



IEC/TC OR SC: <b>SyC Smart Energy</b>	SECRETARIAT: <b>IEC Central Office</b>	DATE: <b>2018-07-27</b>
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Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

**A. STATE TITLE AND SCOPE OF TC**

Are there any new or emerging trends in technology that will impact the scope and work activities of the TC? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another TC’s scope or work activities?

If yes, describe how these will impact another TC(s) and list the TC(s) it would impact

**Title: Systems Committee Smart Energy**

**Scope:** Standardization in the field of Smart Energy in order to provide systems level standardization, coordination and guidance in the areas of Smart Grid and Smart Energy, including interaction in the areas of Heat and Gas. Its objective is to provide guidance to standard users in using the set of international standards (IEC and other bodies) to meet the domain requirements

To widely consult within the IEC community and the broader stakeholder community to provide overall systems level value, support and guidance to the TCs and other standard development groups; both inside and outside the IEC.

To liaise and cooperate with the SEG Smart Cities and future SEGs, as well as the future Systems Resource Group.

**Remarks:** The SyC Smart Energy believes that the TC/SCs will remain the factory for IEC standardization activities and has placed their importance at the top of the SyC diagram. The SyC aims to provide a “GPS or Radar” to the TC/SCs to enable the entire community to operate while helping stakeholders to identify their position in the entire system that they are contributing to. One concrete approach consists of collectively elaborating on a master development plan to visualize new ideas under consideration by the TCs/SCs, much earlier than when they are officially executed. This should help in preventing, rather than resolving potential conflicting activities which are increasing with regard to systems.

Note that SyC Smart Energy, was set up by the IEC Standardization Management Board in 2014, but began as Strategic Group 3, Smart Grid, to 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. SyC Smart Energy has since developed the framework and strategic guidance to all IEC Technical Committees involved in Smart Energy work and has further identified IEC standards for interoperability, transmission, distribution, metering, connecting consumers and cyber security

**B. MANAGEMENT STRUCTURE OF THE TC**

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

**Officers:**

Chair:	Mr Richard Schomberg	(FR)
Secretary:	Mr Stephen Dutnall	(XC)

**Working Groups:**

- WG 2: IEC Smart Energy Development Plan
- WG 3: IEC Smart Energy Roadmap
- WG 5: Methodology and Tools
- WG 6: Generic Smart Grid Requirements

**Advisory Groups**

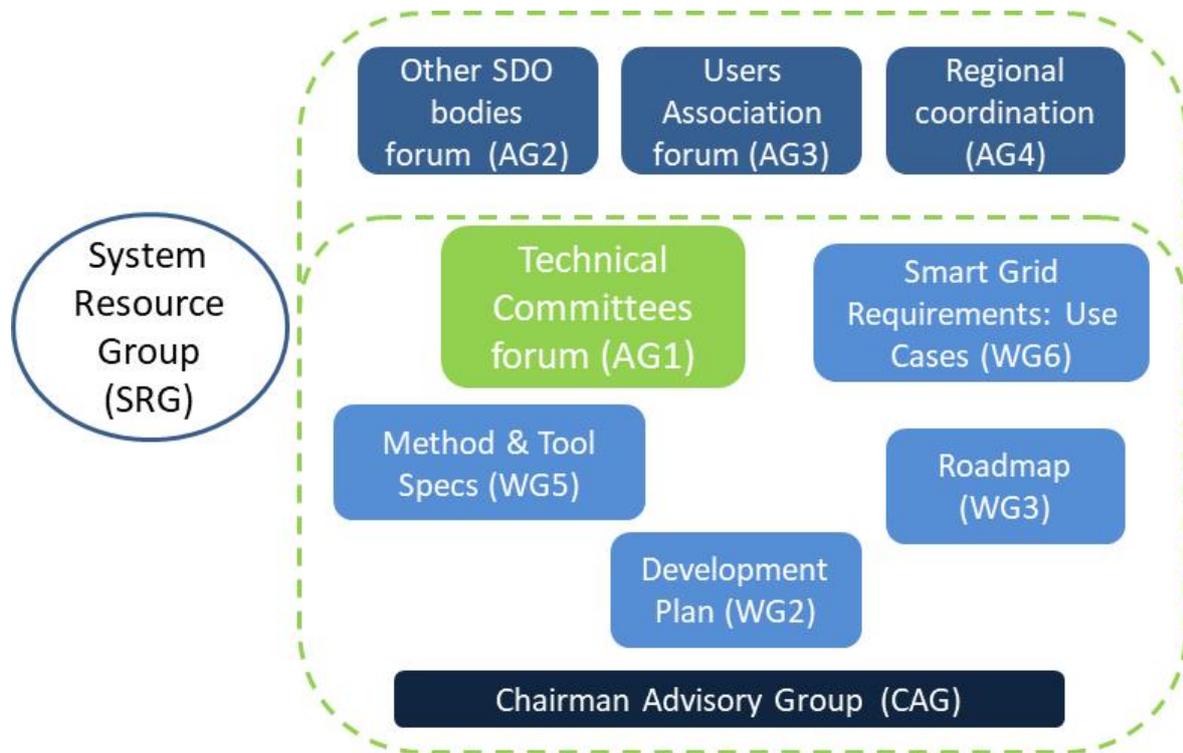
- AG1: Technical Committees Forum
- AG2: Other Standard Bodies Forum
- AG3: Users' Association Forum
- AG4 Regional Coordination
- CAG7: Chairman's Advisory Group

**Remarks:**

Figure 1 provides a pictorial representation of the working group and advisory group set up.

The structure of the SyC Smart Energy Working Groups is designed to efficiently manage the work within the Committee. In order to set up new standards and amendment of existing standards for Smart Energy, it is necessary to identify requirements, analyze gaps, resolve each gap's situations (milestones, timeline, dependencies, etc.), proceed developing process by timetable, and manage development status by the trace of the processes. SyC Smart Energy structure is designed around this process.

IEC SyC Smart Energy (called "SyC-SE") WG6 (SyC Smart Grid Requirements and Uses Cases) identifies the requirements, WG3 (SyC-SE Roadmap) selects priority development items and WG2 (SyC-SE Development Plan) prepares (1) resolved situations, (2) summary of timetable, for each item. While WG5 (SyC Methodology ad Tools) ensure the mechanisms are in place and built for purpose and/ or maximise the re-use of methods and tools by other SyCs.



**Figure 1: Distribution of Working groups and Advisory Groups within SyC Smart Energy**

The advisory groups 1 to 4 are designed to improve communication and coordination of cross group activities within the field of Smart Energy. In particular the various advisory group forums strive to remove technical committee silo activities by providing workshop environment and discussing topical cross committee subjects. The following diagram shows the setup of the SyC Smart Energy groups and includes the interface to the Systems Resource Group.

The SyC Smart Energy will rely on the Systems Resource Group to assist it with the IT tools and future development plans for the mapping tool, use case repository and IEC database by the SyC

The structure will be reviewed bi-annually for accuracy and consistency with actual activities.

**C. BUSINESS ENVIRONMENT**

Provide the rationale for the market relevance of the future standards being produced in the TC.

If readily available, provide an indication of global or regional sales of products or services related to the TC/SC work and state the source of the data.

Specify if standards will be significantly effective for assessing regulatory compliance.

Developments in distributed energy generation and distribution are driving the need for the electrical grid to become “smart”, adaptive, dynamic and flexible. This has created advances in metering, substation automation, and data and controls being added to the electrical grid. All of the benefits of individual parts of this grid will not be realized unless there is a higher level function defined to allow these parts of the electrical grid to work together in an intelligent fashion. The purpose of Systems Committee Smart Energy is to address the high level vision providing a system view feeding into component developments to create solutions which are greater than the sum of their component parts.

#### **D. MARKET DEMAND**

Provide a list of likely customers of the standards (suppliers, specifiers, testing bodies, regulators, installers, other TC/SC's etc.). Do not specify company names, only categories of customers.

It should be noted that the standardisation eco-system is becoming more and more complex, not only due to the IT/OT convergence, but also as an intrinsic side effect of the digitalisation trend which pushes any TC/SC to extend its scope because of increasing digital interactions with its surrounding environment. As such activities providing internal to IEC and external guidance are becoming of increasing importance.

SyC Smart Energy has widely consulted within the IEC community and the broader stakeholder community to provide overall systems level value, support and guidance to the TCs and other standard development groups, both inside and outside the IEC. It has continued to provide operational management of the IEC Smart Grid Framework, and is monitoring and interacting with the 30 so called "Smart Grid TCs" since 2010 (Strategic Group 3) regarding the decisions made on Smart Grid.

IEC SyC Smart Energy is recognized by both International and Regional SDOs as the front-runner in facilitating development of international electrotechnical standards to Smart Grids everywhere. The work of IEC Smart Energy is referenced in the DKE (German) E-Energy/Smart Grid Roadmap, as well as State Grid Corporation of China Framework and Roadmap for Strong and Smart Grid Standards, and is referenced in presentations of many Regional Organizations

SyC Smart Energy is working in close collaboration with Smart Grid/Smart Energy projects around the globe, including NIST and the CEN/CENELEC/ETSI Smart Grid Coordination Group (SG-CG). It has Observer's Status in this coordination group, and also has 4 members actively participating in this group.

#### **E. TRENDS IN TECHNOLOGY AND IN THE MARKET**

If any, indicate the current or expected trends in the technology or in the market covered by the products of your TC/SC.

An emerging trend towards distributed energy generation and distribution has evolved across the industry, driving the need for the electrical grid to become "smart", adaptive, dynamic and flexible. Beyond Advanced Metering, and Substation & Distribution Automation, there will be additional demands for SyC Smart Energy, especially in the following:

- Connecting the consumer, smart appliances
- Smart Energy, Microgrids and Active Distribution Networks
- Interactions with heat/cold and gas
- Cyber Security
- Privacy
- Infrastructure modernization or new deployments
- Plugin hybrid electric vehicles
- Impact of storage, which may dramatically change the way energy is produced, distributed and consumed (from a grid perspective)
- Impact of aggregation of grid users of any types, for any types of market interaction. Such aggregators are likely to have increasing importance as far as market and grid are operated

Additionally specific market drivers related to the increasing transitioning of consumers towards prosumers role, mixing the roles of power consumers and power producers, with more and more advanced strategies to benefit from the value attached to these new capabilities (in selling energy and/or providing services to the grid).

**F. SYSTEMS APPROACH ASPECTS (REFERENCE - AC/33/2013)**

Does your TC/SC have a need for a systems approach?

If so:

- Will the Systems work be in a single TC or in multiple TCs?
- Will a Systems Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your TC/SC work of relevance to ISO?
- Is or are there fora or consortia working in parallel to IEC? Is there a chance to integrate this work in your TC/SC?

This should not only be restricted to the customer/supplier relationships with other TC/SCs indicating types of co-operation (e.g. liaisons, joint working groups) but be of a more generic nature.

If there is no need for a systems approach as outlined in AC/33/2013, is it intended a TC would not be requested to report on general systems approach considerations such as customer/supplier relationships, liaisons, joint WGs, etc. as referenced in the system approach matrix illustrated in slide 14 of the presentation attached to AC/37/2006?

SyC Smart Energy is a systems approach based committee. The IEC Strategic Group 3 (SG3-Smart Grid) preceded the establishment of the IEC Systems Committee Smart Energy and the IEC Systems Resource Group, and transformed into the Systems Committee after approval by of the IEC National Committees in 2013. Its purpose is to provide frameworks and working environments across technical committees. To date more than 30 Technical Committees have been identified to have relevance in the SyC Smart Energy group and its developments.

Coordination and communication of the work provided by the SyC Smart Energy for the technical committees is carried out via technical forums, liaisons and request of representation of technical members with the SyC Smart Energy committee.

Since the IEC creation of the “Representative Member” or “R Member” (AC/22/2017), SyC Smart Energy has actively encouraged groups and entities (both within the IEC and outside of the IEC) to join as R Members to help in the common development of guides and reference documentation.

The identified IEC TCs to date are: ISO/IEC JTC1, TC3, TC8, SC8A, SC8B, TC13, TC14, SC17C, TC21, TC22, SC22F, SC23H, SC23K, TC38, TC57, TC59, TC64, TC65, SC65A, SC65C, SC65E, TC69, TC72, TC77, SC77A, SC77B, SC77C, TC82, TC88, TC95, TC99, TC100, TC105, TC114, TC115 PC118, TC120, TC121, TC123, CISPR, ACEE, ACSEC and SyC Smart Cities.

TC/SC	Title	TC/SC	Title
TC 3	Information structures and elements, identification and marking principles, documentation and graphical symbols	SC 77A	EMC - Low frequency phenomena
SC 8A	Grid Integration of Renewable Energy Generation	SC 77B	High frequency phenomena
SC 8B	Decentralized Electrical Energy Systems	SC 77C	High power transient phenomena
TC 8	Systems aspects for electrical energy supply	TC 77	Electromagnetic compatibility
TC 13	Electrical energy measurement and control	TC 82	Solar photovoltaic energy systems
TC14	Power Transformers	TC 88	Wind energy generation systems
SC 17C	Assemblies	TC 95	Measuring relays and protection equipment

TC 21	Secondary cells and batteries	TC 99	Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC
TC 22	Power electronic systems and equipment	TC 100	Audio, video and multimedia systems and equipment
SC 22F	Power electronics for electrical transmission and distribution systems	TC 105	Fuel cell technologies
SC 23H	Plugs, Socket-outlets and Couplers for industrial and similar applications, and for Electric Vehicles	TC 114	Marine energy - Wave, tidal and other water current converters
SC23K	Electrical Energy Efficiency products	TC 115	High Voltage Direct Current (HVDC) transmission for DC voltages above 100 kV
TC 38	Instrument transformers	PC 118	Smart grid user interface
TC 57	Power systems management and associated information exchange	TC 120	Electrical Energy Storage (EES) Systems
TC 59	Performance of household and similar electrical appliances	TC 121	Switchgear and controlgear and their assemblies for low voltage
TC 64	Electrical installations and protection against electric shock	TC 123	Standardization of the management of assets in power systems
SC 65A	System aspects	ACEE	Advisory Committee on Energy Efficiency
SC 65C	Industrial networks	CISPR	International special committee on radio interference
SC65E	Devices and integration in enterprise systems	ISO/IEC JTC 1	Information technology
TC 65	Industrial-process measurement, control and automation	SyC Smart Cities	Electrotechnical aspects of Smart Cities
TC 69	Electric road vehicles and electric industrial trucks	ACSEC	Advisory Committee on Information security and data privacy
TC 72	Automatic electrical controls		

#### G. CONFORMITY ASSESSMENT

With reference to clause 33 of Part 2 of the ISO/IEC directives, are all your publications in line with the requirements related to conformity assessment aspects?

Will the TC/SC publications be used for IEC Conformity Assessment Systems (IECEE, IECEx, IECQ, IECRE)?

Will any of your standards include test specifications, reproducible test requirements, and test methods?

Are there likely to be special conformity assessment requirements generated by any standards projects? If yes, list which projects.

A systems approach to conformity assessment has also started to be developed within IEC, Given the scope of Syc Smart Energy there is a need to address systems level conformity

assessment considerations in the domains of Grid Codes and Cybersecurity. SyC Smart Energy will ensure engagement with the relevant CA groups within the IEC.

It is highlighted that, reproducible test requirements, and test methods are expected to be defined in the associated Specification work carried out by the Technical Committees/Sub Committees and not within the Systems Committee.

#### H. HORIZONTAL ISSUES

Indicate here how the TC/SC deals with horizontal issues such as energy efficiency, environmental aspects, safety, security...

Provide information on the interaction with SMB Advisory Committees, if applicable.

The approach of the systems committee is to provide developments and or frameworks to encourage cross technical committee coordination and communication. The System Committee Smart Energy produces the processes and tools to help TCs to develop their standards.

#### I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

Current SyC SE activities cover:

- IEC 62559 series describing the Use case methodology
- IEC 62913 series (Generic Smart Grid requirements)
- Smart Energy “Situations” identification and ranking feeding to roadmap developments (11 situations currently identified)
- Smart Energy roadmap publication (IEC TR 63097) and subsequent development
- Cyber-security task force to provide guidelines for cyber-physical power systems
- Developments of the online Smart Grid Standard Mapping Tool. A new version of this tool is being developed so that it can also be utilized by other IEC Systems Committees for mapping of relevant standards
- Developments in the Use Case Database Repository
- Defining the SGAM framework and its extension to other energies

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
Regular TC Forums to coordinate and communicate cross TC related work areas	AG1 will actively carry out TC Forums annually and engage across related technical committees group	Annual TC Forums, Complete 4 TC Forums before 2023
Actively coordinate with regional Smart Energy activities to publicise approach and activities of IEC within Smart Energy	AG4 to seek out regional SDOs and participate in common workshops/ conferences,	At least 1 conference bi annually (3 conferences before 2023)
Produce supporting deliverables to facilitate Smart Energy work developments within Technical Committees	<ul style="list-style-type: none"> <li>• Extract standardisation requirements from Use cases</li> <li>• Define and Prioritise a list of situations</li> <li>• Elaborate a development plan to resolve the top priority</li> </ul>	<ul style="list-style-type: none"> <li>• 2018</li> <li>• Continuously</li> <li>• 6 month reviews</li> </ul>

	<p>situations</p> <ul style="list-style-type: none"> <li>• Close the loop with TCs on the development plan</li> </ul>	
Provide guidance to market user in best usage of existing and coming set of standards (Roadmap)	Recurrent task with periodicity of 2 years	24 month updates
Provide guidance for tools development for TCs usage	Defining tools requirements including Use Case Repository, database definitions and mapping tool	
<p>Note: The progress on the actions should be reported in the RSMB.</p>		