)	Energy management system application program interface (EMS-API) - Part 403: Generic data access	IEC/TC 57		Core	Common Information Model & EMS-API
366	EN 61970-404:2007	IEC 61970-404:2007 (EQV)	Energy management system application program interface (EMS-API) - Part 404: High Speed Data Access (HSDA)	IEC/TC 57		Core	Common Information Model & EMS-API
367	EN 61970-405:2007	IEC 61970-405:2007 (EQV)	Energy management system application program interface (EMS-API) - Part 405: Generic Eventing and Subscription (GES)	IEC/TC 57		Core	Common Information Model & EMS-API
368	EN 61970-407:2007	IEC 61970-407:2007 (EQV)	Energy management system application program interface (EMS-API) - Part 407: Time Series Data Access (TSDA)	IEC/TC 57		Core	Common Information Model & EMS-API
369	FprEN 61970-452:2012	IEC 61970-452:201X (57/1271/CDV) (EQV)	Energy Management System Application Program Interface (EMS-API) - Part 452: CIM static transmission network model profiles	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)	Core	Common Information Model & EMS-API
370	EN 61970-453:2008	IEC 61970-453:2008 (EQV)	Energy management system application program interface (EMS-API) - Part 453: CIM based graphics exchange	IEC/TC 57		Core	Common Information Model & EMS-API
371	FprEN 61970-453:2012	IEC 61970-453:2012 (57/1263/CDV) (EQV)	Energy management system application program interface (EMS-API) - Part 453: CIM based graphics exchange	IEC/TC 57	DRAFT (supersedes EN 61970-453:2008) / 5060 (Voting results established and sent	Core	Common Information Model & EMS-API

					to TC)		
372	FprEN 61970-456:201X	IEC 61970-456:201X (57/1099/CDV) (EQV)	Energy management system application program interface (EMS-API) - Part 456: Solved power system state profiles	IEC/TC 57	DRAFT / 5099 (Project ratified - Proceed to publication phase)	Core	Common Information Model & EMS-API
373	EN 61970-501:2006	IEC 61970-501:2006 (EQV)	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	IEC/TC 57		Core	Common Information Model & EMS-API
374		IEC 61970-502-8 Ed. 1.0	Energy Management System Application Program Interface (EMS-API) - Part 502-8: Web Services Profile for 61970-4 Abstract Services	IEC/TC 57	DRAFT / PWI (Potential new work item)	Core	Common Information Model & EMS-API
375	FprEN 61970-552:2012	IEC 61970-552:201X (57/1262/CDV) (EQV)	Energy Management System Application Program Interface (EMS-API) - Part 552: CIM XML Model Exchange Format	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)	Core	Common Information Model & EMS-API
376	EN 61982:2012	IEC 61982:2012 (EQV)	Secondary batteries (except lithium) for the propulsion of electric road vehicles - Performance and endurance tests	IEC/TC 21	Published (supersedes EN 61982-1:2006, EN 61982-2:2002, EN 61982-3:2001)	Low	Secondary cells and batteries
377	EN 61987-1:2007	IEC 61987-1:2006	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 1: Measuring equipment with analogue and digital output	IEC/TC 65 E		Medium	Industrial-process measurement and control & IT applications in industry
378	EN 61987-10:2009	IEC 61987-10:2009	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 10: List of Properties (LOPs) for Industrial-Process Measurement and Control for Electronic Data	IEC/TC 65 E		Medium	Industrial-process measurement and control & IT

			Exchange - Fundamentals				applications in industry
379	EN 61987-11:2012	IEC 61987-11:2012	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 11: List of Properties (LOP) of measuring equipment for electronic data exchange - Generic structures	IEC/TC 65 E		Medium	Industrial-process measurement and control & IT applications in industry
380	FprEN 61987-12:2012	IEC 61987-12:201X (65E/284/CDV) (EQV)	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 12: Lists of Properties (LOP) for Flow Measuring Equipment for electronic data exchange	IEC/SC 65E	DRAFT / 5060 (Voting results established and sent to TC/SC)		
381		prIEC 61987-13:201X	Industrial-process measurement and control - Data structures and elements in process equipment catalogues. Part 13: Lists of properties (LOP) for Pressure Measuring Equipment for electronic data exchange	IEC/SC 65E	DRAFT / ACDV (Approved for Committee Draft with Vote)		
382		prIEC 61987-21:201X	List of Properties (LOP) of process control valves for electronic data exchange - Generic structures	IEC/SC 65E	DRAFT / ANW (Approved New Work)		
383		prIEC 61987-22:201X	Lists of Properties (LOP) of control valves and actuators for electronic data exchange	IEC/SC 65E	DRAFT / ANW (Approved New Work)		
384	EN 62052-11:2003	IEC 62052-11:2003 (EQV)	Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment	IEC/TC 13		High	Metering
385	EN 62052-21:2004	IEC 62052-21:2004 (EQV)	Electricity metering equipment (a.c.) - General requirements, tests and test conditions - Part 21: Tariff and load control equipment	IEC/TC 13		High	Metering
386	EN 62053-11:2003	IEC 62053-11:2003 (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 11: Electromechanical meters for active energy	IEC/TC 13		High	Metering

			(classes 0, 5, 1 and 2)				
387	EN 62053-21:2003	IEC 62053-21:2003 (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)	IEC/TC 13		High	Metering
388	EN 62053-22:2003	IEC 62053-22:2003 (EQV)	Electricity metering equipment (a.c.) - Particular Requirements - Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)	IEC/TC 13	*M/441	High	Metering
389	EN 62053-23:2003	IEC 62053-23:2003 (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 23: Static meters for reactive energy (classes 2 and 3)	IEC/TC 13	*M/441	High	Metering
390	FprEN 62053-24:2012	IEC 62053-24:201X (13/1513/CDV) (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 24: Static meters for fundamental component reactive energy (classes 0,5 S, 1S and 1)	IEC/TC 13; CLC/TC 13	DRAFT*M404; M441 / 5060 (Voting results established and sent to TC)	Low	EMC
391	EN 62053-31:1998	IEC 62053-31:1998 (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 31: Pulse output devices for electromechanical and electronic meters (two wires only)	IEC/TC 13		High	Metering
392	EN 62053-52:2005	IEC 62053-52:2005 (EQV)	Electricity metering equipment (AC) - Particular requirements - Part 52: Symbols	IEC/TC 13		High	Metering
393	EN 62053-61:1998	IEC 62053-61:1998 (EQV)	Electricity metering equipment (a.c.) - Particular requirements - Part 61: Power consumption and voltage requirements	IEC/TC 13		High	Metering
394	EN 62054-11:2004	IEC 62054-11:2004	Electricity metering (a.c.) - Tariff and load control - Part 11: Particular requirements for electronic ripple control receivers	IEC/TC 13		High	Metering
395	EN 62054-21:2004	IEC 62054-21:2004	Electricity metering (a.c.) - Tariff and load control - Part 21: Particular requirements for time switches	IEC/TC 13		High	Metering
396	EN 62056-21:2002	IEC 62056-21:2002 (EQV)	Electricity metering - Data exchange for meter reading, tariff and load control - Part 21: Direct local data exchange	IEC/TC 13	*M441	High	COSEM - Companion Specification for Energy

							Metering
397	FprEN 62056-3-1:201X	IEC 62056-3-1:201X (13/1461/CDV) (EQV)	Electricity metering - Data exchange for meter reading, tariff and load control - Part 3-1: Use of local area networks on twisted pair with carrier signalling	IEC/TC 13	DRAFT (supersedes EN 62056-31:2000 *M441) / 5020 (Vote circulated)	High	COSEM - Companion Specification for Energy Metering
398	EN 62056-42:2002	IEC 62056-42:2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 42: Physical layer services and procedures for connection-oriented asynchronous data exchange	IEC/TC 13	*M441	High	COSEM - Companion Specification for Energy Metering
399	EN 62056-46:2002	IEC 62056-46:2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol	IEC/TC 13	*M441	High	COSEM - Companion Specification for Energy Metering
400	EN 62056-46:2002/A1:2007	IEC 62056-46:2002/A1:2006	Amendment 1 - Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol	IEC/TC 13	*M441	High	COSEM - Companion Specification for Energy Metering
401	EN 62056-47:2007	IEC 62056-47:2006 (EQV)	Electricity metering - Data exchange for meter reading, tariff and load control - Part 47: COSEM transport layers for IPv4 networks	IEC/TC 13	*M441	High	DLMS/COSEM - Distribution Line Message Specification /Companion Specification for Energy Metering
402	FprEN 62056-5-3:2013	EC 62056-5-3:2013 (EQV)	Electricity metering data exchange - The DLMS/COSEM suite - Part 5-3: DLMS/COSEM application layer	IEC/TC 13	DRAFT*M/490 / 5060 (Voting results sent to Technical Body,	High	DLMS/COSEM - Distribution

					SR)		Line Message Specification /Companion Specification for Energy Metering
403	prEN 62056-5-8	prIEC 62056-5-8	SML container services	IEC/TC 13	DRAFT *M/441; M490/ 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
404	FprEN 62056-6-1:2013	IEC 62056-6-1:2013 (EQV)	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object identification system (OBIS)	IEC/TC 13	DRAFT*M/490 / 5060 (Voting results sent to Technical Body, SR)	High	DLMS/COSE M - Distribution Line Message Specification /Companion Specification for Energy Metering
405	FprEN 62056-6-2:2013	IEC 62056-6-2:2013 (EQV)	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes	IEC/TC 13	DRAFT*M/490 / 5060 (vote circulated)	High	DLMS/COSE M - Distribution Line Message Specification /Companion Specification for Energy Metering
406		prIEC 62056-6-	Mapping between the Common Information	IEC/TC 13	DRAFT / ANW	High	DLMS/COSE

		9:20XX	Model CIM (IEC 61968-9) and DLMS/COSEM (IEC 62056) data models and message profiles		(Approved New Work)		M - Distribution Line Message Specification /Companion Specification for Energy Metering
407	FprEN 62056-7-6:2013	IEC 62056-7-6:2013 (EQV)	Electricity metering data exchange - the DLMS/COSEM suite - Part 7-6: The 3-layer, connection-oriented HDLC based communication profile	IEC/TC 13	DRAFT*M/490 / 5099 (Project ratified - Proceed to publication phase)	High	DLMS/COSEM - Distribution Line Message Specification /Companion Specification for Energy Metering
408	FprEN 62056-8-3:2013	IEC 62056-8-3:2013 (EQV)	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-3: The PLC S-FSK communication profile for neighbourhood networks	IEC/TC 13	DRAFT*M/490 / 5099 (Project ratified - Proceed to publication phase)	High	DLMS/COSEM - Distribution Line Message Specification /Companion Specification for Energy Metering
409		IEC 62056-8-6:20XX	ELECTRICITY METERING DATA EXCHANGE - THE DLMS/COSEM SUITE - Part 8-X: DMT PLC profile for neighbourhood networks	IEC/TC 13	DRAFT / ANW (Approved New Work)	High	DLMS/COSEM - Distribution Line Message

							Specification /Companion Specification for Energy Metering
410	FprEN 62056-9-7:2013	IEC 62056-9-7:2013 (EQV)	Electricity metering data exchange - The DLMS/COSEM suite - Part 9-7: Communication profile for TCP-UDP/IP networks	IEC/TC 13	DRAFT*M/490 / 5099 (Project ratified - Proceed to publication phase)	High	DLMS/COSEM - Distribution Line Message Specification /Companion Specification for Energy Metering
411	EN 62058-11:2010	IEC 62058-11:2008 (MOD)	Electricity metering equipment (a.c.) - Acceptance inspection - Part 11: General acceptance inspection methods	IEC/TC 13		High	Metering
412	EN 62058-21:2010	IEC 62058-21:2008 (MOD)	Electricity metering equipment (a.c.) - Acceptance inspection - Part 21: Particular requirements for electromechanical meters for active energy (classes 0,5, 1 and 2 and class indexes A and B)	IEC/TC 13		High	Metering
413	EN 62058-31:2010	IEC 62059-31:2008 (EQV)	Electricity metering equipment (AC) - Acceptance inspection - Part 31: Particular requirements for static meters for active energy (classes 0,2 S, 0,5 S, 1 and 2)	IEC/TC 13		High	Metering
414	FprEN 62264-1:2013	IEC 62264-1:2013 (EQV)	Enterprise system integration - Part 1: Models and terminology	IEC/SC 65 E	DRAFT (supersedes EN 62264-1:2008) / 5060 (Voting results sent to Technical Body)	Medium	Industrial automation systems; IT applications in industry
415	FprEN 62264-2:2013	IEC 62264-2:201X (65E/290/FDIS)	Enterprise system integration - Part 2: Object models and attributes	IEC/SC 65 E	DRAFT (supersedes EN 62264-1:2008) /	Medium	Industrial automation

		(EQV)			5060 (Voting results sent to Technical Body)		systems; IT applications in industry
416	EN 62264-3:2007	IEC 62264-3:2007 (EQV)	Enterprise-control system integration - Part 3: Activity models of manufacturing operations management	IEC/SC 65A		Medium	Industrial automation systems; IT applications in industry
417	EN 62264-5:2012	IEC 62264-5:2011 (EQV)	Enterprise system integration - Part 5: Business to manufacturing transactions	IEC/SC 65 E		Medium	Industrial automation systems; IT applications in industry
418		prIEC 62271-3:201X	High-voltage switchgear and controlgear - Part 3: Digital interfaces based on IEC 61850	IEC/SC 17C	DRAFT / CDM (Committee Draft to be discussed at Meeting)		
419	EN 62282-2:2012	IEC 62282-2:2012 (EQV)	Fuel cell technologies - Part 2: Fuel cell modules	IEC/TC 105		Low	Fuel cell
420	EN 62282-3-100:2012	IEC 62282-3-100:2012 (EQV)	Fuel cell technologies - Part 3-100: Stationary fuel cell power systems - Safety	IEC/TC 105	Supersedes EN 62282-3-1:2007	Low	Fuel cell
421	EN 62282-3-200:2012	IEC 62282-3-200:2011 (EQV)	Fuel cell technologies - Part 3-200: Stationary fuel cell power systems - Performance test methods	IEC/TC 105		Low	Fuel cell
422	EN 62282-3-300:2012	IEC 62282-3-300:2012 (EQV)	Fuel cell technologies - Part 3-300: Stationary fuel cell power systems - Installation	IEC/TC 105		Low	Fuel cell
423	EN 62282-5-1:2012	IEC 62282-5-1:2012 (EQV)	Fuel cell technologies - Part 5-1: Portable fuel cell power systems - Safety	IEC/TC 105		Low	Fuel cell
424	EN 62282-6-100:2010	IEC 62282-6-100:2010 (EQV) + corrigendum Dec. 2011 (EQV)	Fuel cell technologies -- Part 6-100: Micro fuel cell power systems - Safety	IEC/TC 105		Low	Fuel cell
425	EN 62282-6-200:2012	IEC 62282-6-200:2012 (EQV)	Fuel cell technologies - Part 6-200: Micro fuel cell power systems - Performance test	IEC/TC 105		Low	Fuel cell

			methods				
426	EN 62282-6-300:2009	IEC 62282-6-300:2009 (EQV)	Fuel cell technologies - Part 6-300: Micro fuel cell power systems - Fuel cartridge interchangeability	IEC/TC 105		Low	Fuel cell
427	FprEN 62325-301:2012	IEC 62325-301:201X (57/1232/CDV) (EQV)	Framework for energy market communications - Part 301: Common Information Model (CIM) extensions for markets	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)		
428	FprEN 62325-351:2012	IEC 62325-351:201X (57/1252/CDV) (EQV)	Framework for energy market communications - Part 351: CIM European market model exchange profile	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)		
429	FprEN 62325-450:2013	IEC 62325-450:2013 (EQV)	Framework for energy market communications - Part 450: Profile and context modelling rules	IEC/TC 57	DRAFT M490 / 5099 (Project ratified - Proceed to publication phase)		
430	FprEN 62325-451-1:2012	IEC 62325-451-1:201X (57/1267/CDV) (EQV)	Framework for energy market communications - Part 451-1: Acknowledgement business process and contextual model for CIM European market	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)		
431		prIEC 62325-451-2 Ed. 1.0	Framework for energy market communications - Part 451-2: Scheduling business process and contextual models for CIM European market	IEC/TC 57	DRAFT / ACDV (Approved for Committee Draft with Vote)		
432		prIEC 62325-451-3 Ed. 1.0	Framework for energy market communications - Part 451-3: Transmission capacity allocation business process (explicit or implicit auction) and contextual models for European market	IEC/TC 57	DRAFT / ACDV (Approved for Committee Draft with Vote)		
433		IEC/TS 62351-8:2011	Power systems management and associated information exchange - Data and communications security - Part 8: Role-based access control	IEC/TC 57		Core	Security for Power Systems
434		prIEC/TS 62351-9 Ed. 1.0	Power systems management and associated information exchange - Data and communications security - Part 9: Cyber security key management for power system	IEC/TC 57	DRAFT / ANW (Approved New Work)	Core	Security for Power Systems

			equipment				
435	FprEN 62361-100:2011	IEC 62361-100:201X (57/1191/CDV) (EQV)	Harmonization of quality codes across IEC/TC 57 - Part 100: Naming and design rules for CIM profiles to XML schema mapping	IEC/TC 57	DRAFT / 5060 (Voting results established and sent to TC)	Medium	Framework for energy market communications
436	EN 62439-1:2010	IEC 62439-1:2010 (EQV)	Industrial communication networks - High availability automation networks - Part 1: General concepts and calculation methods	IEC/TC 65/SC 65C		Low	Communication layer
437	EN 62439-1:2010/A1:2012	IEC 62439-1:2010/A1:2012 (EQV)	Industrial communication networks - High availability automation networks - Part 1: General concepts and calculation methods	IEC/TC 65/SC 65C		Low	Communication layer
438	EN 62439-2:2010	IEC 62439-2:2010 (EQV)	Industrial communication networks - High availability automation networks - Part 2: Media Redundancy Protocol (MRP)	IEC/TC 65/SC 65C		Low	Communication layer
439	EN 62439-3:2012	IEC 62439-3:2012 (EQV)	Industrial communication networks - High availability automation networks - Part 3: Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR)	IEC/TC 65/SC 65C		Low	Communication layer
440	EN 62439-4:2010	IEC 62439-4:2010 (EQV)	Industrial communication networks - High availability automation networks - Part 4: Cross-network Redundancy Protocol (CRP)	IEC/TC 65/SC 65C		Low	Communication layer
441	EN 62439-4:2010/A1:2012	IEC 62439-4:2010/A1:2012 (EQV)	Industrial communication networks - High availability automation networks - Part 4: Cross-network Redundancy Protocol (CRP)	IEC/TC 65/SC 65C		Low	Communication layer
442	EN 62439-5:2010	IEC 62439-5:2010 (EQV)	Industrial communication networks - High availability automation networks - Part 5: Beacon Redundancy Protocol (BRP)	IEC/TC 65/SC 65C		Low	Communication layer
443	EN 62439-6:2010	IEC 62439-6:2010 (EQV)	Industrial communication networks - High availability automation networks - Part 6: Distributed Redundancy Protocol (DRP)	IEC/TC 65/SC 65C		Low	Communication layer
444	EN 62439-7:2012	IEC 62439-7:2011 (EQV)	Industrial communication networks - High availability automation networks - Part 7: Ring-based Redundancy Protocol (RRP)	IEC/SC 65C		Low	Communication layer

445	EN 62488-1:2013	IEC 62488-1:2012 (EQV)	Power line communication systems for power utility applications - Part 1: Planning of analogue and digital power line carrier systems operating over EHV/HV/MV electricity grids	IEC/TC 57		Low	Power-line
446	EN 62541-10:2012	IEC 62541-10:2012 (EQV)	OPC unified architecture - Part 10: Programs	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
447	EN 62541-3:2010	IEC 62541-3:2010 (EQV)	OPC unified architecture - Part 3: Address Space Model	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
448	EN 62541-4:2011	IEC 62541-4:2011 (EQV)	OPC unified architecture - Part 4: Services	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
449	EN 62541-5:2011	IEC 62541-5:2011 (EQV)	OPC unified architecture - Part 5: Information model	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnect

							ion in general
450	EN 62541-6:2011	IEC 62541-6:2011 (EQV)	OPC unified architecture - Part 6: Mappings	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
451	EN 62541-7:2012	IEC 62541-7:2012 (EQV)	OPC unified architecture - Part 7: Profiles	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
452	EN 62541-8:2011	IEC 62541-8:2011 (EQV)	OPC unified architecture - Part 8: Data access	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
453	EN 62541-9:2012	IEC 62541-9:2012 (EQV)	OPC unified architecture - Part 9: Alarms and conditions	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general

454		IEC/IEEE/PAS 63547:2011 ed1.0	Interconnecting distributed resources with electric power systems	IEC/TC 8		High	Interconecti on rules in IEEE1547-2003
455		IEC/PAS 62559:2008 ed1.0	IntelliGrid methodology for developing requirements for energy systems	IEC/TC 8		High	Roadmap - terminology
456		IEC/TR 62510:2008	Standardising the characteristics of electricity	IEC/TC 8			
457		prIEC 62559 Ed.1	Use Case Approach Part 2 - Definition of Use Case Template, Actor list and Requirement List for Energy Systems	IEC/TC 8	DRAFT / 1st Committee Draft	Core	Roadmap
458	EN 62576:2010	IEC 62576:2009 (EQV)	Electric double-layer capacitors for use in hybrid electric vehicles - Test methods for electrical characteristics	IEC/TC 69		Low	Electric Double-Layer Capacitors for Use in Hybrid Electric Vehicles
459		prIEC 62749 Ed.1	Power Quality of Energy Supply - Characteristics of Power Quality of electricity supplied by public networks	IEC/TC 8	DRAFT / ANW (Approved New Work)	Core	Power Quality
460		prIEC 62786 Ed.1	Smart Grid User Interface: Demand Side Energy Sources Interconnection with the Grid	IEC/TC 8	DRAFT / ANW (Approved New Work)	Core	Smart Grid User Interface
461		IEC/PAS 62443-3:2008	Security for industrial process measurement and control - Network and system security	IEC/SC 65		Low	Security of Control Systems
462	CLC/TR 60919-1:2005	IEC/TR 60919-1:2005 (EQV)	Performance of high-voltage direct current (HVDC) systems with line-commutated converters - Part 1: Steady-state conditions	IEC/SC 22F		Low	HVDC - High Voltage Direct Current
463		IEC/TR 61000-3-13:2008	Electromagnetic compatibility (EMC) - Part 3-13: Limits - Assessment of emission limits for the connection of unbalanced installations to	IEC/SC 77A		Low	Electromagn etic compatibilit

			MV, HV and EHV power systems				y (EMC)
464		IEC/TR 61000-3-14:2011	Electromagnetic compatibility (EMC) - Part 3-14: Assessment of emission limits for harmonics, interharmonics, voltage fluctuations and unbalance for the connection of disturbing installations to LV power systems	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
465		IEC/TR 61000-3-6:2008	Electromagnetic compatibility (EMC) - Part 3-6: Limits - Assessment of emission limits for the connection of distorting installations to MV, HV and EHV power systems	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
466		IEC/TR 61000-3-7:2008	Electromagnetic compatibility (EMC) - Part 3-7: Limits - Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
467		IEC/TR 61334-1-1:1995	Distribution automation using distribution line carrier systems - Part 1: General considerations - Section 1: Distribution automation system architecture	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
468		IEC/TR 61334-1-2	Distribution automation using distribution line carrier systems - Part 1-2: General considerations - Guide for specification	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
469		IEC/TR 61334-1-4	Distribution automation using distribution line carrier systems - Part 1: General considerations - Section 4: Identification of data transmission parameters concerning medium and low-voltage distribution mains	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
470		IEC/TR 61850-1:2003	Communication networks and systems in substations - Part 1: Introduction and overview	IEC/TC 57		Core	Substation Automation
471		IEC/TR 61850-90-1:2010	Communication networks and systems for power utility automation - Part 90-1: Use of IEC 61850 for the communication between	IEC/TC 57		Core	Substation Automation

			substations				
472		IEC/TR 62051:1999	Electricity metering - Glossary of terms	IEC/TC 13		Medium	Metering
473		IEC/TR 62051-1:2004	Electricity metering - Data exchange for meter reading, tariff and load control - Glossary of terms - Part 1: Terms related to data exchange with metering equipment using DLMS/COSEM	IEC/TC 13		High	Metering
474		IEC/TR 62059-11:2002	Electricity metering equipment - Dependability - Part 11: General concepts	IEC/TC 13		High	Metering
475		IEC/TR 62059-21:2002	Electricity metering equipment - Dependability - Part 21: Collection of meter dependability data from the field	IEC/TC 13		High	Metering
476		IEC/TR 62325-101:2005	Framework for energy market communications - Part 101: General guidelines	IEC/TC 57		Medium	Framework for energy market communications
477		IEC/TR 62325-102:2005	Framework for energy market communications - Part 102: Energy market model example	IEC/TC 57		Medium	Framework for energy market communications
478		IEC/TR 62325-501:2005	Framework for energy market communications - Part 501: General guidelines for use of ebXML	IEC/TC 57		Medium	Framework for energy market communications
479		IEC/TR 62351-10:2012	Power systems management and associated information exchange - Data and communications security - Part 10: Security architecture guidelines	IEC/TC 57		Core	Security
480		IEC/TR 62357-1:2012 ed1.0 (supersedes IEC/TR 62357:2003)	Power systems management and associated information exchange - Part 1: Reference architecture	IEC/TC 57		Core	Roadmap

481		IEC/TR 62443-3-1:2009	Industrial communication networks - Network and system security - Part 3-1: Security technologies for industrial automation and control systems	IEC/SC 65		Low	Security of Control Systems
482		prIEC/TR 62511 Ed. 1.0	A Guide for the Design of Interconnected Power Systems	IEC/TC 8	DRAFT / ACDV (Approved for Committee Draft with Vote)	Core	Power Quality / Interconnection rules
483	CLC/TR 62541-1:2010	IEC/TR 62541-1:2010 (EQV)	OPC unified architecture - Part 1: Overview and concepts	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
484	CLC/TR 62541-2:2010	IEC/TR 62541-2:2010 (EQV)	OPC unified architecture - Part 2: Security model	IEC/TC 65/SC 65E		Low	High availability automation networks/Open systems interconnection in general
485		IEC/TS 60870-6-602:2001	Telecontrol equipment and systems - Part 6-602: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE transport profiles	IEC/TC 57		High	Inter-Control Center Protocol
486		IEC/TS 61000-6-5:2001	Electromagnetic compatibility (EMC) - Part 6-5: Generic standards - Immunity for power station and substation environments	IEC/SC 77A		Low	Electromagnetic compatibility (EMC)
487		IEC/TS 61085:1992	General considerations for telecommunication services for electric power systems	IEC/TC 57		Medium	Telecommunication

							services for electric power systems
488		IEC/TS 61334-5-2:1998	Distribution automation using distribution line carrier systems - Part 5-2: Lower layer profiles - Frequency shift keying (FSK) profile	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
489		IEC/TS 61334-5-3:2001	Distribution automation using distribution line carrier systems - Part 5-3: Lower-layer profiles - Spread spectrum adaptive wideband (SS-AW) profile	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
490		IEC/TS 61334-5-4:2001	Distribution automation using distribution line carrier systems - Part 5-4: Lower layer profiles - Multi-carrier modulation (MCM) profile	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
491		IEC/TS 61334-5-5:2001	Distribution automation using distribution line carrier systems - Part 5-5: Lower layer profiles - Spread spectrum - fast frequency hopping (SS-FFH) profile	IEC/TC 57		High	Distribution Line Message Specification (DLMS)
492		IEC/TS 61400-13:2001	Wind turbine generator systems - Part 13: Measurement of mechanical loads	IEC/TC 88		High	Wind Turbines
493		IEC/TS 61400-14:2005	Wind turbines - Part 14: Declaration of apparent sound power level and tonality values	IEC/TC 88		High	Wind Turbines
494		IEC/TS 61400-23:2001	Wind turbine generator systems - Part 23: Full-scale structural testing of rotor blades	IEC/TC 88		High	Wind Turbines
495	CLC/TS 61836:2009	IEC/TS 61836:2007 (EQV)	Solar photovoltaic energy systems - Terms, definitions and symbols	IEC/TC 82	supersedes CEI/TS 61836:1996 (adopted as SR CEI)	Medium	Solar voltaic

					61836:2006)		
496		IEC/TS 61850-2:2003	Communication networks and systems in substations - Part 2: Glossary	IEC/TC 57		Core	Substation Automation
497	CLC/TS 61850-80-1:2010	IEC/TS 61850-80-1:2008 (EQV)	Communication networks and systems for power utility automation - Part 80-1: Guideline to exchanging information from a CDC-based data model using IEC 60870-5-101 or IEC 60870-5-104	IEC/TC 57		Core	Substation Automation
498	X	IEC/TS 61968-2:2011	Application integration at electric utilities - System interfaces for distribution management - Part 2: Glossary	IEC/TC 57		Core	Distribution Management
499	CLC/TS 61970-2:2005	IEC/TS 61970-2:2004	Energy management system application program interface (EMS-API) - Part 2: Glossary	IEC/TC 57		Core	Common Information Model & EMS-API
500		IEC/TS 61970-401:2005	Energy management system application program interface (EMS-API) - Part 401: Component interface specification (CIS) framework	IEC/TC 57		Core	Common Information Model& EMS-API
501		IEC/TS 62257-1:2003	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 1: General introduction to rural electrification	IEC/TC 82		Medium	Solar voltaic
502		IEC/TS 62257-12-1:2007	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 12-1: Selection of self-ballasted lamps (CFL) for rural electrification systems and recommendations for household lighting equipment	IEC/TC 82		Medium	Solar voltaic
503		IEC/TS 62257-2:2004	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 2: From requirements to a range of electrification systems	IEC/TC 82		Medium	Solar voltaic
504		IEC/TS 62257-3:2004	Recommendations for small renewable energy	IEC/TC 82		Medium	Solar voltaic

			and hybrid systems for rural electrification - Part 3: DRAFT development and management				
505		IEC/TS 62257-4:2005	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 4: System selection and design	IEC/TC 82		Medium	Solar voltaic
506		IEC/TS 62257-5:2005	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 5: Protection against electrical hazards	IEC/TC 82		Medium	Solar voltaic
507		IEC/TS 62257-6:2005	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 6: Acceptance, operation, maintenance and replacement	IEC/TC 82		Medium	Solar voltaic
508		IEC/TS 62257-7:2008	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 7: Generators	IEC/TC 82		Medium	Solar voltaic
509		IEC/TS 62257-7-1:2006	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 7-1: Generators - Photovoltaic generators	IEC/TC 82		Medium	Solar voltaic
510		IEC/TS 62257-7-3:2008	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 7-3: Generator set - Selection of generator sets for rural electrification systems	IEC/TC 82		Medium	Solar voltaic
511		IEC/TS 62257-8-1:2007	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 8-1: Selection of batteries and battery management systems for stand-alone electrification systems - Specific case of automotive flooded lead-acid batteries available in developing countries	IEC/TC 82		Medium	Solar voltaic
512		IEC/TS 62257-9-1:2008	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-1: Micropower systems	IEC/TC 82		Medium	Solar voltaic
513		IEC/TS 62257-9-2:2006	Recommendations for small renewable energy and hybrid systems for rural electrification -	IEC/TC 82		Medium	Solar voltaic

			Part 9-2: Microgrids				
514		IEC/TS 62257-9-3:2006	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-3: Integrated system - User interface	IEC/TC 82		Medium	Solar voltaic
515		IEC/TS 62257-9-4:2006	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-4: Integrated system - User installation	IEC/TC 82		Medium	Solar voltaic
516		IEC/TS 62257-9-5:2007	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-5: Integrated system - Selection of portable PV lanterns for rural electrification DRAFTs	IEC/TC 82		Medium	Solar voltaic
517		IEC/TS 62257-9-6:2008	Recommendations for small renewable energy and hybrid systems for rural electrification - Part 9-6: Integrated system - Selection of Photovoltaic Individual Electrification Systems (PV-IES)	IEC/TC 82		Medium	Solar voltaic
518		IEC/TS 62282-1:2010	Fuel cell technologies - Part 1: Terminology	IEC/TC 105		Low	Fuel cell standards
519		IEC/TS 62325-502:2005	Framework for energy market communications - Part 502: Profile of ebXML	IEC/TC 57		Medium	ebXML for Power Systems
520		IEC/TS 62351-1:2007	Power systems management and associated information exchange - Data and communications security - Part 1: Communication network and system security - Introduction to security issues	IEC/TC 57		Core	Security
521		IEC/TS 62351-2:2008	Power systems management and associated information exchange - Data and communications security - Part 2: Glossary of terms	IEC/TC 57		Core	Security
522		IEC/TS 62351-4:2007	Power systems management and associated information exchange - Data and communications security - Part 4: Profiles	IEC/TC 57		Core	Security

			including MMS				
523		IEC/TS 62351-6:2007	Power systems management and associated information exchange - Data and communications security - Part 6: Security for IEC 61850	IEC/TC 57		Core	Security
524		IEC/TS 62351-7:2010	Power systems management and associated information exchange - Data and communications security - Part 7: Network and system management (NSM) data object models	IEC/TC 57		Core	Security
525		IEC/TS 62600-100:2012	Marine energy - Wave, tidal and other water current converters - Part 100: Power performance assessment of electricity producing wave energy converters	IEC/TC 114		Low	Marine Power
526		ISO 81400-4:2005	Wind turbines - Part 4: Design and specification of gearboxes	IEC/TC 88		High	Wind Turbines
527		ISO/IEC 12139-1 ed1.0	Information technology -- Telecommunications and information exchange between systems -- Powerline communication (PLC) -- High speed PLC medium access control (MAC) and physical layer (PHY) -- Part 1: General requirements	ISO/IEC/JTC 1/SC6		Low	Information Technology
528		ISO/IEC/IEEE 42010:2011	Systems and software engineering -- Architecture description	ISO/IEC/JTC 1/SC7			
528		ISO/IEC 14543-2-1:2006	Information technology - Home electronic system (HES) architecture - Part 2-1: Introduction and device modularity	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
529		ISO/IEC 14543-3-1:2006	Information technology - Home electronic system (HES) architecture - Part 3-1: Communication layers - Application layer for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
530		ISO/IEC 14543-3-2:2006	Information technology - Home electronic system (HES) architecture - Part 3-2: Communication layers - Transport, network and general parts of data link layer for network	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES

			based control of HES Class 1				
531		ISO/IEC 14543-3-3:2007	Information technology - Home electronic system (HES) architecture - Part 3-3: User process for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
532		ISO/IEC 14543-3-4:2007	Information technology - Home electronic system (HES) architecture - Part 3-4: System management - Management procedures for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
533		ISO/IEC 14543-3-5:2007	Information technology - Home electronic system (HES) architecture - Part 3-5: Media and media dependent layers - Powerline for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
534		ISO/IEC 14543-3-6:2007	Information technology - Home electronic system (HES) architecture - Part 3-6: Media and media dependent layers - Twisted pair for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
535		ISO/IEC 14543-3-7:2007	Information technology - Home electronic system (HES) architecture - Part 3-7: Media and media dependent layers - Radio frequency for network based control of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
536		ISO/IEC 14543-4-1:2008	Information technology - Home electronic system (HES) architecture - Part 4-1: Communication layers - Application layer for network enhanced control devices of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
537		ISO/IEC 14543-4-2:2008	Information technology - Home electronic system (HES) architecture - Part 4-2: Communication layers - Transport, network and general parts of data link layer for network enhanced control devices of HES Class 1	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
538		ISO/IEC 14543-5-1:2010	Information technology - Home electronic system (HES) architecture - Part 5-1: Intelligent grouping and resource sharing for Class 2 and	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES

			Class 3 - Core protocol				
539		ISO/IEC 14543-5-22:2010	Information technology - Home electronic system (HES) architecture - Part 5-22: Intelligent grouping and resource sharing for HES Class 2 and Class 3 - Application profile - File profile	ISO/IEC/JTC 1/SC25		Low	Information Technology – HES
540	EN ISO 19142:2010	ISO 19142:2010	Geographic information - Web Feature Service	ISO/TC 211		Low	Geographic Information/ Weather forecast and observation system
541		ISO/IEC 15408-1:2009	Information technology -- Security techniques - - Evaluation criteria for IT security -- Part 1: Introduction and general model	ISO/IEC/JTC 1/SC27			Security
542		ISO/IEC 15408-2:2008	Information technology -- Security techniques - - Evaluation criteria for IT security -- Part 2: Security functional components	ISO/IEC/JTC 1/SC27			Security
543		ISO/IEC 15408-3:2008	Information technology -- Security techniques - - Evaluation criteria for IT security -- Part 3: Security assurance components	ISO/IEC/JTC 1/SC27			Security
544		ISO/IEC 19790:2012	Information technology -- Security techniques - - Security requirements for cryptographic modules	ISO/IEC/JTC 1/SC27			Security
545		ISO/IEC 27000:2012	Information technology — Security techniques — Information security management systems - Overview and vocabulary	ISO/IEC/JTC 1/SC27			Security
546		ISO/IEC 27001:2005	Information technology. Security techniques. Information security management systems. Requirements	ISO/IEC/JTC 1/SC27			Cyber security
547		ISO/IEC 27002:2005	Information technology -- Security techniques - - Code of practice for information security management	ISO/IEC/JTC 1/SC27			Cyber security
548		ISO/IEC 27003:2010	Information technology -- Security techniques -	ISO/IEC/JTC 1/SC27			Security

			- Information security management system implementation guidance				
549		ISO/IEC 27005:2011	Information technology -- Security techniques - - Information security risk management	ISO/IEC/JTC 1/SC27			Security
550		ISO/IEC 27006:2011	Information technology -- Security techniques - - Requirements for bodies providing audit and certification of information security management systems	ISO/IEC/JTC 1/SC27			Security
551		ISO/IEC 27007:2011	Information technology -- Security techniques - - Guidelines for information security management systems auditing	ISO/IEC/JTC 1/SC27			Security
552		ISO/IEC TR 27008:2011	Information technology -- Security techniques - - Guidelines for auditors on information security controls	ISO/IEC/JTC 1/SC27			Security
553		ISO/IEC 27010:2012	Information technology -- Security techniques - - Information security management for inter-sector and inter-organizational communications	ISO/IEC/JTC 1/SC27			Security
554		ISO/IEC 27011:2008	Information technology -- Security techniques - - Information security management guidelines for telecommunications organizations based on ISO/IEC 27002	ISO/IEC/JTC 1/SC27			Security
555		ISO/IEC 27014:2013	Information technology -- Security techniques - - Governance of information security	ISO/IEC/JTC 1/SC27			Security
556		ISO/IEC TR 27015:2012	Information technology -- Security techniques - - Information security management guidelines for financial services	ISO/IEC/JTC 1/SC27			Security
557		ISO/IEC 27031:2011	Information technology -- Security techniques - - Guidelines for information and communication technology readiness for business continuity	ISO/IEC/JTC 1/SC27			Security
558		ISO/IEC 27032:2012	Information technology -- Security techniques - - Guidelines for cybersecurity	ISO/IEC/JTC 1/SC27			Cyber security
559		ISO/IEC 27033-	Information technology -- Security techniques -	ISO/IEC/JTC 1/SC27			Security

		1:2009	- Network security -- Part 1: Overview and concepts				
560		ISO/IEC 27033-2:2012	Information technology -- Security techniques - - Network security -- Part 2: Guidelines for the design and implementation of network security	ISO/IEC/JTC 1/SC27			Security
561		ISO/IEC 27033-3:2010	Information technology -- Security techniques - - Network security -- Part 3: Reference networking scenarios -- Threats, design techniques and control issues	ISO/IEC/JTC 1/SC27			Security
562		ISO/IEC 27034-1:2011	Information technology -- Security techniques - - Application security -- Part 1: Overview and concepts	ISO/IEC/JTC 1/SC27			Security
563		ISO/IEC 27035:2011	Information technology -- Security techniques - - Information security incident management	ISO/IEC/JTC 1/SC27			Security
564		ISO/IEC 27037:2012	Information technology -- Security techniques - - Guidelines for identification, collection, acquisition and preservation of digital evidence	ISO/IEC/JTC 1/SC27			Security
565		ISO/IEC WD 27017	Information technology -- Security techniques - - Code of practice for information security controls for cloud computing services based on ISO/IEC 27002	ISO/IEC/JTC 1/SC27	Working draft (WD) study initiated		Security
566		ISO/IEC PRF TR 27019	Information technology -- Security techniques - - Information security management guidelines based on ISO/IEC 27002 for process control systems specific to the energy utility industry	ISO/IEC/JTC 1/SC27	FDIS registered for formal approval		Security
567		ISO/IEC 7498-1:1994	Information technology -- Open Systems Interconnection -- Basic Reference Model: The Basic Model	ISO/IEC/JTC 1			Telecommunication
568		prIEC 61000-2-12:201X	Electromagnetic compatibility (EMC) - Part 2-12: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public medium-voltage power	IEC/SC 77A	DRAFT / ANW (Approved Maintenance Work)	Low	Electromagnetic compatibility (EMC)

			supply systems				
569		prIEC 61000-2-2:201X	Electromagnetic compatibility (EMC) - Part 2-2: Environment - Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	IEC/SC 77A	DRAFT / ANW (Approved New Work)	Low	Electromagnetic compatibility (EMC)
570		prIEC 62689-1:201X	Current and Voltage sensors or detectors, to be used for fault passage indication purposes - Part 1: General principles and requirements	IEC/TC 38	DRAFT / ACDV (Approved for Committee Draft with Vote)	High	Smart Network Management
571		pr IEC 62746:201X	System interfaces and communication protocol profiles relevant for systems connected to the Smart Grid	IEC/TC 57	DRAFT / ANW (Approved New Work)	High	TASE2 - Telecontrol Application Service Element
572		prISO/IEC 15118-1:201X	Road vehicles - Vehicle to grid communication interface - Part 1: General information and use-case definition	IEC/TC 69	DRAFT / CCDV (Draft circulated as Committee Draft with Vote)	High	Grid Communication Interface
573		prISO/IEC 15118-2:201X	Road vehicles - Vehicle-to-Grid Communication Interface - Part 2: Technical protocol description and Open Systems Interconnections (OSI) layer requirements	IEC/TC 69	DRAFT / CCDV (Draft circulated as Committee Draft with Vote)	High	Grid Communication Interface
574		prISO/IEC 15118-3:201X	Road vehicles - Vehicle to grid Communication Interface - Part 3: Physical and data link layer requirements	IEC/TC 69	DRAFT / CCDV (Draft circulated as Committee Draft with Vote)	High	Grid Communication Interface
575		prIEC 61000-4-19:201X	Electromagnetic Compatibility (EMC) Part 4-19 - Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances in the frequency range from 2 kHz to 150 kHz, at a.c. ports	IEC/SC 77B	DRAFT / CCDV (Circulated Committee Draft for Vote)	Low	Electromagnetic compatibility (EMC)
576		prIEC 61000-4-36:201X	Electromagnetic compatibility (EMC) - Testing	IEC/SC 77A	DRAFT / 1st Committee Draft	Low	Electromagnetic

			and measurement techniques - IEMI Immunity Test Methods for Equipment and Systems				compatibility (EMC)
577		prIEC 61850-90-13 Ed. 1	Extension of IEC 61850 information models to also include logical nodes and data models for steam and gas turbines	IEC/TC 57	DRAFT / ANW (Approved New Work)	Core	Substation Automation
578		prIEC 61869-7:201X	Instrument transformers - Part 7: Specific requirements for electronic Voltage Transformers	IEC/TC 38	DRAFT / PWI (Potential new work item)	Medium	Instrument transformers
579	FprEN 61869-6:2012	IEC 61869-6:201X (38/443/CDV) (EQV)	Instruments transformers - Part 6: Additional general requirements for Low Power Instrument Transformers	IEC/TC 38	DRAFT / 5060 (Voting results sent to Technical Body, SR)		
580		prIEC 61869-8:201X	Instrument transformers - Part 8: Specific requirements for electronic Current Transformers	IEC/TC 38	DRAFT / PWI (Potential new work item)	Medium	Instrument transformers
581	FprEN 61869-9:2012	IEC 61869-9:201X (38/438A/CDV) (EQV)	Instrument Transformers - Part 9: Digital interface for instrument transformers	IEC/TC 38	DRAFT / 5060 (Voting results established and sent to TC)	Medium	Instrument transformers
582		prIEC 61968-6	Application integration at electric utilities - System interfaces for distribution management - Part 6: Interfaces for maintenance and construction	IEC/TC 57	DRAFT / /ACDV (Draft approved for Committee Draft with vote)	Core	Distribution Management
583		prIEC 61968-8	Application integration at electric utilities - System interfaces for distribution management - Part 8: Interface Standard For Customer Support	IEC/TC 57	DRAFT / CCDV (Draft circulated as Committee Draft with Vote)	Core	Distribution Management
584		prIEC 61980-1:201X	Electric equipment for the supply of energy to electric road vehicles using an inductive coupling - Part 1: General requirements	IEC/TC 69	DRAFT / 1st Committee Draft	High	Electrical vehicle charging
585		prIEC 61980-2:201X	Electric equipment for the supply of energy to electric road vehicles using an inductive coupling - Part 2: Manual connection system using a paddle	IEC/TC 69	DRAFT / PWI (Potential new work item)	High	Electrical vehicle charging
586		prIEC 62351-3:201X	Power systems management and associated information exchange - Data and	IEC/TC 57	DRAFT /AMW (Approved)	Core	Security

			communications security - Part 3: Communication network and system security - Profiles including TCP/IP		Maintenance Work)		
587		prIEC/TR 61850-90-4	Communication networks and systems for power utility automation - Part 90-4: Network engineering guidelines for substations	IEC/TC 57	DRAFT / CDTR (Circulated Draft Technical Report)	Core	Substation Automation
588		IEC/TS 62351-5:2013	Power systems management and associated information exchange - Data and communications security - Part 5: Security for IEC 60870-5 and derivatives	IEC/TC 57		Core	Security
589		IEC/TS 62600- 200:2013	Marine energy - Wave, tidal and other water current converters - Part 200: Electricity producing tidal energy converters - Power performance assessment	IEC/TC 114		Low	Marine Power
590		8/1317/NP	Guidelines for the General Planning and Design of Micro-Grids	IEC/TC 8	DRAFT / Proposed New Work Item		
591		8/1318/NP	Technical requirements for the Operation and Control of Micro-Grids	IEC/TC 8	DRAFT / Proposed New Work Item		
592	CLC/FprTS 50549- 1:2011		Requirements for the connection of generators above 16 A per phase - Part 1: Connection to the LV distribution system	CLC/TC 8X	DRAFT M/490 / 5091 (Decision on voting results deferred/advise expected)	Core	Power Quality/Inter connection requirement s
593	CLC/FprTS 50549- 2:2011		Requirements for the connection of generators above 16 A per phase - Part 2: Connection to the MV distribution system	CLC/TC 8X	DRAFT M/490 / 5091 (Decision on voting results deferred/advise expected)	Core	Power Quality/Inter connection requirement s
594	CLC/FprTR 50422:2013		Guide for the application of the European Standard EN 50160	CLC/TC 8X	DRAFT M/490 / 5060(Voting results sent to Technical Body)	Core	Power Quality
595	CWA 50560:2010		Interoperability framework requirements specification for service to the home (IFRS)	CLC/WS 04			

596	CLC/prTS 50560		Interoperability framework requirement specification	CLC/TC 205	DRAFT*M441*M490/1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
597	STOP - CLC/prTS 50567-1		Meter data eXchange over power lines - Part 1: Lower layer profile using Orthogonal Frequency Division Multiplexing (OFDM) Type 1	CLC/TC 13	CLC BT 144/DG9037/DV agreed to STOPprTS 50567-1		
598	STOP - CLC/prTS 50567-2		Meter data exchange over power lines - Part 2: Lower layer profile using Orthogonal Frequency Division Multiplexing (OFDM) Type 2	CLC/TC 13	CLC BT 144/DG9037/DV agreed to STOPprTS 50567-2		
599	CLC/prTS 50568-2		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 2:	CLC/TC 13	DRAFT*M441; M/490/ 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
600	CLC/prTS 50568-5		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 5: Application layer messages exchange on DLC and IP networks	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
601	CLC/prTS 50568-6		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 6: Meter database and data structures	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
602	CLC/prTS 52056-8-4		Electricity metering data exchange - The DLMS/COSEM suite - Part 8-4: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 1 profile	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		

603	CLC/prTS 52056-8-5		Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 2 profile	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
604	CLC/prTS 52056-8-7		Electricity metering data exchange - The DLMS/COSEM suite - Part 8-7: Communication profile for power line carrier neighbourhood networks using CX1	CLC/TC 13	DRAFT*M441 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
605	CLC/TR 50090-9-2:2007		Home and Building Electronic Systems (HBES) - - Part 9-2: Installation requirements - Inspection and testing of HBES installation	CLC/TC 205		Medium	Communications
606		prIEC 61980-2:201X	Electric vehicle wireless power transfer (WPT) systems - Part 2 specific requirements for communication between electric road vehicle (EV) and infrastructure with respect to wireless power transfer (WPT) systems	IEC/TC 69	DRAFT / 1st Committee Draft		
607		prIEC 61980-2:201X	Electric equipment for the supply of energy to electric road vehicles using an inductive coupling - Part 2: Manual connection system using a paddle	IEC/TC 69	DRAFT / PNW (Proposed new work)		
608	CLC/TS 50457-1:2008		Conductive charging for electric vehicles - Part 1: D.C. charging station	CLC/TC 69		High	Electrical vehicle charging
609	CLC/TS 50457-2:2008		Conductive charging for electric vehicles - Part 2: Communication protocol between off-board charger and electric vehicle	CLC/TC 69		High	Electrical vehicle charging
610	EN 13321-2:2006		Open data communication in building automation, controls and building management - Home and building electronic systems - Part 2: KNXnet/IP Communication	CEN/TC 247		Medium	Communications
611	EN 13757-4:2005		Communication systems for meters and remote reading of meters - Part 4: Wireless			Medium	Cross-cutting/Tele

			meter readout (Radio meter reading for operation in the 868 MHz to 870 MHz SRD band)				communicati ons
612	EN 13757-5:2008		Communication systems for meters and remote reading of meters - Part 5: Wireless relaying			Medium	Cross-cutting/Tele communicati ons
613	EN 13757-6:2008		Communication systems for meters and remote reading of meters - Part 6: Local Bus			Medium	Communicat ions
614	EN 14908-1:2005		Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 1: Protocol Stack	CEN/TC 247		Medium	Cross-cutting/Tele communicati ons
615	EN 14908-2:2005		Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 2: Twisted Pair Communication	CEN/TC 247		Medium	Cross-cutting/Tele communicati ons
616	EN 14908-3:2006		Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 3: Power Line Channel Specification	CEN/TC 247		Medium	Demand and Production Flexibility/ Aggregated prosumers managemen t system; Cross-cutting/Tele communicati ons
617	EN 14908-4:2006		Open Data Communication in Building Automation, Controls and Building Management - Control Network Protocol - Part 4: IP Communication	CEN/TC 247		Medium	Cross-cutting/Tele communicati ons
618	EN 50090-1:2011		Home and Building Electronic Systems (HBES) - Part 1: Standardization structure	CLC/TC 205		Medium	Communicat ions

619	EN 50090-3-1:1994		Home and Building Electronic Systems (HBES) - - Part 3-1: Aspects of application - Introduction to the application structure	CLC/TC 205		Medium	Communications
620	EN 50090-3-2:2004		Home and Building Electronic Systems (HBES) - - Part 3-2: Aspects of application - User process for HBES Class 1	CLC/TC 205		Medium	Communications
621	EN 50090-3-3:2009		Home and Building Electronic Systems (HBES) - - Part 3-3: Aspects of application - HBES Interworking model and common HBES data types	CLC/TC 205		Medium	Communications
622	EN 50090-4-1:2004		Home and Building Electronic Systems (HBES) - - Part 4-1: Media independent layers - Application layer for HBES Class 1	CLC/TC 205		Medium	Communications
623	EN 50090-4-2:2004		Home and Building Electronic Systems (HBES) - Part 4-2: Media independent layers - Transport layer, network layer and general parts of data link layer for HBES Class 1	CLC/TC 205		Medium	Communications
624	EN 50090-4-3:2007		Home and Building Electronic Systems (HBES) - - Part 4-3: Media independent layers - Communication over IP	CLC/TC 205		Medium	Communications
625	EN 50090-5-1:2005		Home and Building Electronic Systems (HBES) - Part 5-1: Media and media dependent layers - Power line for HBES Class 1	CLC/TC 205		Medium	Communications
626	EN 50090-5-2:2004		Home and Building Electronic Systems (HBES) - - Part 5-2: Media and media dependent layers - Network based on HBES Class 1, Twisted Pair	CLC/TC 205		Medium	Communications
627	EN 50090-5-3:2006		Home and Building Electronic Systems (HBES) - - Part 5-3: Media and media dependent layers - Radio frequency	CLC/TC 205		Medium	Communications
628	EN 50090-7-1:2004		Home and Building Electronic Systems (HBES) - - Part 7-1: System management - Management procedures	CLC/TC 205		Medium	Communications
629	EN 50160:2010		Voltage characteristics of electricity supplied by public electricity networks	CLC/TC 8X		Core	Power Quality

630	prEN 50412-4:2012		Power line communication apparatus and systems used in low-voltage installations in the frequency range 1,6 MHz to 30 MHz - Part 4: Low rate wide band services (LRWBS) operating between 2 MHz and 4 MHz - Channel allocations	CLC/TC 205A;	DRAFT *M490 / 4060 (Enquiry results established and sent to TC)	Liw	EMC
631	EN 50491-2:2010		General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) -- Part 2: Environmental conditions	CLC/TC 205		Medium	Communicat ions
632	ETSI TR 102 419 V1.1.1 (2005-04)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);Security analysis of IPv6 application in telecommunications standards	ETSI/TISPAN7			
633	ETSI TR 102 437 V1.1.1 (2006-10)		Electronic Signatures and Infrastructures (ESI);Guidance on TS 101 456 (Policy Requirements for certification authorities issuing qualified certificates)	ETSI/ESI			
634	ETSI TR 102 458 V1.1.1 (2006-04)		Electronic Signatures and Infrastructures (ESI);Mapping Comparison Matrix between the US Federal Bridge CA Certificate Policy and the European Qualified Certificate Policy (TS 101 456)	ETSI/ESI			
635	ETSI TR 102 572 V1.1.1 (2007-07)		Best Practices for handling electronic signatures and signed data for digital accounting	ETSI/ESI			
636	ETSI TR 103 118 V0.0.2		Machine-to-Machine communications (M2M); Smart Energy Infrastructures security; Review of existing security measures and convergence investigations	ETSI/M2M	<i>Extension and harmonization of Smart Energy Security Solutions</i>		Smart Energy Security Solutions
637	ETSI TR 103 167 V1.1.1 (2011-08)		Machine to Machine (M2M);Threat analysis and counter measures to M2M service layer	ETSI/M2M			
638	ETSI TR 185 008 V2.0.0 (2008-02)		Telecommunications and Internet converged Services and Protocols for Advanced	ETSI/TISPAN5			

			Networking (TISPAN);Analysis of security mechanisms for customer networks connected to TISPAN NGN R2				
639	ETSI TR 187 002 V3.1.1 (2011-04)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);TISPAN NGN Security (NGN_SEC);Threat, Vulnerability and Risk Analysis	ETSI/TISPAN7			
640	ETSI TR 187 012 V2.1.1 (2009-11)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);NGN Security;Report and recommendations on compliance to the data retention directive for NGN-R2	ETSI/TISPAN7			
641	ETSI TS 100 920 V8.1.0 (2006-06)		Digital cellular telecommunications system (Phase 2+);Security aspects (3GPP TS 02.09 version 8.1.0 Release 1999)	ETSI/3GPPSA			
642	ETSI TS 102 042 V1.3.4 (2007-12)		Electronic Signatures and Infrastructures (ESI);Policy requirements for certification authorities issuing public key certificates	ETSI/ESI			
643	ETSI TS 102 165-1 V4.2.3 (2011-03)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);Methods and protocols;Part 1: Method and proforma for Threat, Risk, Vulnerability Analysis	ETSI/TISPAN7			
644	ETSI TS 102 165-2 V4.2.1 (2007-02)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);Methods and protocols;Part 2: Protocol Framework Definition;Security Counter Measures	ETSI/TISPAN7			
645	ETSI TS 102 225 V11.0.0 (2012-03)		Smart Cards;Secured packet structure for UICC based applications	ETSI/SCPTEC			
646	ETSI TS 102 226 V11.1.0 (2012-08)		Smart Cards;Remote APDU structure for UICC based applications	ETSI/SCPTEC			
647	ETSI TS 102 484		Smart Cards;Secure channel between a UICC	ETSI/SCPTEC			

	V11.0.0 (2012-09)		and an end-point terminal				
648	ETSI TS 102 573 V2.1.1 (2012-04)		Electronic Signatures and Infrastructures (ESI);Policy requirements for trust service providers signing and/or storing data objects	ETSI/ESI			
649	ETSI TS 102 689 V1.1.1 (2010-08)		Machine-to-Machine communications (M2M);M2M service requirements	ETSI/M2M			
650	ETSI TS 102 690 V1.1.1 (2011-10)		Machine-to-Machine communications (M2M);Functional architecture	ETSI/M2M			
651	ETSI TR 102 691 V1.1.1 (2010-05)		Machine-to-Machine communications (M2M); Smart Metering Use Cases	ETSI/M2M			
652	ETSI TS 102 921 V1.1.1 (2012-02)		Machine-to-Machine communications (M2M);mla, dla and mld interfaces	ETSI/M2M			
653	ETSI TR 102 935 V2.1.1 (2012-09)		Machine-to-Machine communications (M2M); Applicability of M2M architecture to Smart Grid Networks; Impact of Smart Grids on M2M platform	ETSI/M2M			
654	ETSI TS 103 908 V1.1.1 (2011-10)		PowerLine Telecommunications (PLT);BPSK Narrow Band Power Line Channel for Smart Metering Applications	ETSI/PLT			
655	ETSI TS 122 368 V11.6.0 (2012-09)		Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS);LTE;Service requirements for Machine-Type Communications (MTC)	ETSI/3GPPSA			
656	ETSI TS 123 401 V11.3.0 (2012-11)		LTE;General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access	ETSI/3GPPSA			
657	ETSI TS 123 402 V11.4.0 (2012-11)		Universal Mobile Telecommunications System (UMTS);LTE;Architecture enhancements for non-3GPP accesses	ETSI/3GPPSA			
658	ETSI TS 123 682 V11.2.0 (2012-11)		Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System	ETSI/3GPPSA			

			(UMTS);LTE;Architecture enhancements to facilitate communications with packet data networks and applications				
659	ETSI TS 124 312 V11.4.0 (2012-10)		Universal Mobile Telecommunications System (UMTS);LTE;Access Network Discovery and Selection Function (ANDSF) Management Object (MO)	ETSI/3GPPCT		Medium	Communicat ions
660	ETSI TS 133 203 V11.2.0 (2012-11)		Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS);LTE;3G security;	ETSI/3GPPSA		Medium	Communicat ions
661	ETSI TS 133 234 V11.4.0 (2012-11)		Universal Mobile Telecommunications System (UMTS);LTE;3G security;Wireless Local Area Network (WLAN) interworking security	ETSI/3GPPSA		Medium	Communicat ions
662	ETSI TS 133 310 V11.1.1 (2012-11)		Universal Mobile Telecommunications System (UMTS);Network Domain Security (NDS);Authentication Framework (AF)	ETSI/3GPPSA		Medium	Communicat ions
663	ETSI TS 136 201 V11.0.0 (2012-10)		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);LTE physical layer;General description	ETSI/3GPPRAN		Medium	Communicat ions
664	ETSI TS 136 211 V11.0.0 (2012-10)		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);Physical channels and modulation	ETSI/3GPPRAN		Medium	Communicat ions
665	ETSI TS 136 212 V11.0.0 (2012-10)		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);Multiplexing and channel coding	ETSI/3GPPRAN		Medium	Communicat ions
666	ETSI TS 136 213 V11.0.0 (2012-10)		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);Physical layer procedures	ETSI/3GPPRAN		Medium	Communicat ions
667	ETSI TS 136 214 V11.0.0 (2012-10)		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);Physical layer;Measurements	ETSI/3GPPRAN		Medium	Communicat ions
668	ETSI TS 136 216 V11.0.0 (2012-10)		Universal Mobile Telecommunications System (UMTS);LTE;Evolved Universal Terrestrial Radio Access (E-UTRA);Physical layer for relaying operation	ETSI/3GPPRAN		Medium	Communicat ions
669	ETSI TS 136 300 V11.3.0 (2012-11);		LTE;Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial	ETSI/3GPPRAN		Medium	Communicat ions

			Radio Access Network (E-UTRAN);Overall description				
670	ETSI TS 187 001 V3.7.1 (2011-03)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);NGN SEcurity (SEC);Requirements	ETSI/TISPAN7		Medium	Communicat ions
671	ETSI TS 187 003 V3.4.1 (2011-03)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);NGN Security;Security Architecture	ETSI/TISPAN7		Medium	Communicat ions
672	ETSI TS 187 016 V3.1.1 (2010-06)		Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN);NGN Security;Identity Protection (Protection Profile)	ETSI/TISPAN7		Medium	Communicat ions
673	ETSI GS OSG 001 V1.1.1 (2012-01)		Open Smart Grid Protocol (OSGP)	ETSI/ ISG			
674	CLC/TR 50555:2010		Interruption indexes	CLC/TC 8X /WG 1- Task Force 4		High	Power Quality
675	prEN 50438:2013		Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks	CLC/TC 8X	DRAFT M/490 /4099 (Decision to launch vote)	Core	Power Quality / Interconnect ion requirement s
676	prEN 50491-1:2013		General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 1: General requirements	CLC/TC 205	DRAFT / 4060 (Enquiry results established and sent to Technical Body)	Medium	Communicat ions
677	prEN 50491-6-1:2011		General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 6-1: HBES installations - Installation and planning	CLC/TC 205	DRAFT / 4099 (Decision to launch vote)		
678	prEN 50491-11		General requirements for Home and Building	CLC/TC 205	DRAFT *M441*M490	Medium	Communicat

			Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 11: Smart metering - Application specification - Home display		/ 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		ions
679	prEN 50491-12		General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 12: Smart grid - Application specification - Interface and framework for customer	CLC/TC 205	DRAFT *M441*M490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)	Medium	Communicat ions
680	CLC/prTS 50568-4		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 4: Physical layer based on B-PSK modulation + Data Link Layer	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
681	CLC/prTS 50568-8		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 8: DLC profile based on B-PSK modulation	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
682	CLC/prTS 50568-9		Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 9: IP Profile on public telecommunication network	CLC/TC 13	DRAFT*M441; M/490 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
683	CLC/prTS 50586		OSGP for utility metering, tariff, load control and other applications - Communication protocols, data structures and procedures	CLC/TC 13	DRAFT*M441 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		
684	CLC/prTS 50590		Electricity metering data exchange - CX1 lower layer Specification - Physical layer, and data link layer	CLC/TC 13	DRAFT*M441 / 1099 (decision to proceed: launch PQ/UQ or prepare draft for circulation)		

685	CEN/CLC/ETSI/TR 50572:2011		Functional reference architecture for communications in smart metering systems	SM-CG	*M441	Core	architecture for communications
686		prIEC 60826 Ed. 4.0	Design criteria of overhead transmission lines	IEC/TC 11	DRAFT / ADIS (Approved for FDIS)	high	Design criteria - Safety, security, reliability of new transmission lines
687	EN 50341-1:2012		Overhead electrical lines exceeding AC 1 kV - Part 1: General requirements - Common specifications	CLC/TC 11		high	It is used by European countries for development of Set of National Normative Aspects
688	CWA 505611:2013		Flow batteries - Guidance on the specification, installation and operation	CLC/WS 05			

B.2 IEEE STANDARDS

No	IEEE STANDARD AND TITLE	DESCRIPTION	IEEE COMMITTEE / WORKING GROUP	APPLICATIONS	Solutions provided by IEEE publications and used for ETSI/IEC/ISO publications	REMARKS
1	80-2000 - IEEE Guide for Safety in AC Substation Grounding	Outdoor ac substations, either conventional or gas-insulated, are covered in this guide. Distribution, transmission, and generating plant substations are also included. With proper caution, the methods described herein are also applicable to indoor portions of such substations, or to sub-stations that are wholly indoors. No attempt is made to cover the grounding problems peculiar to dc substations. A quantitative analysis of the effects of lightning surges is also beyond the scope of this guide.	PE/SUB - Substations / Working Group: WGE4 - Substation Safety Working Group	Cyber security		IEEE standard* See IEEE Project P80
2	P80 – IEEE Draft Guide for Safety in AC Substation Grounding	This guide is primarily concerned with outdoor AC substations, either conventional or gas-insulated. These include distribution, transmission, and generating plant substations. With proper caution, the methods described herein are also applicable to indoor portions of such substations, or to substations that are wholly indoors. No attempt is made to cover the grounding problems peculiar to DC substations. A quantitative analysis of the effects of lightning surges is also beyond the scope of this guide.	WGD7 - Grounding			IEEE Project
3	81-2012 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System	Practical test methods and techniques are presented for measuring the electrical characteristics of grounding systems. Topics addressed include safety considerations, measuring earth resistivity, measuring the power system frequency resistance or impedance of the ground system to remote	PE/SUB - Substations / Working Group: WGD6 - Measuring Earth Resistivity,	Cyber security		IEEE standard

		earth, measuring the transient or surge impedance of the ground system to remote earth, measuring step and touch voltages, verifying the integrity of the grounding system, reviewing common methods for performing ground testing, reviewing instrumentation characteristics and limitations, and reviewing various factors that can distort test measurements.	Ground Impedance, and Earth Surface Potentials of a Grounding System Working Group			
4	367-2012 - IEEE Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault	Guidance for the calculation of power station ground potential rise (GPR) and longitudinal induction (LI) voltages is provided, as well as guidance for their appropriate reduction from worst-case values, for use in metallic telecommunication protection design.	PE/PSC - Power System Communications / Working Group: SC6-WG - Wireline Working Group			IEEE standard
5	487-2007 - IEEE Recommended Practice for the Protection of Wire-Line Communication Facilities Serving Electric Supply Locations	Workable methods for protecting wire-line communication circuits entering electric supply locations are presented. This document covers: the electric supply location environment; protection apparatus; service types, reliability, service performance objective classifications, and transmission considerations; protection theory and philosophy; protection configurations; installation and inspection; and safety.	PE/PSC - Power System Communications / Working Group: SC6-WG - Wireline Working Group			IEEE standard
6	644-1994 - IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	In this IEEE Standard uniform procedures for the measurement of power frequency electric and magnetic fields from alternating current (AC) overhead power lines and for the calibration of the meters used in these measurements are established. The procedures apply to the measurement of electric and magnetic fields close to ground level. The procedures can also be tentatively applied (with limitations, as specified in the standard) to electric fields near an energized conductor or structure	PE/T&D - Transmission and Distribution			IEEE standard
7	656-1992 - IEEE standard for the Measurement of Audible Noise from Overhead Transmission Lines	In this standard uniform procedures are established for manual and automatic measurement of audible noise from overhead transmission lines. Their purpose is to allow valid evaluation and comparison of the audible noise performance of various overhead lines. Definitions are provided, and instruments are specified. Measurement procedures are set	PE/T&D - Transmission and Distribution			IEEE standard

		forth, and precautions are given. Supporting data that should accompany the measurement data are specified, and methods for presenting the latter are described.				
8	P789 - IEEE Draft Standard Performance Requirements for Communications and Control Cables for Application in High Voltage Environments	This standard applies to wires and cables, used principally for power system communications and control purposes, which are located within electric supply locations or are installed within the zone of influence (ZOI) of the power station ground potential rise (GPR), or which may be buried adjacent to electric power transmission and distribution lines. This standard covers the appropriate design requirements, electrical and mechanical parameters, the testing requirements, and the handling procedures for cables that are to be installed and operated in high voltage environments where they may be subjected to high voltages either by conduction, or induction coupling, or both. Coaxial and fiber optic cables, except for those used in Ethernet applications, are specifically excluded from this standard.	Working Group: SC6 - Wireline Subcommittee			IEEE project
9	P802 - IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture	This standard contains descriptions of the IEEE 802 Standards published by IEEE for Local Area Networks (LANs), Metropolitan Area Networks (MANs), and Personal Area Networks (PANs) networks considered as well as a reference model (RM) for protocol standards. Compliance with the family of IEEE 802 Standards is defined, and a standard for the identification of public, private, and standard protocols is included.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.1 - Higher Layer LAN Protocols Working Group			IEEE project
10	802.1AB-2009 - IEEE Station and Media Access Control Connectivity Discovery	This document defines a protocol and a set of managed objects that can be used for discovering the physical topology from adjacent stations in IEEE 802 LANs.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.1 - Higher Layer LAN Protocols Working Group			IEEE standard
11	802.3-2012 - IEEE standard	Ethernet local area network operation is specified for selected	C/LM - LAN/MAN	Communication		IEEE

	for Ethernet	speeds of operation from 1 Mb/s to 100 Gb/s using a common media access control (MAC) specification and management information base (MIB). The Carrier Sense Multiple Access with Collision Detection (CSMA/CD) MAC protocol specifies shared medium (half duplex) operation, as well as full duplex operation. Speed specific Media Independent Interfaces (MIIs) allow use of selected Physical Layer devices (PHY) for operation over coaxial, twisted-pair or fiber optic cables. System considerations for multisegment shared access networks describe the use of Repeaters that are defined for operational speeds up to 1000 Mb/s. Local Area Network (LAN) operation is supported at all speeds. Other specified capabilities include various PHY types for access networks, PHYs suitable for metropolitan area network applications, and the provision of power over selected twisted-pair PHY types.	Standards Committee External Link/ Working Group: WG802.3 - Ethernet Working Group	s Physical Layer - Ethernet		standard
12	802.11-2012 - IEEE Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications	This revision specifies technical corrections and clarifications to IEEE Std 802.11 for wireless local area networks (WLANS) as well as enhancements to the existing medium access control (MAC) and physical layer (PHY) functions. It also incorporates Amendments 1 to 10 published in 2008 to 2011.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.11 - Wireless LAN Working Group	Communication s Physical Layer -WiFi	ISO/IEC/IEEE 8802-11:2012 defines one medium access control (MAC) and several physical layer (PHY) specifications for wireless connectivity for fixed, portable, and moving stations (STAs) within a local area.	IEEE standard
13	802.15.1-2005 - IEEE Specific requirements-- Part 15.1a: Wireless Medium Access	Methods for communicating devices in a personal area network (PAN) are covered in this standard.	C/LM - LAN/MAN Standards Committee /			IEEE standard

	Control (MAC) and Physical Layer (PHY) specifications for Wireless Personal Area Networks (WPAN)		Working Group: WG802.15 - Wireless Personal Area Network (WPAN) Working Group			
14	802.15.4-2011 - IEEE Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)	The protocol and compatible interconnection for data communication devices using low-data-rate, low-power, and low-complexity short-range radio frequency (RF) transmissions in a wireless personal area network (WPAN) were defined in IEEE Std 802.15.4-2006. In this revision, the market applicability of IEEE Std 802.15.4 is extended, the ambiguities in the standard are removed, and the improvements learned from implementations of IEEE Std 802.15.4-2006 are included.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.15 - Wireless Personal Area Network (WPAN) Working Group	Solutions provided by IEEE 802.15.4-2006 are used by ISO/JTC 1 for ISO/IEC/IEEE 8802-15-4:2010 ed1.0.		IEEE standard
15	802.15.4g-2012 - IEEE Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs) Amendment 3: Physical Layer (PHY) Specifications for Low-Data-Rate, Wireless, Smart Metering Utility Networks	In this amendment to IEEE Std 802.15.4-2011, outdoor low-data-rate, wireless, smart metering utility network requirements are addressed. Alternate PHYs are defined as well as only those MAC modifications needed to support their implementation. The PDF of this standard is available at no cost compliments of the GETIEEE802 program located at http://standards.ieee.org/about/get/802/	C/LM - LAN/MAN Standards Committee / Working Group: WG802.15 - Wireless Personal Area Network (WPAN) Working Group	Physical Layer for Smart Utility Networks or energy networks; Communication s Link Layer - Media Access Control	Solutions provided by IEEE 802.15.4g are used by ETSI/TG28 (Short Range Devices devices) to M2M mesh networks	IEEE standard
16	P802.15.4 - IEEE Approved Draft Standard for Local and metropolitan area networks - Part 15.4: Low-Rate Wireless Personal Area Networks (WPANs)	This Standard defines the physical layer (PHY) and medium access control (MAC) sublayer specifications for low-data-rate wireless connectivity with fixed, portable, and moving devices with no battery or very limited battery consumption requirements typically operating in the personal operating space (POS) of 10 m. Physical layers (PHYs) are defined for - devices operating in the license free 868-868.6 MHz, 902-928 MHz and 2400-2483.5 MHz bands, - devices with precision ranging, extended range, and enhanced robustness and	Working Group: WG802.15 - Wireless Personal Area Network (WPAN) Working Group			IEEE project

		mobility, - devices operating according to the Chinese regulations, Radio Management of P. R. of China doc. #6326360786867187500 or current document, for one or more of the 314-316 MHz, 430-434 MHz, and 779-787 MHz frequency bands, and - devices operating in the 950 MHz -956 MHz allocation in Japan and coexisting with passive tag systems in the band.				
17	802.16-2012 - IEEE Air Interface for Broadband Wireless Access Systems	This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support the WirelessMAN-SC, WirelessMAN-OFDM, and WirelessMAN-OFDMA PHY specifications, each suited to a particular operational environment. The standard enables rapid worldwide deployment of innovative, cost-effective, and interoperable multivendor broadband wireless access products, facilitates competition in broadband access by providing alternatives to wireline broadband access, encourages consistent worldwide spectrum allocation, and accelerates the commercialization of broadband wireless access systems.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.16 - Broadband Wireless Access Working Group	Communication s Physical Layer - WiMAX		IEEE standard
18	802.20-2008 - IEEE Part 20: Air Interface for Mobile Broadband Wireless Access Systems Supporting Vehicular Mobility -- Physical and Media Access Control Layer Specification	The technical requirements of this standard form a compatibility standard for mobile broadband wireless access systems. The standard ensures that a compliant access terminal (AT) or user terminal (UT) can obtain service through any access node (AN) or base station (BS) conforming to properly selected modes of this standard, consistent with equipment and operator requirements, thus providing a framework for the rapid development of cost-effective, multivendor mobile broadband wireless access systems. This compatibility standard is targeted for use in a wide variety of licensed frequency bands and regulatory environments. This standard provides for future standardized extension capabilities. The architecture defined by this standard permits	C/LM - LAN/MAN Standards Committee / Working Group: WG802.20 - Mobile Broadband Wireless Access (MBWA) Working Group			IEEE standard

		such expansion without the loss of backward compatibility.				
19	P802.21d - IEEE Standard for Local and metropolitan area networks -- Part 21: Media Independent Handover Services Amendment: Multicast Group Management	To add support in Media-Independent Handover (MIH) framework for management of multicast groups.	Working Group: WG802.21 - Media Independent Handoff Working Group			IEEE project
20	IEEE 802-1955 - AIEE Proposed Trail Use Test Code DIRECT -- CURRENT CARBON -- PILE VOLTAGE REGULATORS for AIRCRAFT	It is the purpose of this code to define uniform acceptable methods of making tests to determine that the rating, performance and other characteristics of generator voltage regulators for aircraft comply with specifications and application requirements.	AES			IEEE standard
21	802-2001 - IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture	IEEE Std 802-2001 is the IEEE standard for local and metropolitan area networks. It provides an overview to the family of IEEE 802 standard and their architectures. The IEEE Std 802b-2004 amendment to IEEE Std 802-2001 specifies an object identifier hierarchy used within IEEE 802 for uniform allocation of object identifiers used in IEEE 802 standards.	C/LM - LAN/MAN Standards Committee / Working Group: WG802.1 - Higher Layer LAN Protocols Working Group			IEEE standard
22	1020-2011 - IEEE Guide for Control of Small (100 kVA to 5 MVA) Hydroelectric Power Plants	Description of the electrical control and monitoring requirements for equipment and systems associated with small (100 kVA to 5 MVA) hydroelectric power plants.	PE/ED&PG - Energy Development & Power Generation/ Working Group: HPS - WG 1020 - HPS - Control of Small (100 kVA to 5 MVA)Hydroelectric Power Plants Working Group			IEEE standard
23	1031-2011 - IEEE Guide for the Functional Specification of Transmission Static Var Compensators	An approach to preparing a specification for a transmission static var compensator is documented by this guide. The intention of this document is to serve as a base specification with an informative annex provided to allow users to modify	PE/SUB - Substations / Working Group: WG14 - Static Var			IEEE standard

		or develop specific clauses to meet a particular application.	Compensator			
24	1127-1998 - IEEE Guide for the Design, Construction, and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility	Significant community acceptance and environmental compatibility items to be considered during the planning and design phases, the construction period, and the operation of electric supply substations are identified, and ways to address these concerns to obtain community acceptance and environmental compatibility are documented. On-site generation and telecommunication facilities are not considered.	PE/SUB - Substation	Cyber security		IEEE standard*See IEEE Project P1127
25	P1127a - Guide for the Design, Construction, and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility	This guide identifies significant community acceptance and environmental compatibility items to be considered during the planning and design phases, the construction period, and the operation of electric supply substations, and documents ways to address these concerns to obtain community acceptance and environmental compatibility. On-site generation and telecommunication facilities are not considered.	Working Group: WGG2 - IEEE Guide for the Design, Construction, and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility			IEEE project
26	1138-2009- IEEE Testing and Performance for Optical Ground Wire (OPGW) for Use on Electric Utility Power Lines	This standard covers the performance, test requirements, procedures, and acceptance criteria for a transmission line overhead ground wire (a.k.a. shield wire, static wire, earth wire, skywire) with optical fibers commonly known as optical ground wire (OPGW). An OPGW cable has the dual performance functions of a ground wire with telecommunications capabilities. This standard includes functional requirements such as electrical, mechanical, optical fiber, environmental and packaging, and test requirements related to design, installation, in-service, maintenance, including routine tests. This standard is not intended to supersede any established safety rules, codes, regulations, or practices associated with the use of OPGW cables. It is the responsibility of the user of this standard to establish				IEEE standard

		appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.				
27	1159.3-2003 - IEEE Recommended Practice for the Transfer of Power Quality Data	This recommended practice defines a file format suitable for exchanging power quality related measurement and simulation data in a vendor independent manner. The format is designed to represent all power quality phenomena identified in IEEE Std 1159 TM -1995, IEEE Recommended Practice on Monitoring Electric Power Quality, other power related measurement data, and is extensible to other data types as well. The recommended file format utilizes a highly compressed storage scheme to minimize disk space and transmission times. The utilization of globally unique identifiers (GUID) to represent each element in the file permits the format to be extensible without the need for a central registration authority.	SASB/SCC22 - SCC22 - Power Quality			IEEE standard
28	1159-2009 - IEEE Recommended Practice for Monitoring Electric Power Quality	This recommended practice encompasses the monitoring of electrical characteristics of single-phase and polyphase ac power systems. It includes consistent descriptions of conducted electromagnetic phenomena occurring on power systems. This recommended practice describes nominal conditions and deviations from these nominal conditions that may originate within the source of supply or load equipment or may originate from interactions between the source and the load. Also, this recommended practice discusses power quality monitoring devices, application techniques, and the interpretation of monitoring results.	PE/T&D - Transmission and Distribution / Working Group: PQ-1159_WG - Working Group for Monitoring Electric Power Quality			IEEE standard
29	1222-2011- IEEE Testing and Performance for All-Dielectric Self-Supporting (ADSS) Fiber Optic Cable for Use on Electric Utility Power Lines	This standard covers the construction, mechanical, electrical and optical performance, installation guidelines, acceptance criteria, test requirements, and environmental considerations for an all-dielectric self-supporting fiber optic cable designed to be located on overhead electric power utility and telecommunications facilities. This does not include cables used for underground installations.				IEEE standard
30	1247-2005 - IEEE Standard for	The basic requirements of interrupter switches used indoors,	PE/SWG -			IEEE

	Interrupter Switches for Alternating Current Rated Above 1000 Volts	outdoors, and in enclosures are covered. This standard does not apply to load-break separable insulated connectors.	Switchgear / Working Group: HVS-WG_1247 - HVS - IEEE Standard for Interrupter Switches for Alternating Current, Rated Above 1000 Volts			standard
31	1250-2011 - IEEE Guide for Identifying and Improving Voltage Quality in Power Systems	The use of some electrical equipment attached to typical power systems creates voltage quality concerns. There is an increasing awareness that some equipment is not designed to withstand the surges, faults, distortion, and reclosing duty present on typical utility distribution systems. Traditional concerns about steady-state voltage levels and light flicker due to voltage fluctuation also remain. These concerns are addressed by this guide by documenting typical levels of these aspects of voltage quality and indicating how to improve them. Other documents that treat these subjects in more detail are referenced.	PE/T&D - Transmission and Distribution / Working Group: PQ-1250_WG - Voltage Quality Working Group	Power Quality		IEEE standard
32	1366-2012 - IEEE Guide for Electric Power Distribution Reliability Indices	Distribution reliability indices and factors that affect their calculations are defined in this guide. The indices are intended to apply to distribution systems, substations, circuits, and defined regions.				IEEE standard
33	1377-2012 - IEEE Standard for Utility Industry Metering Communication Protocol Application Layer (End Device Data Tables)	Common structures are provided in this standard for encoding data in communication between End Devices (meters, home appliances, IEEE 1703 Nodes) and Utility enterprise collection and control systems using binary codes and Extensible Markup Language (XML) content. The Advanced Metering Infrastructure (AMI) and SmartGrid requirements are addressed as identified by the Office of Electricity Delivery and Energy Reliability of the U.S. Department of Energy and by the Smart Metering Initiative of the Ontario Ministry of Energy (Canada) and of Measurement Canada. Sets of tables are	SASB/SCC31 / Working Group: EndDevic - End Device/Telemetry Interface Unit Subcommittee			IEEE standard

		exposed that are grouped together into sections that pertain to a particular feature-set and related function such as Time-of-use, Load Profile, Security, Power Quality, and more. Each standard Table Set (Data Model) can be expanded or restricted by the Manufacturer of the IEEE 1377 Device or home appliance using XML/TDL descriptive registered syntax (XML-based Table Definition Language) and enterprise data-value management using EDL (Ex				
34	1402-2000 - IEEE Guide for Electric Power Substation Physical and Electronic Security	Security issues related to human intrusion upon electric power supply substations are identified and discussed. Various methods and techniques presently being used to mitigate human intrusions are also presented in this guide.	PE/SUB - Substations / Working Group: E7_1402 - Physical Security of Electric Power Substations	Cyber security		IEEE standard*See IEEE Project P1402
35	P1402 - IEEE Standard for Physical Security of Electric Power Substations	This standard establishes minimum requirements and practices for the physical security of electric power substations. It is designed to address a number of threats, including unauthorized access to substation facilities, theft of material, and vandalism. It describes the requirements for positive access control, monitoring of facilities, and delay/deter features which shall be employed to mitigate these threats. This standard also establishes requirements for different levels of physical security for electric power substations. The standard does not establish requirements based on voltage levels, size or any depiction of criticality of the substation. The user will make these decisions based on threat assessment and criticality assignment by the substation owner. Overt attacks against the substation for the purpose of destroying its capability to operate, such as explosives, projectiles, vehicles, etc. are beyond the scope of this standard.	Working Group: E7_1402 - Physical Security of Electric Power Substations			IEEE project
36	1409-2012 - IEEE Guide for Application of Power Electronics for Power Quality	Guidelines and performance expectations are provided for the application of power electronic-based equipment on distribution systems of power providers to improve power	PE/T&D - Transmission and Distribution /			IEEE standard

	Improvement on Distribution Systems Rated 1 kV Through 38 kV	quality. It is a resource to electric utility providers as they enter into the competitive marketplace. It provides detailed information about custom power devices as options to solve power quality problems.	Working Group: PQ-1409_WG - Power Quality Solutions			
37	1459-2010 - IEEE Standard Definitions for the Measurement of Electric Power Quantities Under Sinusoidal, Nonsinusoidal, Balanced, or Unbalanced Conditions	This document provides definitions of electric power to quantify the flow of electrical energy in single-phase and three-phase circuits under sinusoidal, non-sinusoidal, balanced, and unbalanced conditions.	PE/PSIM - Power System Instrumentation and Measurements / Working Group: Nonsinus - WG on Nonsinusoidal Situations: Effects on Meter Performance and Definitions of Power			IEEE standard
38	1547.1-2005 - IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems	This standard specifies the type, production, and commissioning tests that shall be performed to demonstrate that the interconnection functions and equipment of the distributed resources (DR) conform to IEEE Std 1547	SASB/SCC21 - SCC21 - Fuel Cells, Photovoltaics, Dispersed Generation, and Energy Storage	Basic principles of DER&interconnection rules		IEEE standard
39	1547.2-2008 - Application Guide for IEEE Std 1547(TM), IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems	Technical background and application details to support understanding of IEEE Std 1547-2003 are provided. The guide facilitates the use of IEEE Std 1547-2003 by characterizing various forms of distributed resource (DR) technologies and their associated interconnection issues. It provides background and rationale of the technical requirements of IEEE Std 1547-2003. It also provides tips, techniques, and rules of thumb, and it addresses topics related to DR project implementation to enhance the user's understanding of how IEEE Std 1547-2003 may relate to those topics. This guide is intended for use by engineers, engineering consultants, and knowledgeable individuals in the field of DR. The IEEE 1547 series of standards				IEEE standard

		is cited in the Federal Energy Policy Act of 2005, and this guide is one document in the IEEE 1547 series.				
40	1547.3-2007 - IEEE Guide for Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems	This guide is intended to facilitate the interoperability of distributed resources (DR) and help DR project stakeholders implement monitoring, information exchange, and control (MIC) to support the technical and business operations of DR and transactions among the stakeholders. The focus is on MIC between DR controllers and stakeholder entities with direct communication interactions. This guide incorporates information modeling, use case approaches, and a proforma information exchange template and introduces the concept of an information exchange interface	SASB/SCC21 - SCC21 - Fuel Cells, Photovoltaics, Dispersed Generation, and Energy Storage	Basic principles of DER&interconn ection rules		IEEE standard
41	1547.4-2011 - IEEE Guide for Design, Operation, and Integration of Distributed Resource Island Systems with Electric Power Systems	Alternative approaches and good practices for the design, operation, and integration of distributed resource (DR) island systems with electric power systems (EPS) are provided. This includes the ability to separate from and reconnect to part of the area EPS while providing power to the islanded EPSs. This guide includes the DRs, interconnection systems, and participating EPSs.				IEEE standard
42	1547.6-2011- IEEE Recommended Practice For Interconnecting Distributed Resources With Electric Power Systems Distribution Secondary Networks	Recommendations and guidance for distributed resources (DR) interconnected on the distribution secondary networks, including both spot networks and grid networks, are provided. This document gives an overview of distribution secondary network systems design, components, and operation; describes considerations for interconnecting DR with networks; and provides potential solutions for the interconnection of DR on network distribution systems. IEEE Std 1547.6-2011 is part of the IEEE 1547(TM) series of standards. IEEE Std 1547-2003 provides mandatory requirements for the interconnection of DR with EPSs and focuses primarily on radial distribution circuit interconnections. For DR interconnected on networks, all of IEEE Std 1547-2003 needs to be satisfied. IEEE Std 1547.6-2011 was specifically developed to provide additional information in				IEEE standard

		regard to interconnecting DR with distribution secondary networks.				
43	P1547.7 - Guide to Conducting Distribution Impact Studies for Distributed Resource Interconnection	This guide describes criteria, scope, and extent for engineering studies of the impact on area electric power systems of a distributed resource or aggregate distributed resource interconnected to an area electric power distribution system	Working Group: DRIS WG - P1547.7 Distributed Resources Impact Studies Working Group			IEEE project
44	P1547.8 - Recommended Practice for Establishing Methods and Procedures that Provide Supplemental Support for Implementation Strategies for Expanded Use of IEEE Standard 1547	This recommended practice applies to the requirements set forth in IEEE Std 1547 and provides recommended methods that may expand the usefulness and utilization of IEEE Std 1547 through the identification of innovative designs, processes, and operational procedures.	Working Group: P1547.8 WG to Expand 1547 Use - P1547.8 Working Group to Provide Supplemental Support for Expanded Use of IEEE Std 1547			IEEE project
45	1547-2003 - Interconnecting Distributed Resources with Electric Power Systems	This standard is the first in the 1547 series of interconnection standards and is a benchmark milestone demonstrating the open consensus process for standards development. Traditionally, utility electric power systems (EPS--grid or utility grid) were not designed to accommodate active generation and storage at the distribution level. As a result, there are major issues and obstacles to an orderly transition to using and integrating distributed power resources with the grid. The lack of uniform national interconnection standards and tests for interconnection operation and certification, as well as the lack of uniform national building, electrical, and safety codes, are understood. IEEE Std 1547 and its development demonstrate a model for ongoing success in establishing additional interconnection agreements, rules, and standards, on a national, regional, and state level. IEEE Std 1547 has the potential to be used in federal legislation and rule making and state public utilities commission (PUC) deliberations, a	SASB/SCC21 - SCC21 - Fuel Cells, Photovoltaics, Dispersed Generation, and Energy Storage	Basic principles of DER&interconnection rules	Solutions given in IEEE 1547 are used by IEC TC 8 for preparing IEC/IEEE/PAS 63547:2011"Inter connecting distributed resources with electric power systems"	IEEE standard

46	1588-2008 - IEEE standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems	A protocol is provided in this standard that enables precise synchronization of clocks in measurement and control systems implemented with technologies such as network communication, local computing, and distributed objects. The protocol is applicable to systems communicating via packet networks. Heterogeneous systems are enabled that include clocks of various inherent precision, resolution, and stability to synchronize. System-wide synchronization accuracy and precision in the sub-microsecond range are supported with minimal network and local clock computing resources. Simple systems are installed and operated without requiring the management attention of users because the default behavior of the protocol allows for it.	IM/ST - TC9 - Sensor Technology / Working Group: 1588_WG - Precise Networked Clock Synchronization Working Group			IEEE standard
47	1590-2009 - IEEE Recommended Practice for the Electrical Protection of Communication Facilities Serving Electric Supply Locations Using Optical Fiber Systems	The main emphasis of this recommended practice is the engineering design of optical fiber communication facilities serving, or connected to, electric supply locations. This recommended practice includes methods for providing telecommunication facilities serving electric supply locations using optical fiber cables, and their related electronic systems, extending across the zone of influence (ZOI).	PE/PSC - Power System Communications / Working Group: SC6-WG - Wireline Working Group			IEEE standard
48	1591.1-2012 - IEEE Standard for Testing and Performance of Hardware for Optical Ground Wire (OPGW)	Hardware performance, test requirements, procedures, and acceptance criteria for a transmission line overhead ground wire (also known as shield wire, static wire, earth wire, sky wire) with optical fibers commonly known as optical ground wire (OPGW) are covered. Functional requirements, such as electrical, mechanical, optical fiber, environmental, and test requirements related to design, installation, in service, and maintenance, including routine tests, are included.				IEEE standard
49	P1591.2 - Standard for Testing and Performance of Hardware for All-Dielectric Self-Supporting (ADSS) Fiber Optic Cable	This standard covers the construction, mechanical and electrical performance, test requirements, environmental considerations, and acceptance criteria for qualifying hardware for use with all-dielectric self-supporting (ADSS) fiber optic cable.	Working Group: SC5-WG - Working Group for Fiber Optic Standards			IEEE project
50	1591.3-2011 - IEEE Standard	The purpose of this standard is to establish performance and				IEEE

	for Qualifying Hardware for Helically-Applied Fiber Optic Cable Systems (WRAP Cable)	testing specifications for hardware used on WRAP CABLE systems in order to standardize testing, simplify procurement specifications, and assure product quality.				standard
51	P1595 - Standard for Designating and Quantifying Green Energy Projects in the Electricity Sector	The standard covers and defines the rules for designation and quantification of electrical energy from “Green Technology”; energy converting or saving projects, such as Hydro, Wind, Solar, Geothermal, Bio and Energy Efficiency. To be designated as “Green Technology”; the energy project shall meet at least the minimum requirements and comply with the principles of sustainability that are specified in the standard. The standard also defines the rules for quantifying the net green energy from the project.	Working Group: CCTSC-P1595 - P1595 Working Group			IEEE project
52	1613-2009 - Environmental and Testing Requirements for Communications Networking Devices Installed in Electric Power Substations	Service conditions, electrical ratings, thermal ratings, and environmental testing requirements are defined for communications networking devices to be installed in electric power substations. This standard establishes a common reproducible basis for designing and evaluating communications networking devices and the communications ports of protective relays for use in this harsh environment.	Working Group: WGC2 - Substations Working Group C2			IEEE standard
53	1615-2007 - IEEE Recommended Practice for Network Communication in Electric Power Substations	Recommended practices for communication and interoperation of devices connected on an electric power substation Internet protocol (IP) network are provided. For the power engineer new to IP networking, this document provides an introduction to the concepts that need to be mastered as well as specific recommendations to follow when deploying the technologies. For equipment manufacturers and system integrators, it provides direction and requirements to facilitate interoperable electric utility information networks.	PE/SUB - Substations External Link / Working Group: WGC8 - Substations Working Group C8			IEEE standard
54	1646-2004 - Standard Communication Delivery Time Performance Requirements for Electric Power Substation Automation	A standard defining communication delivery times of information to be exchanged within and external to substation integrated protection, control, and data acquisition systems is described. Communication capabilities and system capabilities to deliver data on time are also specified.	PE/SUB - Substations / Working Group: WGC2TF4 - Committee 2 Task	Cyber security		IEEE standard*See IEEE Project P1646

			Force 4			
55	P1646 - Standard Communication Delivery Time Performance Requirements for Electric Power Substation Automation	This standard defines communication delivery times of information to be exchanged within and external to substation integrated protection, control, and data acquisition systems.	Working Group: WGC9 - Substations Working Group C9			IEEE project
56	1675-2008 - Broadband Over Powerline Hardware	Testing and verification standards for the commonly used hardware, primarily couplers, and enclosures, for broadband over power line (BPL) installations, and installation methods to enable compliance with applicable codes and standards are provided in this standard.	PE/PSC - Power System Communications / Working Group: BPL_WG - Broadband over Power Line Working Group			IEEE standard
57	1686-2007 - Substation Intelligent Electronic Devices (IEDs) Cyber Security Capabilities	The functions and features to be provided in substation intelligent electronic devices (IEDs) to accommodate critical infrastructure protection programs are defined in this standard. Security regarding the access, operation, configuration, firmware revision, and data retrieval from an IED is addressed in this standard. Communications for the purpose of power system protection (teleprotection) is not addressed. Encryption for the secure transmission of data both within and external to the substation, including supervisory control and data acquisition, is not part of this standard as this is addressed in other efforts.	PE/SUB - Substations External Link / Working Group:WGC1 - Substations Working Group C1	Cyber security		IEEE standard*See IEEE Project P1686
58	P1686 - Standard for Intelligent Electronic Devices (IEDs) Cyber Security Capabilities P1686 - Standard for Intelligent Electronic Devices (IEDs) Cyber Security Capabilities	The standard defines the functions and features to be provided in intelligent electronic devices (IEDs) to accommodate critical infrastructure protection (CIP) programs. The standard addresses security regarding the access, operation, configuration, firmware revision, and data retrieval from an IED. Encryption of communications to and from the IED is also addressed.	Working Group: WGC1 - Substations Working Group C1			IEEE project
59	P1695 - Trial-Use Guide for Assessing Voltages at Publicly	This guide addresses the normal and abnormal voltages that exist at publicly and privately accessible locations as a result of	Working Group: Dist-1695_WG -			IEEE project

	and Privately Accessible Locations	the delivery and use of electrical energy (often referred to as stray voltage). It focuses primarily on the presence of power frequency related voltages, and discusses definitions, causes, impacts, testing techniques, mitigation strategies, and hazard levels.	Working Group on voltages at publicly and privately accessible locations			
60	1701-2011 - IEEE Standard for Optical Port Communication Protocol to Complement the Utility Industry End Device Data Tables	This standard provides multi-source and "plug and play" environment for the millions of metering devices in the field now and the future using the ANSI Type 2 optical port interface. It solves the problems associated with single source systems and with multi-source systems based upon proprietary communications protocols. Electric, water, and gas utilities and corresponding vendors can realize cost savings which ultimately shall benefit the client consumers of the utilities.	SASB/SCC31 / Working Group: P1701 - P1701			IEEE standard
61	1702-2011 - IEEE Standard for Telephone Modem Communication Protocol to Complement the Utility Industry End Device Data Tables	This standard provides multisource and "plug and play" environment for the millions of metering devices in the field now and in the future using the telephone modem communication interface. It solves the problems associated with single-source systems and with multisource systems based upon proprietary communications protocols. Electric, water, and gas utilities and corresponding vendors can realize cost savings that ultimately shall benefit the client consumers of the utilities.	SASB/SCC31 / Working Group: P1702 - P1702 Working Group			IEEE standard
62	1703-2012 - IEEE Standard for Local Area Network/Wide Area Network (LAN/WAN) Node Communication Protocol to Complement the Utility Industry End Device Data Tables	A set of application layer messaging services are provided in this standard that are applicable for the enterprise and End Device ends of an Advanced Metering Infrastructure (AMI). The application services include those useful for managing the AMI network assets defined by this standard. These messages may be transported over a wide range of underlying network transports such as TCP/IP, UDP, IEEE 802.11, IEEE 802.15.4 IEEE 802.16, PLC, and SMS over GSM, over a wide range of physical media. Additionally, interfaces are defined for a Communication Module and a Local Port (e.g., an IEEE 1701 optical port).The described protocol is tailored for, but not	SASB/SCC31 / Working Group: P1703 - P1703			IEEE standard

		limited to, the transport of IEEE 1377 Table data. Also, a means by which information can be sent in a secure manner using AES-128 and the EAX' mode is provided in this standard. This standard was developed jointly with ANSI (published as ANSI C12.22) and Measurement Canada (published as MC12.22).				
63	P1704 - Standard for Utility Industry End Device Communications Module	This document defines the hardware physical interface and interface signals between IEEE 1703 Devices (such as IEEE 1377 meters or distribution automation devices) and IEEE 1703 communication modules. The communication modules are described as being attachable and removable to/from the IEEE 1703 Devices, and are not intended to be internal to the metering devices. Included in this standard are the physical dimensions, electrical connections, communication hardware interface signals, and module positioning which involves the secure physical mounting, weather elements, and communications propagation considerations. This standard serves as the extension of (but not limited to) IEEE 1703, MC1222, and ANSI C12.22 standards in regard to the communications module hardware interfaces, reference signals, their description and specification.	Working Group: P1704 - P1704			IEEE project
64	P1705 - Standard for Compliance Testing Standard for Utility Industry Metering Communications Protocol Standards	This standard provides requirements for building and testing for compliance to the following Utility Industry Metering Communications protocols: 1. The Utility Industry Metering Communication Protocol Application Layer Std (Proposed congruent standards, IEEE P1377, ANSI C12.19-2006 and MC12.19-2006) 2. Optical Port Communication Protocol (Proposed congruent standards, IEEE P1701, MC12.18-2006 and ANSI C12.18-2006) to complement The Utility Industry Metering Communication Protocol Application Layer Std. 3. Telephone Port Communication Protocol (Proposed congruent standards, IEEE P1702, MC12.21-2006 and ANSI C12.21-2006) to complement the Utility Industry Metering Communication Protocol Application Layer Std. 4. Local Area Network/Wide Area Network (LAN/WAN) Communication Protocol (Proposed	Working Group: P1705 - P1705			IEEE project

		congruent standards, IEEE P1703, MC12.22-2006 and ANSI C12.22-2006) to complement the Utility Industry Metering Communication Protocol Application Layer Std.				
65	1711-2010 - IEEE Trial Use Standard for a Cryptographic Protocol for Cyber Security of Substation Serial Links	A cryptographic protocol to provide integrity, and optional confidentiality, for cyber security of serial links is defined in this trial use standard. Specific applications or hardware implementations are not addressed, and the standard is independent of the underlying communications protocol.	PE/SUB - Substations / Working Group: WGC6 - Substations Working Group C6			IEEE standard
66	1775-2010 - IEEE Standard for Power Line Communication Equipment--Electromagnetic Compatibility (EMC) Requirements--Testing and Measurement Methods	Electromagnetic compatibility (EMC) criteria and consensus test and measurements procedures for broadband over power line (BPL) communication equipment and installations are presented. Existing national and international standards for BPL equipment and installations are referenced. This standard does not include the specific emission limits, which are subject to national regulations.	PE/PSC - Power System Communications / Working Group: PLCEMC-WG - Powerline Communication Equipment Working Group			IEEE standard
67	P1797 - IEEE Draft Guide for Design and Application of Solar Technology in Commercial Power Generating Stations	This document will summarize current electrical engineering methods and practices for applying photovoltaic technology for Solar Power Generation Stations. It will describe analytical methods, preferred parameters and performance characteristics from a common frame of reference for grid connected power systems.	Working Group: EDS - Energy Development Subcommittee			IEEE project
	1808-2011 - IEEE Guide for Collecting and Managing Transmission Line Inspection and Maintenance Data	Reference information to assist electric utilities and their contractors with the development of computer-based means for collecting and managing transmission line inspection and maintenance data and associated asset information is provided. The guide provides a high level overview of key principles and considerations learned through experience that will help ensure common pitfalls are avoided and enhance the usability of systems. It is not intended to provide an exhaustive discussion of the many details and specifics that must be accounted for when designing and developing a system for an individual utility's application and needs.				

68	1815-2012 - IEEE Standard for Electric Power Systems Communications-Distributed Network Protocol (DNP3)	The DNP3 protocol structure, functions, and interoperable application options (subset levels) are specified. The simplest application level is intended for low-cost distribution feeder devices, and the most complex for full-featured systems. The appropriate level is selected to suit the functionality required in each device. The protocol is suitable for operation on a variety of communication media consistent with the makeup of most electric power communication systems	PE/T&D - Transmission and Distribution			IEEE standard
69	P1815.1 - IEEE Draft Standard for Exchanging Information Between Networks Implementing IEC 61850 and IEEE Std 1815 (Distributed Network Protocol - DNP3)	This document specifies the standard approach for mapping between IEEE Std 1815 (Distributed Network Protocol (DNP3)) and IEC 61850 (Communications Networks and Systems for Power Utility Automation). Two primary use cases are addressed; A) Mapping between an IEEE Std 1815 based master and an IEC 61850 based remote site and B) Mapping between an IEC 61850 based master and an IEEE Std 1815 based remote site. Mapping aspects included in the standard are: conceptual architecture; general mapping requirements; the mapping of Common Data Classes, Constructed Attribute Classes and Abstract Communication Service Interface (ASCI); cyber security requirements, the architecture of a gateway used for translation and requirements for embedding mapping configuration information into IEC 61850 System Configuration Language (SCL) and DNP3 Device Profile. This specification addresses a selection of features, data classes and services of the two standards.	Working Group: C14-1815.1_WG - Substations Working Group C14			IEEE project
70	P1854 - Guide for Smart Distribution Applications Guide	This guide categorizes important smart distribution applications, develops descriptions of the critical functions involved, defines important components of these systems, and provides examples of the systems that can be considered as part of distribution management systems or other smart distribution systems.	Working Group: SDWG - Smart Distribution Working Group			IEEE project
71	1888-2011 - IEEE Standard for Ubiquitous Green Community Control Network Protocol	The standard describes remote control architecture of digital community, intelligent building groups, and digital metropolitan networks; specifies interactive data format	BOG/CAG - Corporate Advisory Group / Working			IEEE standard

		between devices and systems; and gives a standardized generalization of equipment, data communication interface, and interactive message in this digital community network. The digital community remote control network opens interfaces for public administration, public service, property management service, and individual service, which enables intelligent interconnection, collaboration service, remote surveillance, and central management to be feasible.	Group: UGCCNet - Ubiquitous Green Community Control Network Working Group			
72	1901-2010 - Broadband over Power Line Networks: Medium Access Control and Physical Layer Specifications	A standard for high-speed communication devices via electric power lines, so called broadband over power line (BPL) devices, is defined. Transmission frequencies below 100 MHz are used. All classes of BPL devices can use this standard, including BPL devices used for the first-mile/last-mile connection to broadband services as well as BPL devices used in buildings for local area networks (LANs), Smart Energy applications, transportation platforms (vehicle) applications, and other data distribution. The balanced and efficient use of the power line communications channel by all classes of BPL devices is the main focus of this standard, defining detailed mechanisms for coexistence and interoperability between different BPL devices, and ensuring that desired bandwidth and quality of service may be delivered. The necessary security questions are addressed to ensure the privacy of communications between users and to allow the use of BPL for security sensitive services.	COM/PLC - Power Line Communications / Working Group: BPLPHMAC - Broadband Over Power Lines PHY/MAC Working Group			IEEE standard
73	P1901.2 - Standard for Low Frequency (less than 500 kHz) Narrow Band Power Line Communications for Smart Grid Applications	This standard specifies communications for low frequency (less than 500 kHz) narrowband power line devices via alternating current and direct current electric power lines. This standard supports indoor and outdoor communications over low voltage line (line between transformer and meter, less than 1000 V), through transformer low-voltage to medium-voltage (1000 V up to 72 kV) and through transformer medium-voltage to low-voltage power lines in both urban and in long distance (multi- kilometer) rural communications. The standard uses	Working Group: LF NB PLC WG - COM/SC/LF NB PLC Working Group			IEEE project

		transmission frequencies less than 500 kHz. Data rates will be scalable to 500 kbps depending on the application requirements. This standard addresses grid to utility meter, electric vehicle to charging station, and within home area networking communications scenarios. Lighting and solar panel power line communications are also potential uses of this communications standard. This standard focuses on the balanced and efficient use of the power line communications channel by all clas				
74	P1909.1 - Recommended Practice for Smart Grid Communication Equipment - Test methods and installation requirements	This document includes Recommended Practice for testing and installing different types of smart grid communication equipment according to national and international standards available for equipment to be used in the smart grid. The Recommended Practice includes Safety[1], EMC, Environmental and Mechanical battery of tests but excludes the interoperability testing. This document captures Recommended Practice for communication equipment to be installed in various domains of the smart grid such as generation, transmission and distribution.	Working Group: P1909.1 - Recommended Practice for Smart Grid Communication Equipment -Test methods and installation requirements			IEEE project
75	2030-2011 - IEEE Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), End-Use Applications, and Loads	IEEE Std 2030 provides alternative approaches and best practices for achieving smart grid interoperability. It is the first all-encompassing IEEE standard on smart grid interoperability providing a roadmap directed at establishing the framework in developing an IEEE national and international body of standards based on cross-cutting technical disciplines in power applications and information exchange and control through communications. IEEE Std 2030 establishes the smart grid interoperability reference model (SGIRM) and provides a knowledge base addressing terminology, characteristics, functional performance and evaluation criteria, and the application of engineering principles for smart grid interoperability of the electric power system with end-use applications and loads. A system of systems approach to smart grid interoperability lays the foundation on which IEEE Std	SASB/SCC21 - SCC21 - Fuel Cells, Photovoltaics, Dispersed Generation, and Energy StoraGE / Working Group: 2030WG - IEEE 2030 Smart Grid Interoperability Working Group			IEEE standard

		2030 establishes the SGIRM as a design tool that inherently allows for extensibility, scalability, and upgradeability. The IEEE 2030 SGIRM de				
76	P2030.1 - Guide for Electric-Sourced Transportation Infrastructure	This document provides guidelines that can be used by utilities, manufacturers, transportation providers, infrastructure developers and end users of electric-sourced vehicles and related support infrastructure in addressing applications for road-based personal and mass transportation. This guide provides a knowledge base addressing terminology, methods, equipment, and planning requirements for such transportation and its impacts on commercial and industrial systems including, for example, generation, transmission, and distribution systems of electrical power. This guide provides a roadmap for users to plan for short, medium, and long-term systems.	Working Group: WG_P2030.1 - Guide for Electric-Sourced Transportation Infrastructure Working Group			IEEE project
77	P2030.2 - Guide for the Interoperability of Energy Storage Systems Integrated with the Electric Power Infrastructure	This document provides guidelines for discrete and hybrid energy storage systems that are integrated with the electric power infrastructure, including end-use applications and loads. This guide builds upon IEEE Standard 2030 Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation With The Electric Power System (EPS), and End-Use Applications and Loads	Working Group: P2030.2 Interop Energy Stor. - P2030.2 WG for Interoperability of Energy Storage Systems			IEEE project
78	P2030.3 - Standard for Test Procedures for Electric Energy Storage Equipment and Systems for Electric Power Systems Applications	This standard establishes test procedures for electric energy storage equipment and systems for electric power systems (EPS) applications. It is recognized that an electric energy storage equipment or systems can be a single device providing all required functions or an assembly of components, each having limited functions. Components having limited functions shall be tested for those functions in accordance with this standard. Conformance may be established through combination of type, production, and commissioning tests. Additionally, requirements on installation evaluation and periodic tests are included in this standard.	Working Group: WG_Energy_Storage - Test Procedures for Equipment Interconnecting Electric Energy Storage with Electric Power Systems working group			IEEE project
79	P2030.4 - Guide for Control	This document is a guide to users of IEEE Std 2030-2011, Guide	Working Group:			IEEE project

	and Automation Installations Applied to the Electric Power Infrastructure	for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), and End-Use Applications and Loads. It provides guidance in applying the smart grid interoperability reference model (SGIRM) of IEEE Std 2030 in the development of control and automation components. This guide outlines approaches to defining the requirements for control and automation applications within the electric power infrastructure, and describing their design, while adhering to a common open architecture.	CA4EPI - Draft Guide for Control and Automation Installations Applied to the Electric Power Infrastructure			
80	P2030.100 - Recommended Practice for Implementing an IEC 61850 Based Substation Communications, Protection, Monitoring and Control System	his recommended practice outlines the necessary steps and procedures a utility should undertake to implement an IEC 61850 substation in a multi-vendor equipment environment. The document addresses equipment configuration, equipment procurement specification, documentation procedures and general design philosophy that will condense the IEC61850 standard into a practical working implementation guide. The recommended practice also defines baseline information sets and functionality for IEC 61850 devices to allow users to implement similar design philosophies between vendors of IEC 61850 equipment	Working Group: WGC15 - IEC 61850 Implementation			IEEE project
81	C37.1-2007 - SCADA and Automation Systems	The requirements for SCADA and automation systems in substations are defined. This standard defines the process of substation integration as the design process that is the foundation for substation automation. Functional and environmental requirements are provided for all IEDs located in the system. Tutorial material is included in the annexes to address common issues with systems without introducing requirements. Information is also presented in the annexes regarding SCADA masters.	PE/SUB - Substations / Working Group: WGC3 - Substations Working Group C3	SCADA and automation systems in substations		IEEE standard*See IEEE Project PC37.1
82	PC37.1 - Standard for Supervisory Control And Data Acquisition (SCADA) and Automation Systems	This standard applies to, and provides the basis for, the definition, specification, performance analysis, and application of SCADA and automation systems in electric substations, including those associated with generating stations and power	Working Group: WGC3 - Substations Working Group C3			IEEE project

		utilization and conversion facilities.				
83	C37.2-2008 - Standard Electrical Power System Device Function Numbers, Acronyms, and Contact Designations	The definition and application of function numbers and acronyms for devices and functions used in electrical substations and generating plants and in installations of power utilization and conversion apparatus are covered. The purpose and use of the numbers and acronyms is discussed, and 95 numbers and 17 acronyms are assigned. Function numbers or function acronyms for arc fault detection, high impedance fault detection, human machine interface, communications devices, digital fault and sequence of event recorders, power quality recorders, substation time sources and synchrophasor devices are among those that have been added. The use of prefixes and suffixes to provide a more specific definition of a function is defined. Device contact designations are also covered.	PE/SUB - Substations / Working Group: WGC5 - Substations Working Group C5			IEEE standard
84	C37.13-2008 - Low-Voltage AC Power Circuit Breakers Used in Enclosures	The following enclosed low-voltage ac power circuit breakers are covered in this standard: a) stationary or draw-out type of two-, three-, or four-pole construction, with one or more rated maximum voltages of 635 V (600 V for units incorporating fuses), 508 V, and 254 V for application on systems having nominal voltages of 600 V, 480 V, and 240 V; b) unfused or fused circuit breakers; c) manually or power operated; and d) with or without electromechanical or electronic trip devices. Service conditions, ratings, functional components, temperature limitations and classifications of insulating materials, insulation (dielectric) withstand voltage requirements, test procedures, and application are discussed in this standard.	PE/SWG - Switchgear External Link / Working Group: LVSD-WG_C37.13 - LVSD - IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures			IEEE standard
85	C37.90.2-2004 - Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers	Design tests for relays and relay systems that relate to the immunity of this equipment to Radiated Electromagnetic Interference from Transceivers are specified. Field strength, test frequencies, modulation, sweep rates, equipment setup and connection, test procedures, criteria for acceptance, and documentation for test results are described. This standard	PE/PSR - Power System Relaying / Working Group: C37.90.2_WG-I18 - Relay Systems to Radiated			IEEE standard

		has been harmonized with IEC standards where consensus could be reached.	Electromagnetic Interference Working Group			
86	C37.91-2008 - Guide for Protecting Power Transformers	This guide is intended to provide protection engineers and other readers with guidelines for protecting three-phase power transformers of more than 5 MVA rated capacity and operating at voltages exceeding 10 kV. In some cases, a user may apply the techniques described in this guide for protecting transformers of less than 5 MVA ratings or operating at voltages less than 10 kV. Information to assist protection engineers in applying properly relays and other devices to protect transformers used in transmission and distribution systems is provided in this guide. General philosophy, practical applications, and economic considerations involved in power transformer protection are discussed. Emphasis is placed on practical applications. Types of faults in transformers are described. Technical problems with the protection systems, including the behavior of current transformers during system faults, are discussed. Associated problems, such as fault clearing and reenergization, are discussed as well.	PE/PSR - Power System Relaying / Working Group: C37.91_WG-K1 - Protecting Power Transformers Working Group			IEEE standard
87	C37.92-2005 - Analog Inputs to Protective Relays From Electronic Voltage and Current Transducers	Electronic devices that develop or utilize analog signals are not presently covered by standards. This Standard provides interface connectivity of modern power-system signal transducers based on electronics, such as magneto-optic current transducers, and electronic relays. The existing standardized levels from familiar magnetic current and voltage transformers are not readily generated by new types of electronic signal transducers.	PE/PSR - Power System Relaying / Working Group: C37.92_WG - Low Energy Inputs to Protective Relays Working Group			IEEE standard
88	C37.93-2004 - Guide for Power System Protective Relay Applications of Audio Tones Over Voice Grade Channels	Guidelines for applying audio tones over voice grade channels for power system relaying are provided in this document, including transmitting and receiving equipment, leased voice grade channels, application principles, installation, and testing. The primary purpose of this document is to guide the power	PE/PSR - Power System Relaying			IEEE standard

		system user in applying, installing, and operating audio-tone protective relaying systems over voice grade channels. Secondly, it is to provide a reference for equipment manufacturers engaged in the design and application of relaying equipment and for telephone personnel engaged in providing telecommunications channels for audio-tone protective relay schemes.				
89	C37.94-2002 - N Times 64 Kilobit Per Second Optical Fiber Interfaces Between Teleprotection and Multiplexer Equipment	An optical interface for use between teleprotection and digital multiplexer equipment that can operate at a data rate of N times 64 kilobit per second where N = 1, 2... 12 is described. Requirements for both physical connection and the communications timing are also included.	PE/PSR - Power System Relaying / Working Group: C37.94_WG - Optical Fiber Interfaces Working Group			IEEE standard
90	C37.95-2002 - Guide for Protective Relaying of Utility-Consumer Interconnections	Protective relay applications involving electric service to consumers that requires a transformation between the utility's supply voltage and the consumer's utilization voltage are covered in this guide. This guide describes the factors that need to be considered in the design of adequate protection facilities, outlines modern relay practices, and provides several examples of the protection of typical utility-consumer interconnections.	PE/PSR - Power System Relaying			IEEE standard*See IEEE Project PC37.95
91	PC37.95 - Guide for Protective Relaying of Utility-Consumer Interconnections	This guide contains information on a number of different protective relaying practices for the utility-consumer interconnection. It is intended to cover applications involving service to a consumer that normally requires a transformation between the utility's supply voltage and the consumer's utilization voltage. Interconnections supplied at the utilization voltage are not covered. This guide is not intended to supplant specific utility or consumer practices, procedures, requirements, or any contractual agreement between the utility and the consumer. The examples in Clause 7 are used for illustrative purposes only and do not necessarily represent the preferred protection under all conditions. This guide	Working Group: C37.95_WG - IEEE Guide for Protective Relaying of Utility-Consumer Interconnections			IEEE project

		addresses consumers, with or without generation, that are connected to utility subtransmission or transmission circuits. The specific control schemes associated with generation are not addressed. It is not intended to apply necessarily to consumer generation connected to utility distribution circuits.				
92	C37.100-1992 - IEEE standard definitions for power switchgear	In this standard, terms that encompass the products with the scope of the C37 project are defined. These include power switchgear for switching, interrupting, metering, protection and regulating purposes as used primarily in connection with generation, transmission, distribution, and conversion of electric power. The definitions do not purport to embrace other meanings that the terms may properly have when used in connection with other subjects.	PE/SWG - Switchgear			IEEE standard
93	C37.101-2006 - Guide for Generator Ground Protection	The guide is intended to assist protection engineers in applying relays and relaying schemes for protection against stator ground faults on various generator grounding schemes. The existing guide is outdated due to rapid technology development. Hence, the revised guide includes new stator ground protection principles that have evolved with the use of new technologies in relay designs. Additional application examples are included, and other issues raised by the users are also addressed. The guide is not intended for the selection of generator or ground connection schemes.	PE/PSR - Power System Relaying			IEEE standard
94	C37.102-2006 - Guide for AC Generator Protection	A review of the generally accepted forms of relay protection for the synchronous generator and its excitation system is presented. This guide is primarily concerned with protection against faults and abnormal operating conditions for large hydraulic, steam, and combustion turbine generators.	PE/PSR - Power System Relaying / Working Group: C37.102_WG-J4 - AC Generator Protection Guide Working Group			IEEE standard
95	C37.104-2012 - Guide for Automatic Reclosing of Circuit Breakers for AC Distribution and Transmission Lines	Current reclosing practices for transmission and distribution lines are described. Application considerations and coordination practices of reclosing are also discussed. (An errata is available at	PE/PSR - Power System Relaying / Working Group: C37.104_WG - IEEE			IEEE standard

		http://standards.ieee.org/findstds/errata/C37.104-2012_errata.pdf)	Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines			
96	C37.106-2003 - Guide for Abnormal Frequency Protection for Power Generating Plants	This guide has been prepared to assist the protection engineer in applying relays for the protection of generating plant equipment from damage caused by operation at abnormal frequencies including overexcitation.	PE/PSR - Power System Relaying			IEEE standard
97	C37.111-1999 - Standard Common Format for Transient Data Exchange (COMTRADE) for Power Systems	A common format for data files and exchange medium used for the interchange of various types of fault, test, or simulation data for electrical power systems is defined. Sources of transient data are described, and the case of diskettes as an exchange medium is recommended. Issues of sampling rates, filters, and sample rate conversions for transient data being exchanged are discussed. Files for data exchange are specified, as is the organization of the data. A sample file is given.	PE/PSR - Power System Relaying			IEEE standard*See IEEE Project PC37.111
98	PC37.111 - IEEE Draft Standard for Common Format for Transient Data Exchange (COMTRADE) for Power Systems	This standard defines a format for files containing transient waveform and event data collected from power systems or power system models. The format is intended to provide an easily interpretable form for use in exchanging data. The standard is for files stored on currently used physical media such as portable external hard drives, USB drives, flash drives, CD, DVD. It is not a standard for transferring data files over communication networks.	Working Group: C37.111_WG - Power System Relaying Committee			IEEE project
99	C37.112-1996 - Standard Inverse-Time Characteristic Equations for Overcurrent Relays	The inverse-time characteristics of overcurrent relays are defined in this standard. Operating equations and allowances are provided in the standard. The standard defines an integral equation for microprocessor relays that ensures coordination not only in the case of constant current input but for any current condition of varying magnitude. Electromechanical inverse-time overcurrent relay reset characteristics are defined in the event that designers of microprocessor based				IEEE standard

		relays and computer relays want to match the reset characteristics of the electromechanical relays				
100	C37.114-2004 - Guide for Determining Fault Location on AC Transmission and Distribution Lines	Electrical faults on transmission and distribution lines are detected and isolated by system protective devices. Once the fault has been cleared, outage times can be reduced if the location of the fault can be determined more quickly. This guide outlines the techniques and application considerations for determining the location of a fault on ac transmission and distribution lines. The document reviews traditional approaches and the primary measurement techniques used in modern devices: one-terminal and two-terminal impedance-based methods and traveling wave methods. Application considerations include: two- and three-terminal lines, series-compensated lines, parallel lines, untransposed lines, underground cables, fault resistance effects, and other power system conditions, including those unique to distribution systems.				IEEE standard*See IEEE Project PC37.114
101	PC37.114 - Guide for Determining Fault Location on AC Transmission and Distribution Lines	This guide outlines the techniques and application considerations for determining the location of a fault on ac transmission and distribution lines. This document reviews traditional approaches and the primary measurement techniques used in modern devices: one-terminal and two-terminal impedance-based methods and traveling wave methods. Application considerations include two- and three-terminal lines, series-compensated lines, parallel lines, untransposed lines, underground cables, fault resistance effects, and other power system conditions, including those unique to distribution systems.	Working Group: C37.114_WG - Revision of C37.114 Fault Location Guide			IEEE project
102	C37.116-2007 - Guide for Protective Relay Application to Transmission-Line Series Capacitor Banks	The application of protective relays on transmission-line series capacitor banks is covered. The purpose of this guide is to provide the reader with ample discussion of the protection and control issues related to series capacitor bank installations. Specific examples related to protective functions	PE/PSR - Power System Relaying			IEEE standard

		and testing procedures are provided. Keywords: bypass gap, bypass switch, externally fused capacitor, fuseless capacitor, harmonic protection, internally fused capacitor, metal oxide varistor, MOV, series capacitor, unbalance protection				
103	C37.117-2007 - Guide for the Application of Protective Relays Used for Abnormal Frequency Load Shedding and Restoration	Information on the application of underfrequency load shedding and restoration to ac power systems is compiled in this guide. Various system conditions that may require the use of underfrequency load shedding and the application of protective relays to various methods of performing underfrequency load shedding are described in this guide. Some practical examples of underfrequency load shedding applications are also provided.	PE/PSR - Power System Relaying			IEEE standard
104	C37.118-2005 - Synchrophasors for Power Systems	This standard defines synchronized phasor measurements used in power system applications. It provides a method to quantify the measurement, tests to be sure the measurement conforms to the definition, and error limits for the test. It also defines a data communication protocol, including message formats for communicating this data in a real-time system. Explanation, examples, and supporting information are also provided.	PE/PSR - Power System Relaying			IEEE standard
105	C37.118.1-2011 - Synchrophasor Measurements for Power Systems	Synchronized phasor (synchrophasor) measurements for power systems are presented. This standard defines synchrophasors, frequency, and rate of change of frequency (ROCOF) measurement under all operating conditions. It specifies methods for evaluating these measurements and requirements for compliance with the standard under both steady-state and dynamic conditions. Time tag and synchronization requirements are included. Performance requirements are confirmed with a reference model, provided in detail. This document defines a phasor measurement unit (PMU), which can be a stand-alone physical unit or a functional unit within another physical unit. This standard does not specify hardware, software, or a method for computing phasors, frequency, or ROCOF.	PE/PSR - Power System Relaying			IEEE standard

106	C37.118.2-2011 - Synchrophasor Data Transfer for Power Systems	A method for real-time exchange of synchronized phasor measurement data between power system equipment is defined. This standard specifies messaging that can be used with any suitable communication protocol for real-time communication between phasor measurement units (PMU), phasor data concentrators (PDC), and other applications. It defines message types, contents, and use. Data types and formats are specified. A typical measurement system is described. Communication options and requirements are described in annexes.	PE/PSR - Power System Relaying			IEEE standard
107	C37.230-2007 - Guide for Protective Relay Applications to Distribution Lines	A review of generally accepted applications and coordination of protection for radial power system distribution lines is presented. The advantages and disadvantages of schemes presently being used in protecting distribution lines are examined in this guide. Identification of problems with the methods used in distribution line protection and the solutions for those problems is included.	PE/PSR - Power System Relaying External Link / Working Group: C37.230_WG-D5 - Protective Relay Applications to Distribution Lines Working Group			IEEE standard
108	C37.231-2006 - Recommended Practice for Microprocessor-Based Protection Equipment Firmware Control	This recommended practice deals with the implications surrounding the use and administration of firmware revisions for protection-related equipment. In general, the number of firmware revisions have become prolific since the introduction of microprocessor-based protection related equipment and no standard means of dealing with the issues surrounding this situation has been addressed. This recommended practice attempts to provide guidelines for the effective communication of firmware-related issues with the intent of helping to maximize the security and reliability of the power system.	PE/PSR - Power System Relaying External Link / Working Group: I3-C37.231_WG - Working Group for Microprocessor-based Protection Equipment			IEEE standard
109	C37.232-2011 - Common Format for Naming Time Sequence Data Files (COMNAME)	A standard procedure for naming time sequence data (TSD) files, such as files produced by digital fault recorders, power swing recorders, power quality monitors, and so on, is specified. The sources of TSD files are described, and a survey	PE/PSR - Power System Relaying / Working Group: C37.232_WG - File			IEEE standard

		of current naming techniques is provided. The advantages of using a common naming procedure are highlighted, and the limitations and applications are identified. Issues of compatibility across operating systems and various vintages, and adaptability to other types of files, are also discussed. The required and optional portions of the naming procedure are described in detail, and many examples are provided.	Name Convention Working Group			
110	PC37.236 - IEEE Draft Guide for Power System Protective Relay Applications over Digital Communication Channels	This document is a guide for the application of digital communication for protective relaying systems and schemes, including transmitting and receiving equipment, digital channels, application principals, performance, installation, troubleshooting, testing and maintenance. Reflected in this guide is the knowledge and experience of equipment manufacturers and power utility users. This guide is not intended to supplant specific or general instructions contained in manufacturers' instruction books or any contractual agreement.	Working Group: C37.236_WG - Guide for Power System Protective Relay Applications over Digital Communication Channels			IEEE project
111	C37.238-2011 - Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications	A common profile for the use of Precision Time Protocol (PTP) of IEEE Std 1588-2008 in power system protection, control, automation, and data communication applications utilizing an Ethernet communications architecture is specified.	PE/PSR - Power System Relaying / Working Group: C37.238_WG - IEEE 1588 Profile for Protection Applications			IEEE standard
112	C37.239-2010 - Common Format for Event Data Exchange (COMFEDE) for Power Systems	A common format for data files used for the interchange of various types of event data collected from electrical power systems or power system models is defined. Extensibility, extension mechanisms, and compatibility of future versions of the format are discussed. An XML schema is defined. A sample file is given.	PE/PSR - Power System Relaying / Working Group: C239_WG - Common Data Format for IED Event Data			IEEE standard
113	PC37.240 - Standard for Cyber Security Requirements for Substation Automation,	This document provides technical requirements for substation cyber security. It presents sound engineering practices that can be applied to achieve high levels of cyber security of	Working Group: C37.240_WG - PC37.240 Cyber			IEEE project

	Protection and Control Systems	automation, protection and control systems independent of voltage level or criticality of cyber assets. Cyber security includes trust and assurance of data in motion, data at rest and incident response.	Security Standard			
114	C37.242-2013 - Synchronization, Calibration, Testing, and Installation of Phasor Measurement Units (PMUs) for Power System Protection and Control	Guidance for synchronization, calibration, testing, and installation of phasor measurement units (PMUs) applied in power systems is provided. The following are addressed in this guide: (a) Considerations for the installation of PMU devices based on application requirements and typical substation electrical bus configurations; (b) Techniques focusing on the overall accuracy and availability of the time synchronization system; (c) Test and calibration procedures for PMUs for laboratory and field applications; (d) Communications testing for connecting PMUs to other devices including Phasor Data Concentrators	PE/PSR - Power System Relaying			IEEE standard
115	PC37.243 - Guide for Application of Digital Line Current Differential Relays Using Digital Communication	This guide presents practical line current differential schemes using digital communication. Operating principles, synchronization methods, channel requirements, current transformer requirements, external time reference requirements, backup considerations, testing considerations and troubleshooting are included. It also provides specific guidelines for various application aspects including multi-terminal lines, series compensated lines, mutual coupled lines, line charging current, in-zone transformers and reactors, single-pole tripping and reclosing as well as channel and external time sources requirements.	Working Group: C37.243_WG - Guide for Application of Digital Line Current Differential Relays Using Digital Communication			IEEE project
116	C37.244-2013 - Guide for Phasor Data Concentrator Requirements for Power System Protection, Control, and Monitoring	This guide describes the functional, performance and testing guidelines for a Phasor Data Concentrator. Supporting information is also provided.	PE/PSR - Power System Relaying			IEEE standard
117	C57.120-1991 - Loss Evaluation Guide for Power Transformers and Reactors	In this standard a method for establishing the dollar value of the electric power needed to supply the losses of a transformer or reactor is provided. Users can use this loss	PE/TR - Transformers / Working Group:			IEEE standard*See IEEE

		evaluation to determine the relative economic benefit of a high-first-cost, low-loss unit versus one with a lower first cost and higher losses, and to compare the offerings of two or more manufacturers to aid in making the best purchase choice. Manufacturers can use the evaluation to optimize the design and provide the most economical unit to bid and manufacture. The various types of losses are reviewed.	PwrTrans-WGC57.120 & 638 - Power Transformers - Loss Evaluation Guide for Power Xfmrs Working Group			Project PC57.120
118	PC57.120 - Guide for Loss Evaluation of Distribution and Power Transformers and Reactors	This guide covers the economic loss evaluation of liquid filled distribution and power transformers, dry type distribution and power transformers, and reactors.	Working Group: PerfCharac-WGC57.120 - Performance Characteristics - Loss Evaluation Guide Working Group			IEEE project
119	C57.123-2010 - Guide for Transformer Loss Measurement	Information and general recommendations of instrumentation, circuitry, calibration, and measurement techniques of no-load losses (excluding auxiliary losses), excitation current, and load losses of power and distribution transformers are provided. The guide is intended as a complement to the test code procedures given in Clause 8 and Clause 9 of IEEE Std C57.12.90.	PE/TR - Transformers / Working Group: PerfCharac-WGC57.123 - Performance Characteristics - Xfrmr Loss Measurement Working Group			IEEE standard
120	C62.11-2012 - Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV)	Metal-oxide surge arresters (MOSAs) designed to repeatedly limit the voltage surges on 48 Hz to 62 Hz power circuits (􀀡 1000 V) by passing surge discharge current and automatically limiting the flow of system power current are addressed in this standard. This standard applies to devices for separate mounting and to devices supplied integrally with other equipment. The tests demonstrate that an arrester is able to survive the rigors of reasonable environmental conditions and system phenomena while protecting	PE/SPDHV - Surge Protective Devices/High Voltage			IEEE standard

		equipment and/or the system from damaging overvoltages caused by lightning, switching, and other undesirable surges				
121	C62.39-2012 -Test Methods and Preferred Values for Self-Restoring Current-Limiter Components Used in Telecommunication Surge Protection	Metal-oxide surge arresters (MOSAs) designed to repeatedly limit the voltage surges on 48 Hz to 62 Hz power circuits by passing surge discharge current and automatically limiting the flow of system power current are addressed in this standard. This standard applies to devices for separate mounting and to devices supplied integrally with other equipment. The tests demonstrate that an arrester is able to survive the rigors of reasonable environmental conditions and system phenomena while protecting equipment and/or the system from damaging overvoltages caused by lightning, switching, and other undesirable surges.	PE/SPDLV - Surge Protective Devices/Low Voltage			IEEE standard
122	IEEE/ISO/IEC 42010-2011	ISO/IEC/IEEE 42010:2011 addresses the creation, analysis and sustainment of architectures of systems through the use of architecture descriptions. A conceptual model of architecture description is established. The required contents of an architecture description are specified. Architecture viewpoints, architecture frameworks and architecture description languages are introduced for codifying conventions and common practices of architecture description. The required content of architecture viewpoints, architecture frameworks and architecture description languages is specified. Annexes provide the motivation and background for key concepts and terminology and examples of applying ISO/IEC/IEEE 42010:2011				IEEE standard
123	IEEE Vision for Smart Grid Communications: 2030 and Beyond	Active. The IEEE Vision for Smart Grid Communications: 2030 and Beyond provides a vision of the communications-related aspects of the Smart Grid in the year 2030, and lays out the technology roadmap that will lead us to the vision. This document starts with some basic knowledge of the power grid and follows up with fundamental building blocks for the communication infrastructure that will accompany the Smart Grid. Subsequently, network architectures, including overlays,	Document published 05/31/2013 by IEEE			IEEE Smart Grid Research Papers

		are discussed at length. Also discussed, are important issues such as standards, regulations, security, and disruptive technologies. The last part of this document discusses emerging technologies such as the solid state transformer, wireless beamed power, and quantum key distribution. Throughout the document, a careful distinction is made between communications capabilities and the specific technologies that are required to support those capabilities. For Corporate or Institutional Access, request a custom quote for your organization at www.ie				
124	IEEE 3001.8-2013 - IEEE Recommended Practice for the Instrumentation and Metering of Industrial and Commercial Power Systems	New IEEE Standard - Active. This recommended practice covers the instrumentation and metering of industrial and commercial power systems. It describes the importance of metering to achieve a successful energy management process, as well as considerations that must be made when applying the latest metering technology.	P3001.8 Working Group			IEEE standard
125	IETF RFC6272:2011 - Internet Protocols for the Smart Grid	Identifies the key infrastructure protocols of the Internet Protocol Suite for use in the Smart Grid. The target audience is those people seeking guidance on how to construct an appropriate Internet Protocol Suite profile for the Smart Grid. In practice, such a profile would consist of selecting what is needed for Smart Grid deployment from the picture presented here				Communications using Internet Protocols
126	NIST IR 7628:2010 - Guidelines for Smart Grid Cyber Security	Presents an analytical framework that organizations can use to develop effective cyber security strategies tailored to their particular combinations of Smart Grid-related characteristics, risks, and vulnerabilities.				Cybersecurity
127	NIST IR 7761:2011 - Guidelines for Assessing Wireless Standards for Smart Grid Applications	Key tools and methods to assist Smart grid system designers in making informed decisions about existing and emerging wireless technologies. An initial set of quantified requirements have been brought together for advanced metering infrastructure (AMI) and initial Distribution Automation (DA) communications.				Communications - Wireless Technology
128	NIST IR 7862:2012 - Guideline	Power Line Communication (PLC) systems provide a bi-				Power Line

	for the Implementation of Coexistence for Broadband Power Line Communication Standards	directional communication platform capable of delivering data for a variety of Smart Grid applications such as home energy management and intelligent meter reading and control. One benefit of using power line communication on power grid is that it provides an infrastructure that is much more comprehensive and widespread than other wired/wireless alternatives. The use of PLC in the home network enables home appliances and home energy management systems to communicate with no additional wiring and minimal configuration by the home owners.				Carrier (PLC) Network Communications
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B.3 ITU-T STANDARDS

Nº	ITU-T RECOMMENDATION	TITLE	STATUS	APPLICATIONS	DESCRIPTION
1	ITU-T G.7041/Y.1303	Generic framing procedure	Approved:2011-04 *In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.7041/Y.1303 defines a generic framing procedure (GFP) to delineate octet-aligned, variable-length payloads from higher-level client signals for subsequent mapping into octet-synchronous paths such as those defined in Recommendations ITU-T G.707/Y.1322, ITU-T G.8040/Y.1340 and ITU-T G.709/Y.1331. This Recommendation defines: <ul style="list-style-type: none"> – frame formats for protocol data units (PDUs) transferred between GFP initiation and termination points; – the mapping procedure for the client signals into GFP; – responses to certain defect conditions.
2	ITU-T G.7042/Y.1305	Link capacity adjustment scheme (LCAS) for virtual concatenated signals	Approved:2006-03 *n force	Cross-cutting/ telecommunication	This Recommendation specifies a methodology for dynamically changing (i.e., increasing and decreasing) the capacity of a container that is transported in a generic transport network (e.g., over SDH or OTN network using Virtual Concatenation). In general, this change of capacity does not affect the traffic. In addition, the methodology also provides survivability capabilities, automatically decreasing the capacity if a member experiences a failure in the network, and increasing the capacity when the network fault is repaired.
3	ITU-T G.707/Y.1323	Network node interface for the synchronous digital hierarchy (SDH)	Approved:2007-01 *In force	Cross-cutting/ telecommunication	This Recommendation provides the requirements for the STM-N signals at the network node interface of a synchronous digital network, including B-ISDN in terms of: <ul style="list-style-type: none"> – bit rates; – frames structures; – formats for mapping and multiplexing of client signals (e.g., PDH, ATM and Ethernet) elements; – functionalities of the overheads.

4	ITU-T G.709/Y.1331	Interfaces for the optical transport network	Approved:2012-02 *In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.709/Y.1331 defines the requirements for the optical transport module of order n (OTM-n) signals of the optical transport network, in terms of: – optical transport hierarchy (OTH) – functionality of the overhead in support of multi-wavelength optical networks – frame structures – bit rates – formats for mapping client signals.
5	ITU-T G.781	Synchronization layer functions	Approved:2008-09 * In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.781 defines the atomic functions that are part of the two synchronization layers, the synchronization distribution (SD) layer and the network synchronization (NS) layer. It also defines some atomic functions, part of the transport layer, which are related to synchronization. These functions describe the synchronization of SDH NEs and how SDH NEs are involved in Network Synchronization. The specifications in this Recommendation are the superset of functionality of three regional standards bodies. Care should be taken when selecting from this Recommendation. Not every atomic function defined in this Recommendation is required for every application. Different subsets of atomic functions may be assembled in different ways according to the combination rules given in Recommendation ITU-T G.783 to provide a variety of different capabilities. Network operators and equipment suppliers may choose which functions must be implemented for each application
6	ITU-T G.783	Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks	Approved:2006-03 *n force	Cross-cutting/ telecommunication	This Recommendation specifies both the components and the methodology that should be used in order to specify SDH functionality of network elements; it does not specify an individual SDH equipment as such. This Recommendation specifies a library of basic building blocks and a set of rules by which they may be combined in order to describe a digital transmission equipment. The library comprises the functional building blocks needed to specify completely the generic

					functional structure of the Synchronous Digital Hierarchy. In order to be compliant with this Recommendation, equipment needs to be describable as an interconnection of a subset of these functional blocks contained within this Recommendation. The interconnections of these blocks should obey the combination rules given. The specification method is based on functional decomposition of the equipment into atomic, and compound functions. The description is generic and no particular physical partitioning of functions is implied.
7	ITU-T G.798	Characteristics of optical transport network hierarchy equipment functional blocks	Approved:2012-12*In force* To be published	Cross-cutting/telecommunication	This ITU-T Recommendation describes the functional architecture of transport networks including network synchronization principles for networks that are based on the SDH. This ITU-T Recommendation uses the architectural description defined in ITU-T Recommendation G.805, the generic functional architecture of transport networks. The application of various mappings is also included.
8	ITU-T G.803	Architecture of transport networks based on the synchronous digital hierarchy (SDH)	Approved:2000-03*In force	Cross-cutting/telecommunication	This ITU-T Recommendation describes the functional architecture of transport networks including network synchronization principles for networks that are based on the SDH. This ITU-T Recommendation uses the architectural description defined in ITU-T Recommendation G.805, the generic functional architecture of transport networks. The application of various mappings is also included.
9	ITU-T G.872	Architecture of optical transport networks	Approved:2012-10*In force (prepublished)	Cross-cutting/telecommunication	Recommendation ITU-T G.872 describes the functional architecture of optical transport networks using the modelling methodology described in [ITU-T G.800] and [ITU-T G.805]. The optical transport network (OTN) functionality is described from a network level viewpoint, taking into account an optical network layered structure, client characteristic information, client/server layer associations, networking topology, and layer network functionality providing optical signal transmission, multiplexing, routing, supervision, performance assessment, and network survivability. The optical portion of the network is described in terms of spectrum management entities and

					maintenance entities.
10	ITU-T G.983.1	Broadband optical access systems based on Passive Optical Networks (PON)	Approved:2000-03*In force	Cross-cutting/telecommunication	This Recommendation describes a flexible optical fibre access network capable of supporting the bandwidth requirements of narrow-band and broadband services. This Recommendation describes systems with nominal downstream line rates of 155.52, 622.08 and 1244.16 Mbit/s, and nominal upstream line rates of 155.52 and 622.08 Mbit/s. Both symmetrical and asymmetrical systems are described. This Recommendation proposes the physical layer requirements and specifications for the physical media dependent layer, the TC layer and the ranging protocol of an ATM-based Broadband Passive Optical Network (B-PON)
11	ITU-T G.983.2	ONT management and control interface specification for B-PON	Approved:2005-07*In force	Cross-cutting/telecommunication	n the B-PON system defined in ITU-T Rec. G.983.1 [3] (called ATM-PON in ITU-T Rec. G.983.1), the ONTs are located at the customer site. The B-PON element management system will only manage ONTs as part of the B-PON system through the OLT using the ONT management and control interface (OMCI). This Recommendation presents requirements for the OMCI. Firstly, it specifies managed entities of a protocol-independent Management Information Base (MIB) that models the exchange of information between the OLT and ONT, then it covers the ONT management and control channel, protocol and detailed messages. This 2nd revised version of ITU-T
12	ITU-T G.983.3	A broadband optical access system with increased service capability by wavelength allocation	Approved:2001-03*In force	Cross-cutting/telecommunication	his Recommendation defines new wavelength allocations to distribute ATM-PON signals and additional service signals simultaneously. New wavelength bands for additional services are made available by constraining the current ATM-PON downstream wavelength to a portion of downstream optical spectrum originally specified in ITU-T G.983.1. The new bands have potential to provide unidirectional and bidirectional services. The wavelength allocation defined in this Recommendation enables the distribution of video broadcast services or data services. The general optical characteristics of these services are taken into account. However, the detailed

					specifications of these services, such as modulation scheme, signal format, and so on are beyond the scope of this Recommendation
13	ITU-T G.983.4	A broadband optical access system with increased service capability using dynamic bandwidth assignment	Approved:2001-11*In force	Cross-cutting/ telecommunication	This Recommendation specifies requirements for adding Dynamic Bandwidth Assignment (DBA) functionality to the Broadband Optical Access Systems defined in ITU-T Rec. G.983.1. The use of DBA functionality enables dynamic sharing of upstream bandwidth. This dynamic sharing uses upstream bandwidth more efficiently and enables additional services flexibility. This Recommendation captures specifications for DBA operation and for DBA-related communication between the OLT and the ONUs/ONTs.
14	ITU-T G.983.5	A broadband optical access system with enhanced survivability	Approved:2002-01*In force	Cross-cutting/ telecommunication	This Recommendation describes flexible access networks using optical fibre technology based on ITU-T Rec. G.983.1. Specifically, it describes the functions that extend ITU-T Rec. G.983.1 to enable survivability-protection enhancements for the delivery of highly reliable services. It describes B-PON survivability architectures, protection performance criteria, and protection-switching criteria and protocols.
15	ITU-T G.984.1	Gigabit-capable passive optical networks (GPON): General characteristics	Approved:2008-03*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.984.1 describes a flexible optical fibre access network capable of supporting the bandwidth requirements of business and residential services and covers systems with nominal line rates of 2.4 Gbit/s in the downstream direction and 1.2 Gbit/s and 2.4 Gbit/s in the upstream direction. Both symmetrical and asymmetrical (upstream/downstream) gigabit-capable passive optical network (GPON) systems are described. This Recommendation proposes the general characteristics for GPON based on operators' service requirements.
16	ITU-T G.984.2	Gigabit-capable Passive Optical Networks (G-PON): Physical Media Dependent (PMD) layer specification	Approved:2003-03*In force	Cross-cutting/ telecommunication	This Recommendation describes a flexible optical fibre access network capable of supporting the bandwidth requirements of business and residential services, and covers systems with nominal line rates of 1244.160 Mbit/s and 2488.320 Mbit/s in the downstream direction and 155.520 Mbit/s, 622.080 Mbit/s,

					1244.160 Mbit/s and 2488.320 Mbit/s in the upstream direction. Both symmetrical and asymmetrical (upstream/downstream) Gigabit-capable Passive Optical Network (GPON) systems are described. This Recommendation proposes the physical layer requirements and specifications for the Physical Media Dependent (PMD) layer. The Transmission Convergence (TC) layer and ranging protocol for GPON systems are described in a different ITU-T Recommendation
17	ITU-T G.984.3	Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification	Approved:2008-03*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.984.3 describes the transmission convergence layer for gigabit-capable passive optical networks – a family of flexible access networks capable of providing a range of broadband and narrow-band services, operating at the rates of 2.48832 Gbit/s downstream, and 1.24416 or 2.48832 Gbit/s upstream. This Recommendation includes the specifications of the following: – gigabit PON transmission convergence (GTC) layer framing; – upstream time division multiple access mechanism; – physical layer OAM messaging channel; – principles and signalling mechanism of the upstream dynamic bandwidth assignment; – ONU activation method; – forward error correction; – security.
18	ITU-T G.984.4	Gigabit-capable passive optical networks (G-PON): ONT management and control interface specification	Approved:2008-02*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.984.4 provides the optical network termination (ONT) management and control interface (OMCI) specification for gigabit-capable passive optical network (G-PON) systems as defined in Recommendations ITU-T G.984.2 and G.984.3. Firstly, it specifies the managed entities of a protocol-independent management information base (MIB) that models the exchange of information between the optical line termination (OLT) and the optical network termination (ONT). In addition, it covers the ONT management and control channel, protocol and detailed messages. This revised version incorporates the material from Amendment 1 (2005),

					Amendment 2 (2006), and Amendment 3 (2006). In addition to the purely editorial collection work, this revision endeavours to remove all references to the optional ATM transport capabilities of G-PON, since all modern systems do not support it.
19	ITU-T G.984.5	Gigabit-capable Passive Optical Networks (G-PON): Enhancement band	Approved:2007-09*In force	Cross-cutting/ telecommunication	The purpose of ITU-T Recommendation G.984.5 is to define wavelength ranges reserved for additional service signals to be overlaid via wavelength division multiplexing (WDM) in future passive optical networks (PON) for maximizing the value of optical distribution networks (ODNs).
20	ITU-T G.984.6	Gigabit-capable passive optical networks (GPON): Reach extension	Approved:2008-03*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.984.6 outlines the architecture and interface parameters for GPON systems with extended reach using a physical layer reach extension device such as a regenerator or optical amplifier in the fibre link between the optical line termination (OLT) and optical network termination (ONT). The maximum reach is up to 60 km with loss budgets of in excess of 27.5 dB being achievable in both spans.
21	ITU-T G.984.7	Gigabit-capable passive optical networks (GPON): Long reach	Approved:2010-07*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.984.1 defines the maximum differential distance between any two ONUs on the passive optical network (PON) as 20 km and the GPON logical reach has been defined as 60 km. However, based on practical deployment experience, it has been found that a differential distance of 40 km, ranging from 0 to 40 km, 20 to 60 km or distances in between allows significant flexibility in PON deployment and offers many benefits including the ability to serve sparsely populated areas in an efficient manner. The present Recommendation describes the necessary requirements for GPON to support the differential distance of 40 km.
22	ITU-T G.985	100 Mbit/s point-to-point Ethernet based optical access system	Approved in 2003-03*In force	Communications technologies	This Recommendation describes the 100 Mbit/s point-to-point Ethernet based optical access system, including ODN (optical distribution network) specification, physical layer specification and the requirements for the OAM (operation, administration and maintenance). This Recommendation is based on 1-fiber

					WDM bidirectional transmission system
23	ITU-T G.986	1 Gbit/s point-to-point Ethernet-based optical access system	Approved in 2010-01*In force	Communications technologies	Recommendation ITU-T G.986 describes a 1 Gbit/s point-to-point Ethernet-based optical access system for the optical access services including the optical distribution network (ODN) specification, the physical layer specification and the operation, administration and maintenance (OAM) specification.
23	ITU-T G.987.1	10-Gigabit-capable passive optical networks (XG-PON): General requirements	Approved:2010-01*In force	Cross-cutting/telecommunication	Recommendation ITU-T G.987.1 addresses the general requirements of 10 Gigabit-capable passive optical network (XG-PON) systems, in order to guide and motivate the physical layer and the transmission convergence layer specifications. The general requirements include examples of services, user network interfaces (UNIs) and service node interfaces (SNIs), as well as the principal deployment configurations that are requested by network operators. This Recommendation also includes the system and operational requirements to meet the needs of supporting various business and residential applications.
24	ITU-T G.987.2	10-Gigabit-capable passive optical networks (XG-PON): Physical media dependent (PMD) layer specification	Approved:2010-10*In force	Cross-cutting/telecommunication	Recommendation ITU-T G.987.2 describes the physical layer requirements and specifications for the XG-PON physical media dependent (PMD) layer. Wavelength enhancement bands are described in Recommendation ITU-T G.987.1. The transmission convergence (TC) layer is described in Recommendation ITU-T G.987.3. The ONU management and control interface (OMCI) specifications are described in Recommendation ITU-T G.988. This Recommendation describes a flexible optical fibre access network capable of supporting the bandwidth requirements of business and residential services. The ITU-T G.987 series of standards allows for multiple upstream and downstream line rates. This Recommendation currently defines one type of 10-Gigabit-capable passive optical network (XG-PON) system with asymmetric nominal line rate of 9.95328 Gbit/s in the downstream direction and 2.48832 Gbit/s in the upstream direction, hereinafter referred to as XG-PON1.
25	ITU-T G.987.4	10-Gigabit-capable passive optical	Approved:2010-	Cross-cutting/	Recommendation ITU-T G.987.3 describes the transmission

		networks (XG-PON): Transmission convergence (TC) layer specification	10*In force	telecommunication	convergence layer for 10-gigabit-capable passive optical network systems – a family of flexible access network systems that operate over a point-to-multipoint optical access infrastructure at nominal data rates in the order of 10.0 Gbit/s in at least one direction, while providing a wide range of broadband and narrow-band services to end-users.
26	ITU-T G.991.1	High bit rate digital subscriber line (HDSL) transceivers	Approved:1998-10*In force	Cross-cutting/ telecommunication	This Recommendation specifies a High bit rate Digital Subscriber Line (HDSL) which is a bidirectional and symmetrical transmission system that allows the transport of signals with a bit rate of 1544 kbit/s or 2048 kbit/s on the copper twisted pairs of an access network. The basic work has been carried out in the ANSI T1 committee for 1544 kbit/s signals. The results of this work were taken by TM6 of ETSI and adopted for 2048 kbit/s signals in a technical specification, which built the basis for this Recommendation. The HDSL system uses echo cancellation technique for the separation of the directions of transmission, so that one twisted pair can carry both directions. Two different options for the line code are recommended, the Pulse Amplitude Modulation 2B1Q and the Carrierless Amplitude/Phase Modulation CAP. CAP is applicable for 2048 kbit/s only, while for 2B1Q two different frames for 1544 kbit/s and 2048 kbit/s are defined. The 2B1Q for 2048 kbit/s caters for both duplex transmission on a single pair and parallel transmission on two or three-pairs.
27	ITU-T G.991.2	Single-pair high-speed digital subscriber line (SHDSL) transceivers	Approved:2003-12*In force	Cross-cutting/ telecommunication	This Recommendation describes a transmission method for data transport in telecommunications access networks. SHDSL transceivers are designed primarily for duplex operation over mixed gauge two-wire twisted metallic pairs. Optional multi-pair operation is supported for extended reach applications. Optional signal regenerators for both single-pair and multi-pair operation are specified, as well. SHDSL transceivers are capable of supporting selected symmetric user data rates in the range of 192 kbit/s to 2312 kbit/s using a Trellis Coded Pulse Amplitude Modulation (TCPAM) line code. Optional extensions

					described in Annex F allow user data rates up to 5696 kbit/s. SHDSL transceivers are designed to be spectrally compatible with other transmission technologies deployed in the access network, including other DSL technologies. SHDSL transceivers do not support the use of analogue splitting technology for coexistence with either POTS or ISDN.
28	ITU-T G.992.1	Asymmetric digital subscriber line (ADSL) transceivers	Approved:1999-07*In force	Cross-cutting/ telecommunication	This Recommendation describes Asymmetric Digital Subscriber Line (ADSL) Transceivers on a metallic twisted pair that allows high-speed data transmission between the network operator end (ATU-C) and the customer end (ATU-R). This Recommendation provides a variety of bearer channels in conjunction with one of three other services dependent on the environment: <ul style="list-style-type: none"> – ADSL transmission simultaneously on the same pair with voice (band) service; – ADSL transmission simultaneously on the same pair with G.961 (Appendix I or II) ISDN services; – ADSL transmission on the same pair with voiceband transmission and with TCM-ISDN (G.961 Appendix III) in an adjacent pair.
29	ITU-T G.992.2	Splitterless asymmetric digital subscriber line (ADSL) transceivers	Approved:1999-07*In force	Cross-cutting/ telecommunication	This Recommendation describes the interface between the telecommunications network and the customer installation in terms of their interaction and electrical characteristics. This Recommendation allows the transmission of POTS and V-series data services simultaneously with a digital channel over a single mixed gauge twisted metallic pair. Annex C defines the procedures to operate in a TCM-ISDN noise environment. Operation in the frequency band over BRA-ISDN is for further study. This Recommendation includes procedures to allow provisioning without the need for "splitters", typically installed at the ingress to the customer premises. Additionally, power management procedures and link states are specified to achieve power savings at the central office and customer premises.

30	ITU-T G.992.3	Asymmetric digital subscriber line transceivers 2 (ADSL2)	Approved:2009-04*In force	Cross-cutting/ telecommunication	<p>Recommendation ITU-T G.992.3 describes asymmetric digital subscriber line (ADSL) transceivers on a metallic twisted pair that allows high-speed data transmission between the network operator end (ATU-C) and the customer end (ATU-R). It defines a variety of frame bearers in conjunction with one of two other services, or without underlying service, dependent on the environment:</p> <ul style="list-style-type: none"> – ADSL transmission simultaneously on the same pair with voiceband service. – ADSL transmission simultaneously on the same pair with integrated services digital network (ISDN) (Appendix I or II of Recommendation ITU-T G.961) services. – ADSL transmission without underlying service, optimized for deployment with ADSL over voiceband service in the same binder cable. – ADSL transmission without underlying service, optimized for deployment with ADSL over ISDN service in the same binder cable. – ADSL transmission with specific requirements for Reach Extended ADSL2, simultaneously on the same pair with voiceband service. – ADSL transmission with extended upstream bandwidth, simultaneously on the same pair with voiceband service. – ADSL transmission on the same pair with voiceband services and operating in an environment with TCM-ISDN (Appendix III of Recommendation ITU-T G.961) services in an adjacent pair.
31	ITU-T G.992.4	Splitterless asymmetric digital subscriber line transceivers 2 (splitterless ADSL2)	Approved:2002-07*In force	Cross-cutting/ telecommunication	<p>This Recommendation describes the interface between the telecommunications network and the customer installation in terms of their interaction and electrical characteristics. G.992.4 allows the transmission of POTS and V-series data services simultaneously with a digital channel over a single mixed gauge twisted metallic pair. Operation in a TCM-ISDN noise environment is for further study. This Recommendation is structured as a delta document to ITU-T Rec. G.992.3. This</p>

					Recommendation includes procedures to allow provisioning without the need for "splitters", typically installed at the ingress to the customer premises. Additionally, power management procedures and link states are specified to achieve power savings at the central office and customer premises
32	ITU-T G.993.1	Very high speed digital subscriber line transceivers (VDSL)	Approved:2004-06*In force	Cross-cutting/ telecommunication	G.993.1 VDSL (Very high speed Digital Subscriber Line) permits the transmission of asymmetric and symmetric aggregate data rates up to tens of Mbit/s on twisted pairs. G.993.1 includes worldwide frequency plans that allow asymmetric and symmetric services in the same group of twisted pairs (known as a binder). G.993.1 transceivers must overcome many types of ingress interference from radio and other transmission techniques that occur in the same frequencies of typical deployment scenarios. Similarly, G.993.1 transmission power levels have been designed to minimize potential egress interference into other transmission systems. As with other Recommendations in the G.99x series, G.993.1 uses G.994.1 to handshake and initiate the transceiver training sequence.
33	ITU-T G.993.2	Very high speed digital subscriber line transceivers 2 (VDSL2)	Approved:2011-12*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.993.2 specifies an access technology that exploits the existing infrastructure of copper wires that were originally deployed for POTS services. It can be deployed from central offices, from fibre-fed cabinets located near the customer premises, or within buildings. This Recommendation is an enhancement to ITU-T G.993.1 that supports asymmetric and symmetric transmission at a bidirectional net data rate up to 200 Mbit/s on twisted pairs using a bandwidth up to 30 MHz.
34	ITU-T G.993.5	Self-FEXT cancellation (vectoring) for use with VDSL2 transceivers	Approved:2010-04*In force	Cross-cutting/ telecommunication	Vectoring is a transmission method that employs the coordination of line signals for reduction of crosstalk levels and improvement of performance. The degree of improvement depends on the channel characteristics. Vectoring may be for a single user or for multiple-users' benefit. The scope of

					Recommendation ITU-T G.993.5 is specifically limited to the self-FEXT (far-end crosstalk) cancellation in the downstream and upstream directions. This Recommendation defines a single method of self-FEXT cancellation, in which FEXT generated by a group of near-end transceivers and interfering with the far-end transceivers of that same group is cancelled. This cancellation takes place between VDSL2 transceivers, not necessarily of the same profile. This Recommendation is intended to be implemented in conjunction with Recommendation ITU-T G.993.2.
35	ITU-T G.994.1	Handshake procedures for digital subscriber line transceivers	Approved:2012-06*In force (prepublished)	Cross-cutting/telecommunication	Recommendation ITU-T G.994.1 provides a flexible mechanism for digital subscriber line (DSL) transceivers to exchange capabilities and to select a common mode of operation. It includes parameters relating to service and application requirements as well as parameters pertinent to various DSL transceivers. This Recommendation is currently an integral part of the start-up procedure for Recommendations ITU-T G.991.2, G.992.1, G.992.2, G.992.3, G.992.4, G.992.5, G.993.1 and G.993.2. It is anticipated that future DSL Recommendations will also be able to make use of this Recommendation. Provisions are also included for exchanging non-standard information. This revision integrates all approved amendments and corrigendum into the latest revision of Recommendation ITU-T G.994.1. It also includes a new corrigendum (indicates with changed bar as corrigendum 2) that: <ul style="list-style-type: none"> – fixes the allocation of the codepoint "Support of downstream virtual noise in diagnostic mode" – fixes the allocation of the codepoint "Full G.993.5-friendly G.993.2 operation" – removes the codepoints for O-P-VECTOR-1-1 duration.
36	ITU-T G.996.1	Test procedures for digital subscriber line (DSL) transceivers	Approved:2001-02*In force	Cross-cutting/telecommunication	This Recommendation describes the testing procedures for ITU-T Digital Subscriber Line (DSL) Recommendations. The testing procedures described herein include methods for testing DSL transceivers in the presence of crosstalk from other services,

					Radio Frequency ingress, impulse noise and POTS signalling. Test loops and in-home wiring models are specified for different regions of the world for use during DSL performance testing. Other DSL Recommendations reference this Recommendation for testing procedures and configurations. This Recommendation does not specify performance requirements for these other Recommendations; it only specifies the procedures for measuring the performance requirements for a particular Recommendation.
37	ITU-T G.996.2	Single-ended line testing for digital subscriber lines (DSL)	Approved:2009-05*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.996.2 specifies line testing for xDSL transceivers in the form of single-ended line testing (SELT), dual-ended line testing (DELT) and metallic line testing (MELT).
38	ITU-T G.997.1	Physical layer management for digital subscriber line transceivers	Approved2012-06*In force (prepublished)	Cross-cutting/ telecommunication	Recommendation ITU-T G.997.1 specifies the physical layer management for asymmetric digital subscriber line (ADSL) and very high speed digital subscriber line 2 (VDSL2) transmission systems. It specifies means of communication on a transport transmission channel defined in the physical layer Recommendations ITU-T G.992.1, ITU-T G.992.2, ITU-T G.992.3, ITU-T G.992.4, ITU-T G.992.5 and ITU-T G.993.2. It specifies Network Elements content and syntax for configuration, fault and performance management. The revision of this Recommendation includes the MIB elements for the physical layer management of Recommendation ITU-T G.993.2 and additional MIB elements for the physical layer management of Recommendations ITU-T G.992.3 and ITU-T G.992.5.
39	ITU-T G.998.1	ATM-based multi-pair bonding	Approved:2005-01*In force	Cross-cutting/ telecommunication	This Recommendation describes a method for bonding of multiple digital subscriber lines (DSL) to transport ATM streams. The specifications of this Recommendation provide a complete description of startup, operational, and contingency modes of operation which allows for interoperability between vendors. This Recommendation includes the following types of requirements, recommendations, and information for defined DSL systems, including: – higher-layer transport-independent requirements;

					– higher-layer transport-dependent, e.g., ATM, requirements.
40	ITU-T G.998.2	Ethernet-based multi-pair bonding	Approved:2005-01*In force	Cross-cutting/ telecommunication	This Recommendation describes a method for bonding of multiple digital subscriber lines (DSL) for Ethernet transport. This Recommendation can support SHDSL, VDSL and ADSL transport as well as future xDSL technologies as they emerge. This Recommendation builds on the IEEE 802.3ah-2004 methods and extends Ethernet transport over other xDSL technologies, including ADSL. The Recommendation does not describe the details of the specific xDSL transport technology. Rather, it focuses on the aspects of the PCS layer modifications required for bonding.
41	ITU-T G.998.3	Multi-pair bonding using time-division inverse multiplexing	Approved:2005-01*In force	Cross-cutting/ telecommunication	This Recommendation describes a method for bonding of multiple digital subscriber lines (DSL) using Time-Division Inverse Multiplexing (TDIM). This Recommendation provides a specification of the TDIM protocol in sufficient detail, to allow development and testing of interoperable implementations for both transmitter and receiver. It includes a multi-pair synchronization frame format, Bonding Communication Channel (BCC), byte-oriented dispatching, hitless addition and removal of pairs, fast removal of pair upon pair failure, using IEEE 802.3ah handshake for pair discovery, parameter negotiation and setup, and an optional FEC and interleaver.
42	ITU-T G.998.4	Improved impulse noise protection for DSL transceivers	Approved:2010-06*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.998.4 specifies techniques beyond those defined in the existing ITU-T digital subscriber line (DSL) Recommendations ITU-T G.992.3, ITU-T G.992.5, and ITU-T G.993.2 to provide enhanced protection against impulse noise or to increase the efficiency of providing impulse noise protection (INP). NOTE – This publication includes the clarification of the definition of actual INP that was approved as ITU-T G.998.4 (2010) Corrigendum 1 (2010-11)
43	ITU-T G.999.1	Interface between the link layer and the physical layer for digital subscriber line (DSL) transceivers	Approved:2009-10*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.999.1 defines a point-to-point interface between the LINK layer device such as a network processor and a PHY device supporting multiple DSL lines, such as VDSL2, ADSL2, and SHDSL.

44	ITU-T G9901	Narrowband orthogonal frequency division multiplexing power line communication transceivers - Power spectral density specification	Approved in 2012-11*In force	Communications technologies	Recommendation ITU-T G.9901 specifies the control parameters that determine spectral content, power spectral density (PSD) mask requirements, a set of tools to support the reduction of the transmit PSD, the means to measure this PSD for transmission over power line wiring, as well as the allowable total transmit power into a specified termination impedance. It complements the system architecture, physical layer (PHY) and data link layer (DLL) specifications in Recommendations ITU-T G.9902 (G.hnem), ITU-T G.9903 (G3-PLC) and ITU-T G.9904 (PRIME).
45	ITU-T G9902	Narrowband orthogonal frequency division multiplexing power line communication transceivers for ITU-T G.hnem networks	Approved in 2012-10*In force	Communications technologies	Recommendation ITU-T G.9902 contains the physical layer (PHY) and the data link layer (DLL) specifications for the ITU-T G.9902 narrowband orthogonal frequency division multiplexing (OFDM) power line communication transceivers, operating over alternating current and direct current electric power lines over frequencies below 500 kHz. The control parameters that determine spectral content, power spectral density (PSD) mask requirements and the set of tools to support the reduction of the transmit PSD can be found in Recommendation ITU-T G.9901.
46	ITU-T G9903	Narrowband orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks	Approved in 2012-10*In force	Communications technologies	Recommendation ITU-T G.9903 contains the physical layer (PHY) and data link layer (DLL) specification for the G3-PLC narrowband orthogonal frequency division multiplexing (OFDM) power line communication transceivers for communications via alternating current and direct current electric power lines over frequencies below 500 kHz. The control parameters that determine spectral content, power spectral density (PSD) mask requirements and the set of tools to support the reduction of the transmit PSD can be found in Recommendation ITU-T G.9901.
47	ITU-T G9904	Narrowband orthogonal frequency division multiplexing power line communication transceivers for PRIME networks	Approved in 2012-10*In force	Communications technologies	Recommendation ITU-T G.9904 contains the physical layer (PHY) and data link layer (DLL) specification for PRIME narrowband orthogonal frequency division multiplexing (OFDM) power line communication transceivers for

					communications via alternating current and direct current electric power lines over frequencies in the CENELEC A band. The control parameters that determine spectral content, power spectral density (PSD) mask requirements and the set of tools to support the reduction of the transmit PSD can be found in Recommendation ITU-T G.9901.
48	ITU-T G.9954	Home networking transceivers - Enhanced physical, media access, and link layer specifications	Approved in 2007-01**In force	Communications technologies	TU-T Recommendation G.9954 defines the PHY, MAC, LINK and CONVERGENCE protocol stack layers for the G.9954v2 system
49	ITU-T G.9955	Narrow-band OFDM power line communication transceivers - Physical layer specification	Approved in 2011-12*In force (prepublished)	Communications technologies	Recommendation ITU-T G.9955 contains the physical layer specification for narrowband OFDM power line communications transceivers for communications via alternating current and direct current electric power lines over frequencies below 500 kHz. This Recommendation supports indoor and outdoor communications over low voltage lines, medium voltage lines, through transformer low-voltage to medium-voltage and through transformer medium-voltage to low-voltage power lines in both urban and in long distance rural communications. This Recommendation addresses grid to utility meter applications, advanced metering infrastructure (AMI), and other Smart Grid applications such as charging of electric vehicle, home automation, and home area networking (HAN) communications scenarios.
50	ITU-T G.9956	Narrow-band OFDM power line communication transceivers - Data link layer specification	Approved in 2011-11*In force (prepublished)		Recommendation ITU-T G.9956 contains the data link layer specification for narrowband OFDM power line communications transceivers for communications via alternating current and direct current electric power lines over frequencies below 500 kHz. This Recommendation supports indoor and outdoor communications over low voltage lines, medium voltage lines, through transformer low-voltage to medium-voltage and through transformer medium-voltage to low-voltage power lines in both urban and in long distance rural communications. This Recommendation addresses grid to utility meter applications, advanced metering infrastructure

					(AMI), and other Smart Grid applications such as charging of electric vehicles, home automation, and home area networking (HAN) communications scenarios.
51	ITU-T G.9959	Short range narrow-band digital radiocommunication transceivers - PHY and MAC layer specifications	Approved in 2012-02*In force	Communications technologies	Recommendation ITU-T G.9959 contains the MAC/PHY layer specification for short range narrow-band digital radiocommunication transceivers. This Recommendation is a joint piece of work between ITU-R and ITU-T, each contributing material from their respective remits. This Recommendation contains the non-radio (frequency) related aspects of the radiocommunication transceiver. The Recommendation specifies sub 1 GHz transceivers which shall be interoperable with transceivers complying with Annex A of this Recommendation.
52	ITU-T G.9960	Unified high-speed wireline-based home networking transceivers - System architecture and physical layer specification	Approved:2011-12*In force	Cross-cutting/telecommunication	Recommendation ITU-T G.9960 specifies the system architecture and physical (PHY) layer for wireline-based home networking transceivers capable of operating over premises wiring including inside telephone wiring, coaxial cable, and power-line wiring. It complements the data link layer (DLL) specification in Recommendation ITU-T G.9961. Besides the inclusion of minor enhancements and error fixes, this version of the Recommendation removes the control parameters that determine spectral content, power spectral density (PSD) mask requirements, and the set of tools to support reduction of the transmit PSD, all of which have been moved to Recommendation ITU-T G.9964.
53	ITU-T G.9961	Unified high-speed wire-line based home networking transceivers - Data link layer specification	Approved:2010-06*In force	Cross-cutting/telecommunication	Recommendation ITU-T G.9961 specifies the data link layer (DLL) for wire-line based home networking transceivers capable of operating over premises wiring including inside telephone wiring, coaxial cable, and power-line wiring. It complements the system architecture and physical layer (PHY) specification in Recommendation ITU-T G.9960.
54	ITU-T G.9962	Unified high-speed wireline-based home networking transceivers - Multiple input/multiple output	Approved:2011-12*In force	Cross-cutting/telecommunication	Recommendation ITU-T G.9963 specifies the basic characteristics of a multiple-input multiple-output (MIMO) high-speed home networking transceiver capable of operating

		specification			over premises power-line wiring. This Recommendation includes the additions and modifications to Recommendations ITU-T G.9960 and ITU-T G.9961 that are required in order to fully define a MIMO home networking transceiver. MIMO transceivers are able to transmit over three power-line conductors (phase, neutral, and ground) in more than one Tx port and receive in more than one Rx port, thus providing an increased data rate and enhancing the connectivity (i.e., service coverage) of the home network. This Recommendation also specifies the means by which transceivers that comply with ITU-T G.9960, ITU-T G.9961 and ITU-T G.9963 interoperate when operating on the same wires
55	ITU-T G.9963	Unified high-speed wireline-based home networking transceivers - Multiple input/multiple output specification	Approved in 2011-12*In force	Communications technologies	Recommendation ITU-T G.9963 specifies the basic characteristics of a multiple-input multiple-output (MIMO) high-speed home networking transceiver capable of operating over premises power-line wiring. This Recommendation includes the additions and modifications to Recommendations ITU-T G.9960 and ITU-T G.9961 that are required in order to fully define a MIMO home networking transceiver. MIMO transceivers are able to transmit over three power-line conductors (phase, neutral, and ground) in more than one Tx port and receive in more than one Rx port, thus providing an increased data rate and enhancing the connectivity (i.e., service coverage) of the home network. This Recommendation also specifies the means by which transceivers that comply with ITU-T G.9960, ITU-T G.9961 and ITU-T G.9963 interoperate when operating on the same wires.
56	ITU-T G.9964	Unified high-speed wireline-based home networking transceivers – Power spectral density specification	Approved:2011-12*In force	Cross-cutting/ telecommunication	Recommendation ITU-T G.9964 specifies the control parameters that determine spectral content, power spectral density (PSD) mask requirements, a set of tools to support reduction of the transmit PSD, means to measure this PSD for transmission over telephone wiring, power line wiring and coaxial cable, as well as the allowable total transmit power into a specified termination impedance. It complements the system

					architecture and physical layer (PHY) specification in Recommendation ITU-T G.9960, and the data link layer (DLL) specification in Recommendation ITU-T G.9961, as well as the modifications and additions to these Recommendations specifying the multiple input/multiple output (MIMO) home networking transceiver in Recommendation ITU-T G.9963.
57	ITU-T G.9970	Generic home network transport architecture	Approved in 2009-01*In force	Communications technologies	Recommendation ITU-T G.9970 describes the generic architecture for home networks and their interfaces to the operators' broadband access networks.
58	ITU-T G.9972	Coexistence mechanism for wireline home networking transceivers	Approved in 2010-06*In force	Communications technologies	Recommendation ITU-T G.9972 specifies a coexistence mechanism for home networking transceivers capable of operating over powerline wiring. The coexistence mechanism allows ITU-T G.996x devices to coexist with other coexisting systems, as defined in this Recommendation, operating on the same powerline wiring.
59	ITU-T G.9973	Protocol for identifying home network topology	Approved in 2011-10*In force	Communications technologies	Based on Recommendation ITU-T G.9971, Recommendation ITU-T G.9973 specifies the configuration management protocol, which is described in TTC JJ-300.00. This protocol is used to manage devices in the IP home network for the purpose of showing users the Layer 2 home network topology.
60	ITU-T I.322	Generic protocol reference model for telecommunication networks	Approved:1999-02*In force	Cross-cutting/telecommunication	This Recommendation defines a Generic Protocol Reference Model (GPRM) used to describe heterogeneous transport networks based on the deployment of overlaid switching and transmission techniques. GPRM models the interconnection and exchange of information, including information pertaining to the user, control and management functions.

APPENDIX C: CENELEC PUBLICATIONS UNDER MANDATE M/490

CCOMMITTEE	REFERENCE	TITLE	MANDATE
CLC/WS 05	CWA 50611:2013	Flow batteries - Guidance on the specification, installation and operation	M490
CLC/TC 8X	EN 50160:2010	Voltage characteristics of electricity supplied by public electricity networks	M490
CLC/TC 8X	EN 50160:2010/AC:2012	Voltage characteristics of electricity supplied by public electricity networks	M490
CLC/TC 8X	CLC/TR 50422:2003	Guide for the application of the European Standard EN 50160	M490
CLC/TC 8X	EN 50438:2007	Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks	M490
CLC/TC 13	EN 62056-31:2000	Electricity metering - Data exchange for meter reading, tariff and load control - Part 31: Use of local area networks on twisted pair with carrier signalling	M490
CLC/TC 13	EN 62056-42:2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 42: Physical layer services and procedures for connection-oriented asynchronous data exchange	M490
CLC/TC 13	EN 62056-46:2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol	M490
CLC/TC 13	EN 62056-46:2002/A1:2007	Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol	M490
CLC/TC 13	EN 62056-47:2007	Electricity metering - Data exchange for meter reading, tariff and load control - Part 47: COSEM transport layers for IPv4 networks	M490
CLC/TC 13	EN 62056-53:2007	Electricity metering - Data exchange for meter reading, tariff and load control - Part 53: COSEM application layer	M490
CLC/TC 13	EN 62056-61:2007	Electricity metering - Data exchange for meter reading, tariff and load control - Part 61: Object identification system (OBIS)	M490
CLC/TC 13	EN 62056-62:2007	Electricity metering - Data exchange for meter reading, tariff and load control - Part 62: Interface classes	M490

CLC/TC 57	EN 60870-5-5:1995	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 5: Basic application functions	M490
CLC/TC 57	EN 60870-5-101:2003	Telecontrol equipment and systems - Part 5-101: Transmission protocols - Companion standard for basic telecontrol tasks	M490
CLC/TC 57	EN 60870-5-102:1996	Telecontrol equipment and systems - Part 5: Transmission protocols - Section 102: Companion standard for the transmission of integrated totals in electric power systems	M490
CLC/TC 57	EN 60870-5-103:1998	Telecontrol equipment and systems - Part 5-103: Transmission protocols - Companion standard for the informative interface of protection equipment	M490
CLC/TC 57	EN 60870-5-104:2006	Telecontrol equipment and systems - Part 5-104: Transmission protocols - Network access for IEC 60870-5-101 using standard transport profiles	M490
CLC/TC 57	EN 61334-4-32:1996	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 32: Data link layer - Logical link control (LLC)	M490
CLC/TC 57	EN 61334-4-511:2000	Distribution automation using distribution line carrier systems - Part 4-511: Data communication protocols - Systems management - CIASE protocol	M490
CLC/TC 57	EN 61334-4-512:2002	Distribution automation using distribution line carrier systems - Part 4-512: Data communication protocols - System management using profile 61334-5-1 - Management Information Base (MIB)	M490
CLC/TC 57	EN 61334-5-1:2001	Distribution automation using distribution line carrier systems - Part 5-1: Lower layer profiles - The spread frequency shift keying (S-FSK) profile	M490
CLC/TC 57	EN 61850-6:2010	Communication networks and systems for power utility automation - Part 6: Configuration description language for communication in electrical substations related to IEDs	M490
CLC/TC 57	EN 61850-7-1:2003	Communication networks and systems in substations - Part 7-1: Basic communication structure for substation and feeder equipment - Principles and models	M490
CLC/TC 57	EN 61850-7-1:2011	Communication networks and systems for power utility automation - Part 7-1: Basic communication structure - Principles and models	M490
CLC/TC 57	EN 61850-7-2:2003	Communication networks and systems in substations - Part 7-2:	M490

		Basic communication structure for substation and feeder equipment - Abstract communication service interface (ACSI)	
CLC/TC 57	EN 61850-7-2:2010	Communication networks and systems for power utility automation - Part 7-2: Basic information and communication structure - Abstract communication service interface (ACSI)	M490
CLC/TC 57	EN 61850-7-3:2003	Communication networks and systems in substations - Part 7-3: Basic communication structure for substation and feeder equipment - Common data classes	M490
CLC/TC 57	EN 61850-7-3:2011	Communication networks and systems for power utility automation - Part 7-3: Basic communication structure - Common data classes	M490
CLC/TC 57	EN 61850-7-4:2003	Communication networks and systems in substations - Part 7-4: Basic communication structure for substation and feeder equipment - Compatible logical node classes and data classes	M490
CLC/TC 57	EN 61850-7-4:2010	Communication networks and systems for power utility automation - Part 7-4: Basic communication structure - Compatible logical node classes and data object classes	M490
CLC/TC 57	EN 61850-7-410:2007	Communication networks and systems for power utility automation - Part 7-410: Hydroelectric power plants - Communication for monitoring and control	M490
CLC/TC 57	EN 61850-7-410:2013	Communication networks and systems for power utility automation - Part 7-410: Basic communication structure - Hydroelectric power plants - Communication for monitoring and control	M490
CLC/TC 57	EN 61850-7-420:2009	Communication networks and systems for power utility automation - Part 7-420: Basic communication structure - Distributed energy resources logical nodes	M490
CLC/TC 57	EN 61850-8-1:2004	Communication networks and systems in substations - Part 8-1: Specific Communication Service Mapping (SCSM) - Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3	M490
CLC/TC 57	EN 61850-8-1:2011	Communication networks and systems for power utility automation - Part 8-1: Specific communication service mapping (SCSM) - Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3	M490
CLC/TC 57	EN 61850-9-2:2004	Communication networks and systems in substations - Part 9-2: Specific Communication Service Mapping (SCSM) - Sampled values	M490

		over ISO/IEC 8802-3	
CLC/TC 57	EN 61850-9-2:2011	Communication networks and systems for power utility automation - Part 9-2: Specific communication service mapping (SCSM) - Sampled values over ISO/IEC 8802-3	M490
CLC/TC 57	EN 61968-1:2004	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general requirements	M490
CLC/TC 57	EN 61968-1:2013	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general recommendations	M490
CLC/TC 57	EN 61968-3:2004	Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for network operations	M490
CLC/TC 57	EN 61968-4:2007	Application integration at electric utilities - System interfaces for distribution management - Part 4: Interfaces for records and asset management	M490
CLC/TC 57	EN 61968-9:2009	Application integration at electric utilities - System interfaces for distribution management - Part 9: Interface for meter reading and control	M490
CLC/TC 57	EN 61968-11:2010	Application integration at electric utilities - System interfaces for distribution management - Part 11: Common information model (CIM) extensions for distribution	M490
CLC/TC 57	EN 61968-13:2008	Application integration at electric utilities - System interfaces for distribution management - Part 13: CIM RDF Model exchange format for distribution	M490
CLC/TC 57	EN 61970-1:2006	Energy management system application program interface (EMS-API) - Part 1: Guidelines and general requirements	M490
CLC/TC 57	CLC/TS 61970-2:2005	Energy management system application program interface (EMS-API) - Part 2: Glossary	M490
CLC/TC 57	EN 61970-301:2004	Energy management system application program interface (EMS-API) - Part 301: Common Information Model (CIM) base	M490
CLC/TC 57	EN 61970-301:2011	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	M490
CLC/TC 57	EN 61970-402:2008	Energy management system application program interface (EMS-API) - Part 402: Common services	M490

CLC/TC 57	EN 61970-403:2008	Energy management system application program interface (EMS-API) - Part 403: Generic data access	M490
CLC/TC 57	EN 61970-404:2007	Energy management system application program interface (EMS-API) - Part 404: High Speed Data Access (HSDA)	M490
CLC/TC 57	EN 61970-405:2007	Energy management system application program interface (EMS-API) - Part 405: Generic Eventing and Subscription (GES)	M490
CLC/TC 57	EN 61970-407:2007	Energy management system application program interface (EMS-API) - Part 407: Time Series Data Access (TSDA)	M490
CLC/TC 57	EN 61970-453:2008	Energy management system application program interface (EMS-API) - Part 453: CIM based graphics exchange	M490
CLC/TC 57	EN 61970-501:2006	Energy management system application program interface (EMS-API) - Part 501: Common Information Model Resource Description Framework (CIM RDF) schema	M490
CLC/SR 65E	CLC/TR 62541-1:2010	OPC unified architecture - Part 1: Overview and concepts	M490
CLC/SR 65E	CLC/TR 62541-2:2010	OPC unified architecture - Part 2: Security model	M490
CLC/SR 65E	EN 62541-3:2010	OPC unified architecture - Part 3: Address Space Model	M490
CLC/TC 65X	CLC/TR 61158-1:2004	Digital data communications for measurement and control - Fieldbus for use in industrial control systems - Part 1: Overview and guidance for the IEC 61158 series	M490
CLC/TC 65X	CLC/TR 61158-1:2008	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	M490
CLC/TC 65X	CLC/TR 61158-1:2010	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	M490
CLC/TC 65X	EN 61158-2:2008	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	M490
CLC/TC 65X	EN 61158-2:2010	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	M490
CLC/TC 65X	EN 61158-3-1:2008	Industrial communication networks - Fieldbus specifications - Part 3-1: Data-link layer service definition - Type 1 elements	M490
CLC/TC 65X	EN 61158-3-2:2008	Industrial communication networks - Fieldbus specifications - Part 3-2: Data-link layer service definition - Type 2 elements	M490
CLC/TC 65X	EN 61158-3-3:2008	Industrial communication networks - Fieldbus specifications - Part 3-3: Data-link layer service definition - Type 3 elements	M490
CLC/TC 65X	EN 61158-3-4:2008	Industrial communication networks - Fieldbus specifications - Part 3-	M490

		4: Data-link layer service definition - Type 4 elements	
CLC/TC 65X	EN 61158-3-7:2008	Industrial communication networks - Fieldbus specifications - Part 3-7: Data-link layer service definition - Type 7 elements	M490
CLC/TC 65X	EN 61158-3-8:2008	Industrial communication networks - Fieldbus specifications - Part 3-8: Data-link layer service definition - Type 8 elements	M490
CLC/TC 65X	EN 61158-3-11:2008	Industrial communication networks - Fieldbus specifications - Part 3-11: Data-link layer service definition - Type 11 elements	M490
CLC/TC 65X	EN 61158-3-12:2008	Industrial communication networks - Fieldbus specifications - Part 3-12: Data-link layer service definition - Type 12 elements	M490
CLC/TC 65X	EN 61158-3-12:2012	Industrial communication networks - Fieldbus specifications - Part 3-12: Data-link layer service definition - Type 12 elements	M490
CLC/TC 65X	EN 61158-3-13:2008	Industrial communication networks - Fieldbus specifications - Part 3-13: Data-link layer service definition - Type 13 elements	M490
CLC/TC 65X	EN 61158-3-14:2008	Industrial communication networks - Fieldbus specifications - Part 3-14: Data-link layer service definition - Type 14 elements	M490
CLC/TC 65X	EN 61158-3-14:2012	Industrial communication networks - Fieldbus specifications - Part 3-14: Data-link layer service definition - Type 14 elements	M490
CLC/TC 65X	EN 61158-3-16:2008	Industrial communication networks - Fieldbus specifications - Part 3-16: Data-link layer service definition - Type 16 elements	M490
CLC/TC 65X	EN 61158-3-17:2008	Industrial communication networks - Fieldbus specifications - Part 3-17: Data-link layer service definition - Type 17 elements	M490
CLC/TC 65X	EN 61158-3-18:2008	Industrial communication networks - Fieldbus specifications - Part 3-18: Data-link layer service definition - Type 18 elements	M490
CLC/TC 65X	EN 61158-3-19:2008	Industrial communication networks - Fieldbus specifications - Part 3-19: Data-link layer service definition - Type 19 elements	M490
CLC/TC 65X	EN 61158-3-19:2012	Industrial communication networks - Fieldbus specifications - Part 3-19: Data-link layer service definition - Type 19 elements	M490
CLC/TC 65X	EN 61158-3-21:2012	Industrial communication networks - Fieldbus specifications - Part 3-21: Data-link layer service definition - Type 21 elements	M490
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CLC/TC 210	EN 61000-4-21:2003	Electromagnetic compatibility (EMC) - Part 4-21: Testing and measurement techniques - Reverberation chamber test methods	M490
CLC/TC 210	EN 61000-4-21:2011	Electromagnetic compatibility (EMC) - Part 4-21: Testing and measurement techniques - Reverberation chamber test methods	M490
CLC/TC 210	EN 61000-4-22:2011	Electromagnetic compatibility (EMC) - Part 4-22: Testing and measurement techniques - Radiated emission and immunity measurements in fully anechoic rooms (FARs)	M490
CLC/TC 210	EN 61000-4-23:2000	Electromagnetic compatibility (EMC) - Part 4-23: Testing and measurement techniques - Test methods for protective devices for HEMP and other radiated disturbances	M490
CLC/TC 210	EN 61000-4-24:1997	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 24: Test methods for protective	M490

		devices for HEMP conducted disturbance	
CLC/TC 210	EN 61000-4-25:2002	Electromagnetic compatibility (EMC) - Part 4-25: Testing and measurement techniques - HEMP immunity test methods for equipment and systems	M490
CLC/TC 210	EN 61000-4-25:2002/A1:2012	Electromagnetic compatibility (EMC) - Part 4-25: Testing and measurement techniques - HEMP immunity test methods for equipment and systems	M490
CLC/TC 210	EN 61000-4-27:2000	Electromagnetic compatibility (EMC) - Part 4-27: Testing and measurement techniques - Unbalance, immunity test for equipment with input current not exceeding 16 A per phase	M490
CLC/TC 210	EN 61000-4-27:2000/A1:2009	Electromagnetic compatibility (EMC) - Part 4-27: Testing and measurement techniques - Unbalance, immunity test for equipment with input current not exceeding 16 A per phase	M490
CLC/TC 210	EN 61000-4-28:2000	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	M490
CLC/TC 210	EN 61000-4-28:2000/A1:2004	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	M490
CLC/TC 210	EN 61000-4-28:2000/A2:2009	Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	M490
CLC/TC 210	EN 61000-4-29:2000	Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests	M490
CLC/TC 210	EN 61000-4-30:2009	Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods	M490
CLC/TC 210	EN 61000-4-34:2007	Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase	M490
CLC/TC 210	EN 61000-4-34:2007/A1:2009	Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current	M490

		more than 16 A per phase	
CLC/TC 210	EN 61000-5-5:1996	Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines - Section 5: Specification of protective devices for HEMP conducted disturbance	M490
CLC/TC 210	EN 61000-5-7:2001	Electromagnetic compatibility (EMC) - Part 5-7: Installation and mitigation guidelines - Degrees of protection by enclosures against electromagnetic disturbances (EM code)	M490
CLC/TC 210	EN 61000-6-1:2007	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	M490
CLC/TC 210	EN 61000-6-2:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	M490
CLC/TC 210	EN 61000-6-3:2007	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	M490
CLC/TC 210	EN 61000-6-3:2007/A1:2011	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	M490
CLC/TC 210	EN 61000-6-3:2007/A1:2011/AC:2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	M490
CLC/TC 210	EN 61000-6-4:2007	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	M490
CLC/TC 210	EN 61000-6-4:2007/A1:2011	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	M490

APPENDIX D: CENELEC DRAFTS UNDER MANDATE M/490

COMMITTEE	REFERENCE	TITLE	CURRENT STAGE	STAGE DATE	MANDATE
CLC/TC 8X	CLC/FprTR 50422:2013	Guide for the application of the European Standard EN 50160	5060	2013-06-17	M490
CLC/TC 8X	FprEN 50438:2013	Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks	4099	2013-05-03	M490
CLC/TC 8X	CLC/FprTS 50549-1:2011	Requirements for the connection of generators above 16 A per phase - Part 1: Connection to the LV distribution system	5091	2012-09-19	M490
CLC/TC 8X	CLC/FprTS 50549-2:2011	Requirements for the connection of generators above 16 A per phase - Part 2: Connection to the MV distribution system	5091	2012-09-19	M490
CLC/TC 8X	CLC/FprTR 50608:2013	Smart grid projects in Europe	5020	2013-05-10	M490
CLC/TC 8X	CLC/prTR 50609	Technical guidelines for first HVDC Grids	3099	2013-06-14	M490
CLC/TC 9X	CLC/prTR 50610	Railway applications - Functional interface specification - Trainmodes	1099	2013-03-05	M490
CLC/TC 9X	CLC/prTR 50XXX	Railway applications - Functional Interface Specification - Pantograph System	1099	2011-10-01	M490
CLC/TC 9X	CLC/prTR 50XXX	Railway applications - Functional Interface Specification. Door System	1099	2011-10-01	M490
CLC/SC 9XC	prEN 50XXX	Railway applications - Fixed installations - Simulation tool for the validation of simulation tools used for the design of traction power supply systems	1099	2010-10-01	M490
CLC/SC 9XC	CLC/prTR 50XXX	Railway applications - Specification for reversible direct current substations	1099	2012-03-27	M490
CLC/SC 9XC	prEN 50XXX	Railway applications - Fixed installations - Protection principles for electric traction	1099	2011-04-01	M490

		systems			
CLC/TC 13	CLC/prTS 50567-1	Meter data exchange over power lines - Part 1: Lower layer profile using Orthogonal Frequency Division Multiplexing (OFDM) Type 1	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-2	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 2: Local data exchange via optical interface	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-4	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 4: Physical layer based on B-PSK modulation + Data Link Layer	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-5	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 5: Application layer messages exchange on DLC and IP networks	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-6	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 6: Meter database and data structures	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-8	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 8: DLC profile based on B-PSK modulation	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 50568-9	Electricity metering data exchange - The Smart Metering Information Tables and Protocols (SMITP) suite - Part 9: IP Profile on public telecommunication network	1099	2012-09-25	M490
CLC/TC 13	CLC/prTS 52056-8-4	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-4: The PLC Orthogonal Frequency Division Multiplexing	1099	2012-09-25	M490

		(OFDM) Type 1 profile			
CLC/TC 13	CLC/prTS 52056-8-5	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: The PLC Orthogonal Frequency Division Multiplexing (OFDM) Type 2 profile	1099	2012-09-25	M490
CLC/TC 13	FprEN 62056-3-1:2013	Electricity metering data exchange – The DLMS/COSEM suite - Part 3-1: Use of local area networks on twisted pair with carrier signalling	5020	2013-05-24	M490
CLC/TC 13	FprEN 62056-5-3:2013	Electricity metering data exchange - The DLMS/COSEM suite - Part 5-3: DLMS/COSEM application layer	5060	2013-04-22	M490
CLC/TC 13	prEN 62056-5-8	SML container services	1099	2011-05-01	M490
CLC/TC 13	FprEN 62056-6-1:2013	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object identification system (OBIS)	5060	2013-04-22	M490
CLC/TC 13	FprEN 62056-6-2:2013	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes	5060	2013-04-22	M490
CLC/TC 13	EN 62056-7-6:201X	Electricity metering data exchange - the DLMS/COSEM suite - Part 7-6: The 3-layer, connection-oriented HDLC based communication profile	5099	2013-06-20	M490
CLC/TC 13	EN 62056-8-3:201X	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-3: The PLC S-FSK communication profile for neighbourhood networks	5099	2013-06-20	M490
CLC/TC 13	EN 62056-9-7:201X	Electricity metering data exchange - The DLMS/COSEM suite - Part 9-7: Communication profile for TCP-UDP/IP networks	5099	2013-05-28	M490
CLC/TC 14	CLC/prTR 50XXX	Three-phase substation transformers less than or equal to 170 kV and 100 MVA	1099	2010-03-01	M490
CLC/TC 20	prEN 50620	Cables for electric vehicles	1099	2012-02-08	M490

CLC/TC 23E	prEN 50XXX	Time-delayed residual current operated circuit breakers type M without over-current protection or application in circuits with rated currents greater above 32A	1099	2008-09-24	M490
CLC/TC 57	FprEN 61968-8:2013	Application integration at electric utilities - System interfaces for distribution management - Part 8: Interface standard for customer support	5020	2013-03-29	M490
CLC/TC 57	FprEN 61968-9:2013	Application integration at electric utilities - System interfaces for distribution management - Part 9: Interfaces for meter reading and control	5020	2013-06-21	M490
CLC/TC 57	FprEN 61968-100:2013	Application integration at electric utilities - System interfaces for distribution management - Part 100: Implementation profiles	5020	2013-05-03	M490
CLC/TC 57	FprEN 61970-301:2013	Energy Management System Application Program Interface (EMS-API) - Part 301: Common Information Model (CIM) Base	5060	2013-04-15	M490
CLC/TC 57	FprEN 61970-301:2012	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	5060	2013-01-07	M490
CLC/TC 57	FprEN 61970-452:2013	Energy Management System Application Program Interface (EMS-API) - Part 452: CIM static transmission network model profiles	5020	2013-05-17	M490
CLC/TC 57	FprEN 61970-453:2012	Energy Management System Application Program Interface (EMS-API) - Part 453: Diagram Layout Profile	5060	2013-01-07	M490
CLC/TC 57	EN 61970-456:201X	Energy management system application program interface (EMS-API) - Part 456: Solved power system state profiles	5099	2013-06-11	M490
CLC/TC 57	FprEN 61970-552:2012	Energy Management System Application Program Interface (EMS-API) - Part 552: CIM XML Model Exchange Format	5060	2012-12-03	M490

CLC/TC 57	EN 62325-450:201X	Framework for energy market communications - Part 450: Profile and context modelling rules	5099	2013-06-03	M490
CLC/TC 57	FprEN 62325-451-1:2012	Framework for energy market communications - Part 451-1: Acknowledgement business process and contextual model for CIM European market	5060	2013-01-07	M490
CLC/TC 57	FprEN 62351-3:2013	Power systems management and associated information exchange - Data and communications security - Part 3: Communication network and system security - Profiles including TCP/IP	5020	2013-03-29	M490
CLC/TC 61	prEN 50615:2013	Tests on devices for fire prevention and suppression for hobs (cooktops)	4020	2013-06-21	M490
CLC/TC 65X	FprEN 61158-1:2012	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	5060	2012-10-16	M490
CLC/TC 65X	FprEN 61158-2:2012	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	5060	2012-10-16	M490
CLC/TC 65X	FprEN 61158-3-X:2012	Industrial communication networks - Fieldbus specifications - Part 3-x: Data-link layer service definition - Type x elements	5060	2012-10-22	M490
CLC/TC 65X	FprEN 61158-4-X:2012	Industrial communication networks - Fieldbus specifications - Part 4-x: Data-link layer protocol specification - Type x elements	5060	2012-10-22	M490
CLC/TC 65X	FprEN 61158-5-X:2012	Industrial communication networks - Fieldbus specifications - Part 5-x: Application layer service definition - Type x elements	5060	2012-10-22	M490
CLC/TC 65X	FprEN 61158-6-X:2012	Industrial communication networks - Fieldbus specifications - Part 6-x:	5060	2012-10-22	M490

		Application layer protocol specification - Type x elements			
CLC/TC 79	prEN 50605	Active Laser scanner	1099	2013-02-06	M490
CLC/TC 79	prEN 50606	External Perimeter Security Systems	1099	2013-02-06	M490
CLC/TC 81X	prEN 50622	Lightning protection system performance	1099	2011-10-05	M490
CLC/TC 106X	prEN 50XXX	EMF requirements of ground based air traffic management equipment	1091	2010-05-05	M490
CLC/TC 111X	prEN 50613	Collection, logistics & treatment requirements for WEEE - Treatment requirements for lamps	1099	2013-03-26	M490
CLC/TC 111X	prEN 50614	Collection, logistics & treatment requirements for WEEE - Treatment requirements for WEEE containing CRTs and flat panel displays	1099	2013-03-26	M490
CLC/TC 111X	prEN 50XXX	WEEE recycling standards - General technical requirements for treatment of WEEE	1099	2011-10-01	M490
CLC/TC 205	prEN 50491-11	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 11: Smart metering - Application specification - Home display	1099	2012-09-19	M490
CLC/TC 205	prEN 50491-12	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 12: Smart grid - Application specification - Interface and framework for customer	1099	2012-09-19	M490
CLC/TC 205	CLC/prTS 50560	Interoperability framework requirement specification	1099	2012-09-19	M490
CLC/SC 205A	prEN 50412-4:2012	Power line communication apparatus and systems used in low-voltage installations in the frequency range 1,6 MHz to 30 MHz - Part 4: Low rate wide band services	4060	2012-09-17	M490

		(LRWBS) operating between 2 MHz and 4 MHz - Channel allocations			
CLC/SC 205A	CLC/prTR 50XXX	Study Report on Electromagnetic Interference between Electrical Equipment/Systems in the Frequency Range Below 150 kHz Ed. 2	1000	2013-04-23	M490
CLC/TC 209	prEN 50607	Second generation satellite signal distribution installations over a single coaxial cable	1099	2013-02-13	M490
CLC/TC 210	FprEN 55011:2013 (fragment 3)	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement - Supplement of CISPR 11 with the APD method and associated limits for assessment of fluctuating RF disturbances in the range above 1 GHz	5060	2013-05-06	M490
CLC/TC 210	FprEN 55035:2012	Electromagnetic compatibility of multimedia equipment - Immunity requirements	5060	2012-11-05	M490
CLC/TC 210	EN 61000-3-3:201X	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection	5099	2013-06-18	M490
CLC/TC 210	FprEN 61000-4-6:2012	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Conducted disturbances, induced by radio-frequency fields immunity test	5060	2012-11-19	M490
CLC/TC 213	prEN 50XXX	Conduit systems buried underground for the protection and management of insulated electrical cables or communication cables	1091	2012-09-18	M490
CLC/TC 216	CLC/FprTS 50612:201X	Portable electrical apparatus for the	4099	2013-04-10	M490

		measurement of combustion flue gas parameters - Use in the process of commissioning, servicing and maintaining gas fired boilers			
CEN/CLC/JWG 2	prEN 50XXX	Guarantees of origin related to energy - Guarantees of origin for electricity	1099	2010-11-17	M490
CEN/CLC/ETSI/JWG EACC	CLC/prTR 50XXX	Documents relevant to European accessibility requirements for public procurement of products and services	1099	2011-06-01	M490
CEN/CLC/ETSI/JWG EACC	CLC/prTR 50XXX	Requirements for conformity assessment with templates	1099	2011-06-01	M490
CEN/CLC/ETSI/JWG EACC	CLC/prTR 50XXX	Guidelines on accessibility award criteria for ICT products and services	1099	2011-06-01	M490

STAGE CODE	SITUATION
1000	Registration of New Work Item request to be approved by BT
1091	Decision deferred / Advice expected / Wait evolution of another project
1099	Decision to proceed: launch PQ / UQ or prepare draft for circulation
3090	Decision to accelerate procedure and launch vote
4060	Enquiry results established and sent to Technical Body
4099	Decision to launch vote
5020	Vote circulated
5060	Voting results sent to Technical Body, SR
5091	Decision on voting results deferred / Advice expected

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