



Introduction to IECRE

IEC System for Certification to Standards Relating to Equipment
for Use in Renewable Energy Applications (IECRE System)

NREL PV Reliability Workshop 26 Feb 2015

Sandy Butterfield

President - Boulder Wind Consulting

TC88 Chairman

IECRE Chairman



IECRE System



- Industry need for international conformity assessment of Renewable Energy **systems**
 - Originally conceived for large projects
 - Interest in additional schemes for smaller systems and RE tech in developing countries





IECRE Background



- Industry **Growth**
 - Demand increasing 20%+ per year
 - Significant increase in large RE power plants
- Concern for **Quality / Bankability**
 - Doubts about adequacy of existing standards
 - Need for improved understanding of reliability
 - Validation of product lifetime for investors
- Need for **Conformity Assessment**
 - Assurance of security of investments in RE



Conformity Assessment



- Evaluation against international standards
 - May use national or regional standards if no international standard is available
- Improved **quality** and **performance**
 - Assurance that power plant will operate as designed for its expected lifetime
- Increased **confidence** for investors
 - Financial return meets expectations
 - Risk is reduced



Benefits of Conducting Conformity Assessment thru IEC



- IEC **Brand**
 - Global recognition – multiple industries
 - International recognition (e.g. WTO + UN)
 - IEC Reports and Certificates used nationally
- Open and Transparent **Process**
 - Clear Rules in process and results
 - Consistency in processes among participating Certification Bodies & Test Labs
- Industry and market provide **direct input**
 - CA systems driven by market demand



Key Demand Drivers



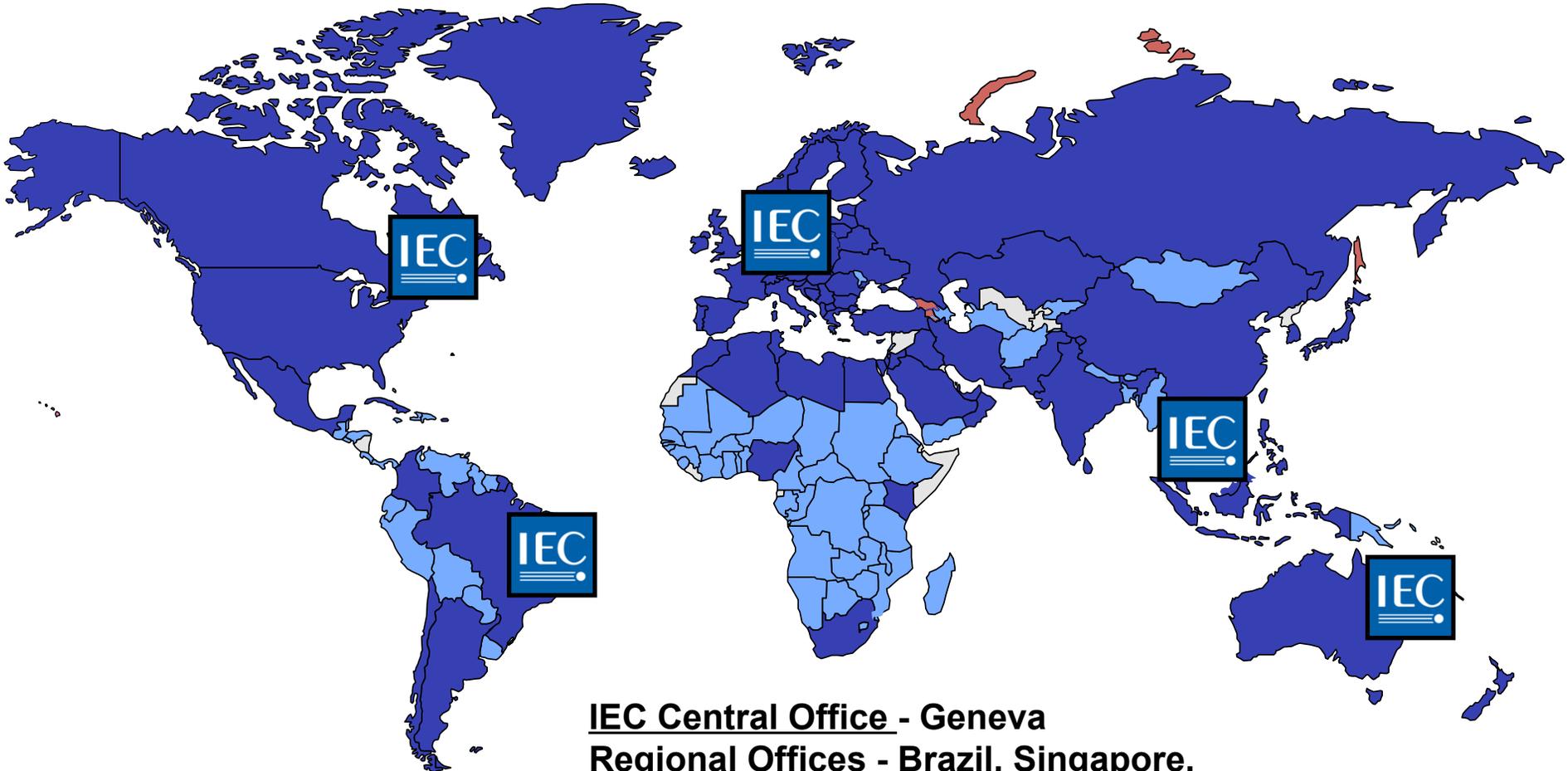
- Removal of costly duplication of testing at local level & delays in accessing markets
- **Confidence** among Industry, Regulators & Stakeholders
- Level playing field for CBs and TLs
- **Portability** of assessment results & certificates
- CA Services & Personnel Certification generally not covered elsewhere
- **Instant access** to information, including “On-Line” Certificates = instant checking



IEC Family: Global Reach



83 Members 83 Affiliates



IEC Central Office - Geneva
**Regional Offices - Brazil, Singapore,
North America and Australia**



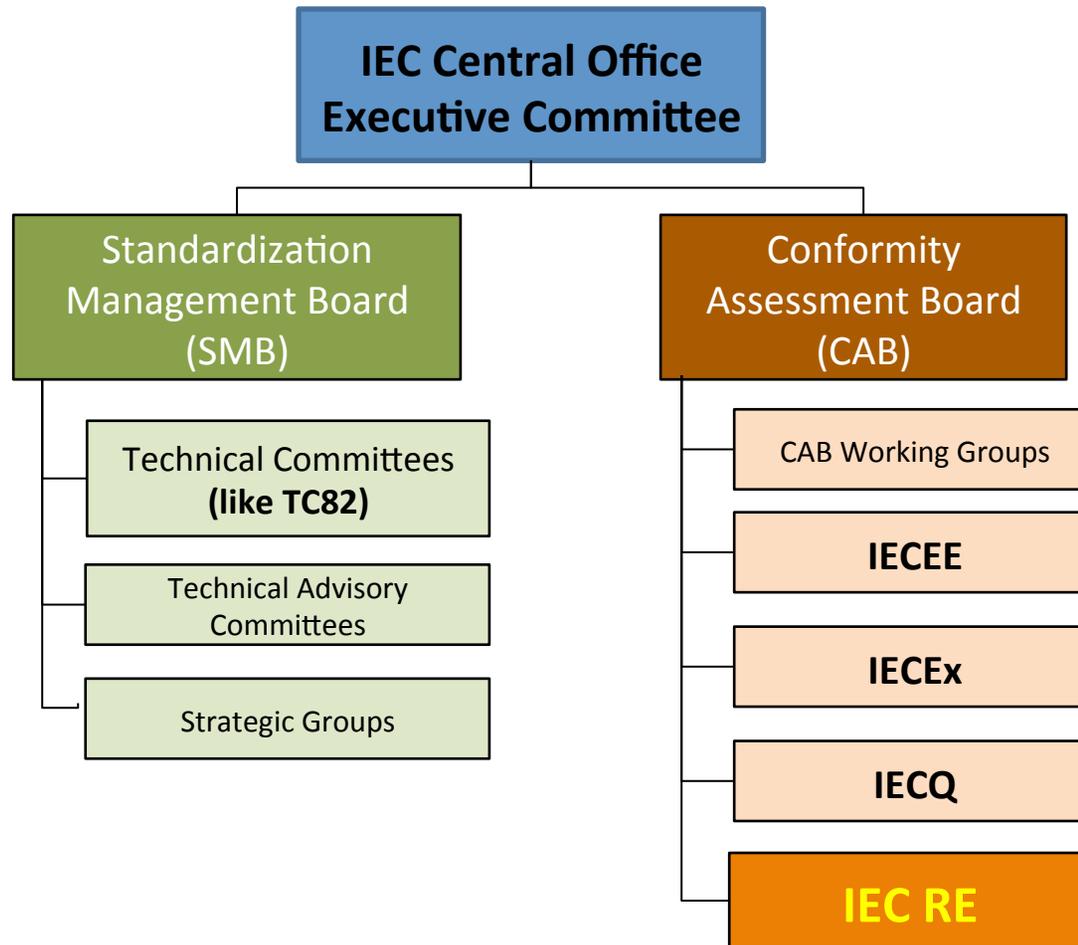
IEC Roles & Responsibilities



- Standards Management Board (**SMB**)
 - Technical Committees => Write the standards
 - Manage nomination of experts and voting by National Committees (Member Bodies)
- Conformity Assessment Board (**CAB**)
 - Assessment Schemes => Evaluate implementation of standards in specific situations
 - Manage accreditation of Certifying Bodies



IEC Organization





Existing CA Systems



- **IECEE**
 - System for conformity testing and certification of **electrotechnical equipment** (specific categories including PV modules)
 - Oversees the Certification Body (CB) Scheme and recognizes CB Testing Laboratories (CBTL)
- **IECEX**
 - Conformity assessment for equipment operating in **explosive atmospheres**
- **IECQ**
 - Quality assessment system for **electronic components** and associated materials

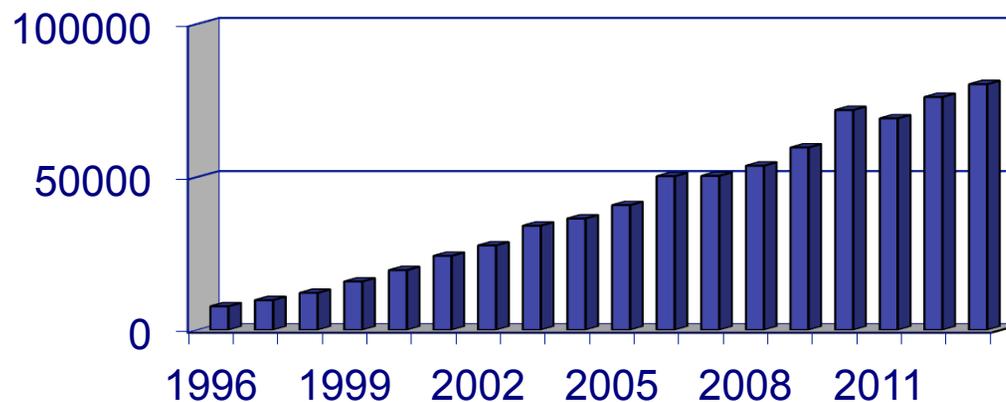


IEC CA Statistics



	IECEE	IECEX	IECQ	IECRE
Member Countries	56	33	14	16
Certification Bodies	74	78	28	tbd
Test Laboratories	447	50	n/a	tbd

IECEE Certificates Issued



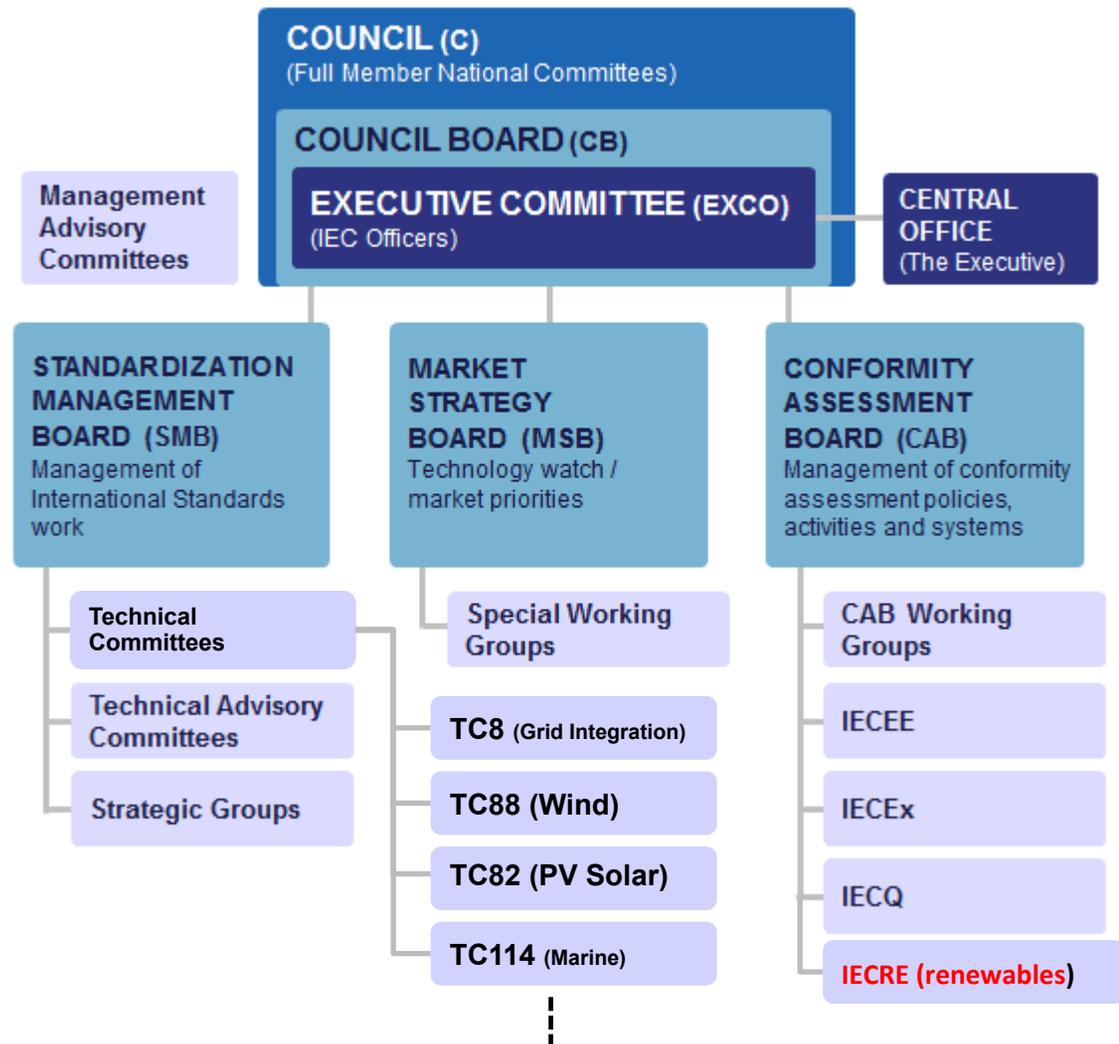


Standards / Certification Landscape



International Electrotechnical Commission (IEC)

- SMB manages 122 technical standards committees
- CAB manages conformity assessment four systems, including the newly formed IECRE
- TC8 leads grid integration
- Subcommittee 8A under TC8, sets renewable integration standards
- TC88 leads wind plants
- TC82 leads PV Solar
- TC114 leads Marine Energy





TC 88 - Wind Turbines



- Wind industry identified need to standardize “**system aspect**” of large complex projects
- Not addressed by any existing CA scheme
- Formation of Wind Turbine Conformity Assessment Committee (WT-CAC)
- Requirements written into IEC 61400-22
 - Type Certification
 - Project Certification
 - Management of certification system
 - Acceptance of operating bodies



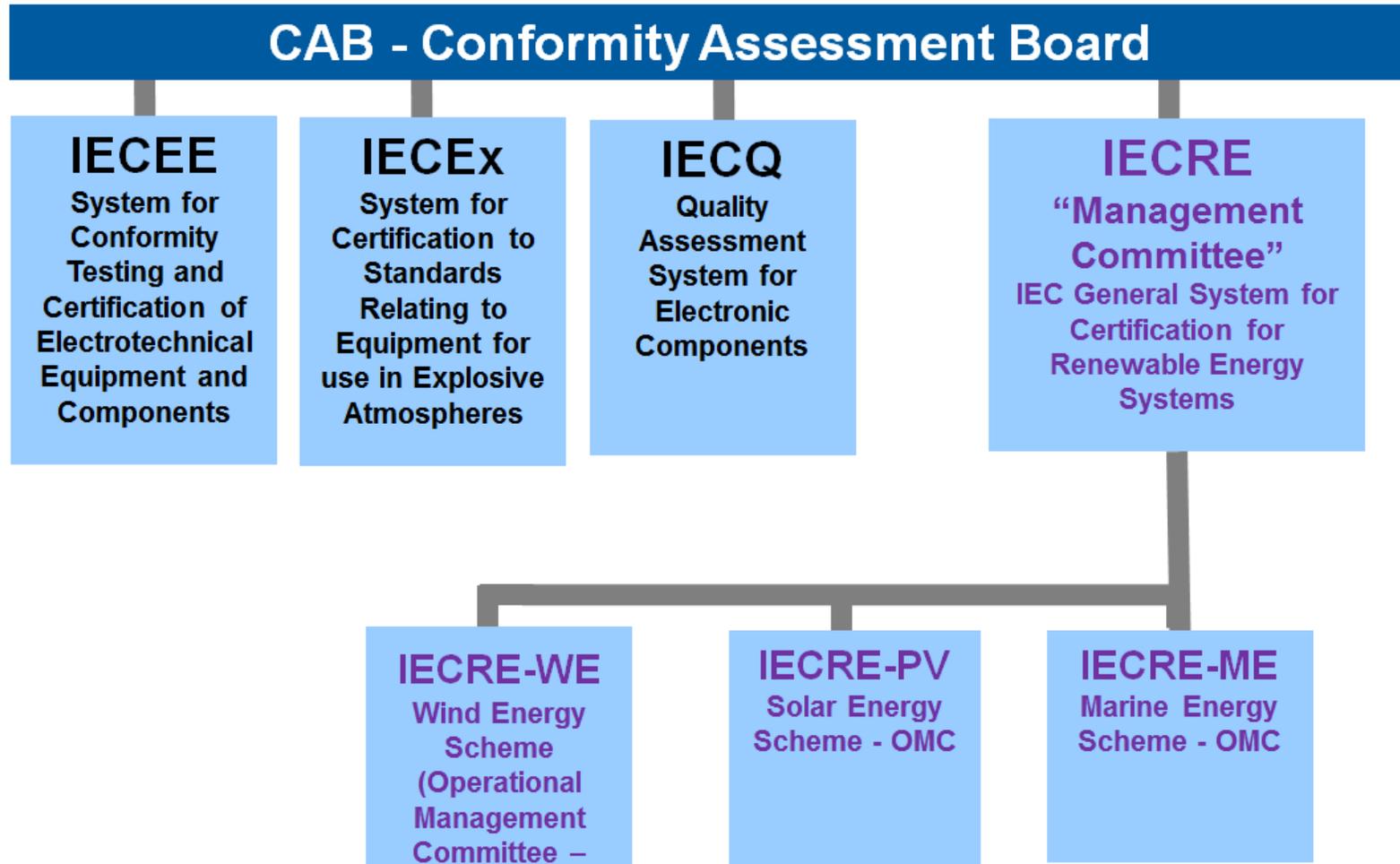
Problem with WT-CAC



- IEC structure / policy requires **separation** of standardization and CA activities
 - TC88 crossed the line, but with strong industry support
 - WT-CAC allowed to exist **temporarily** as industry matured
 - Parallel infrastructure with CAB was not sustainable
- Concept developed for new CA system (IECRE)
 - Similar requirements exist for **Marine Energy** projects as well as large **PV** power plants
 - Specific differences and details apply for each industry



IECRE Concept





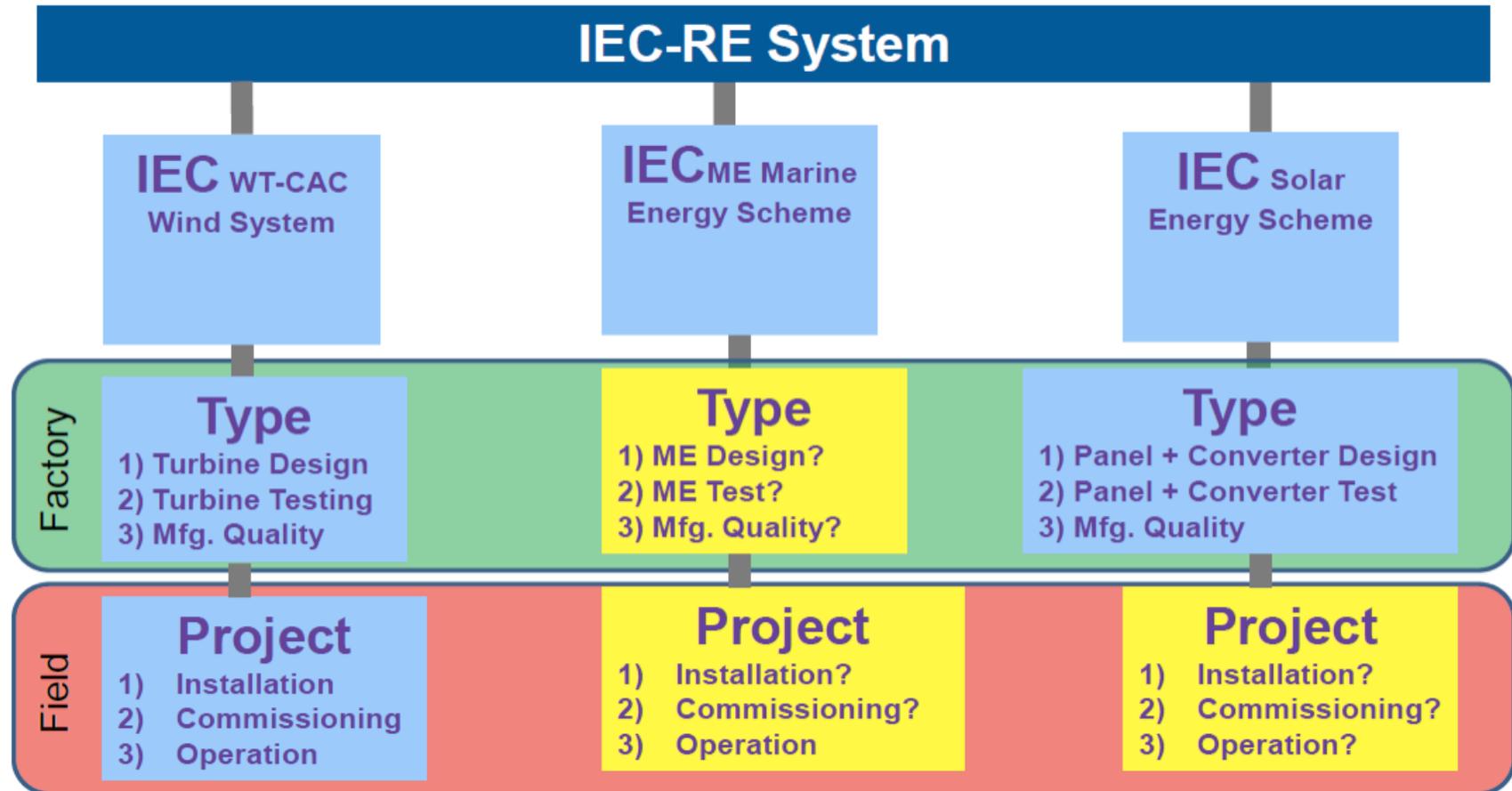
CAB Decisions



- Proposal for a new RE System was endorsed along with the recommended next steps
- June 2013
 - CAB approves creation of CA system for Renewable Energy **industry sectors** with **common elements**
 - Establishes working group to draft Basic Rules
- June 2014
 - CAB approves **Basic Rules**
 - Appoints K. McManama (IECEE) to head IECRE
 - Authorizes first **REMC** meeting (Sept 16-18 in US)



RE System Common Elements





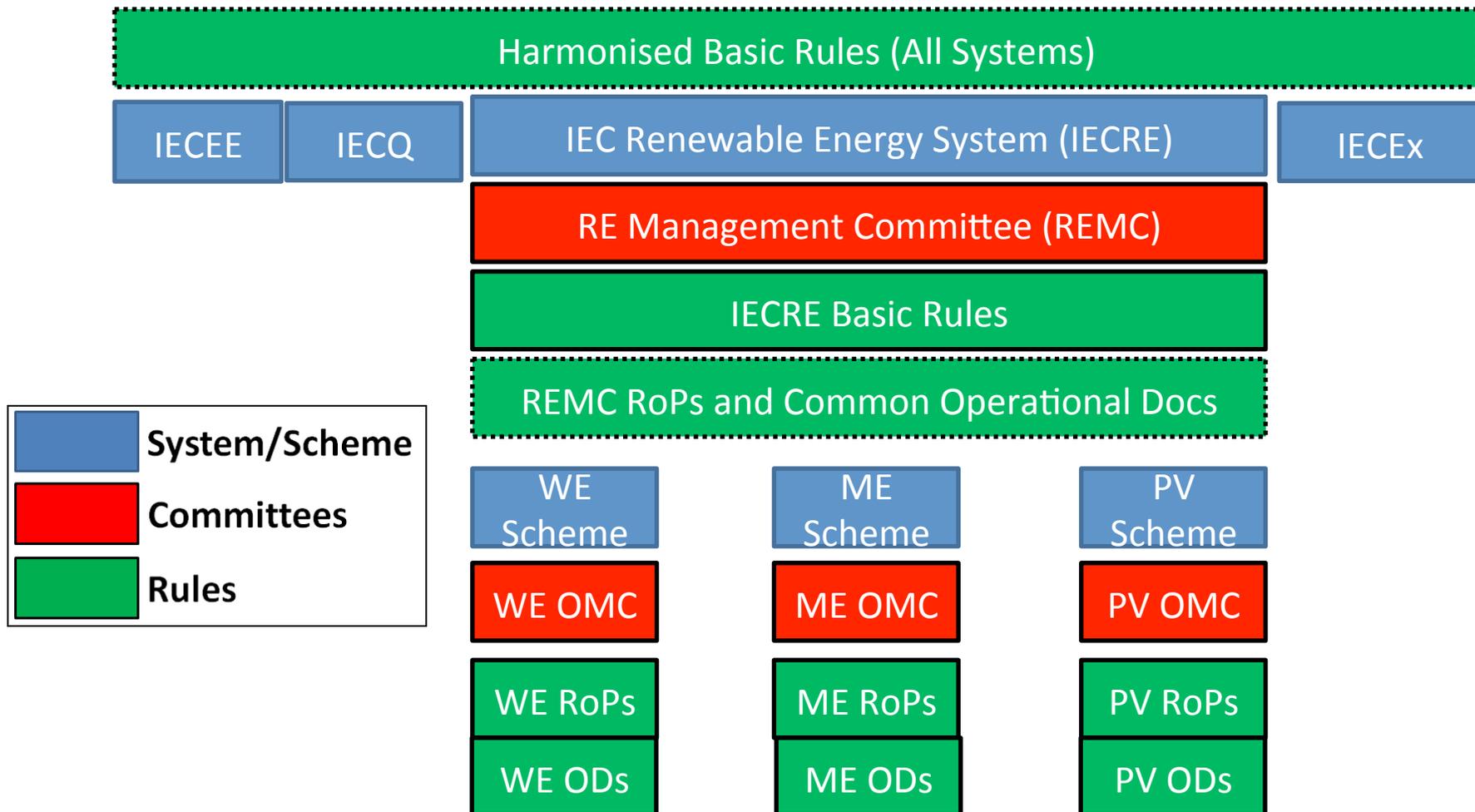
IECRE kickoff meeting



- Oct-2013 in Aarhus, Denmark
 - Participation by TC82 (PV), TC88 (Wind Turbines) and TC114 (Marine Energy)
 - Working to include TC117 (Solar Thermal)
 - Working group (RE Forum) assigned to draft **Basic Rules** and **Rules of Procedure** for IECRE
 - Basic Rules are common to all
 - Rules of Procedure are partly common and partly industry-specific



IECRE Hierarchy





IECRE Basic Rules



- Scope
 - Governing documents
 - Membership
 - Organization
 - RE Management Committee
 - Officers, Executive and administration
 - Committees reporting to the MC
 - Legal provisions
 - Standards
 - Voting
 - Finance
 - Dissolution of the IECRE System
- Final draft of [Basic Rules](#) was approved by CAB in June 2014



REMC 1st Meeting



- Boulder, CO 16-17 Sept 2014
 - Hosted by **USNC** (ANSI)
 - 14 member countries attending
- IECRE Basic Rules confirmed
 - Chairman – S. Butterfield (TC88)
 - Formed 7 Working Groups
 - Authorized **industry sector OMCs** to begin work immediately



IECRE Structure



IEC CONFORMITY ASSESSMENT BOARD, CAB
Oversees IEC Conformity Assessment policy and Systems, eg IECEE, IECEx, IECQ, IECRE

IECRE Management Committee, REMC
Overall management of the IECRE System

National Members (Countries)
Officers + Executive, Scheme Chairs, IEC Gen. Sec
Expert Working Groups (WGs) – as needed

IECRE Secretariat

Technical Support
Administration

WE OMC
Wind Energy Operational Management Committee

Daily management of WE Scheme

National Members
TC 88 + SC Liaison
SubCommittees + WGs

ME OMC
Marine Energy Operational Management Committee

Daily management of ME Scheme

National Members
TC 114 + SC Liaison
SubCommittees + WGs

PV OMC
PV Solar Operational Management Committee

Daily management of PV Scheme

National Members
TC 82 + SC Liaison
SubCommittees + WGs



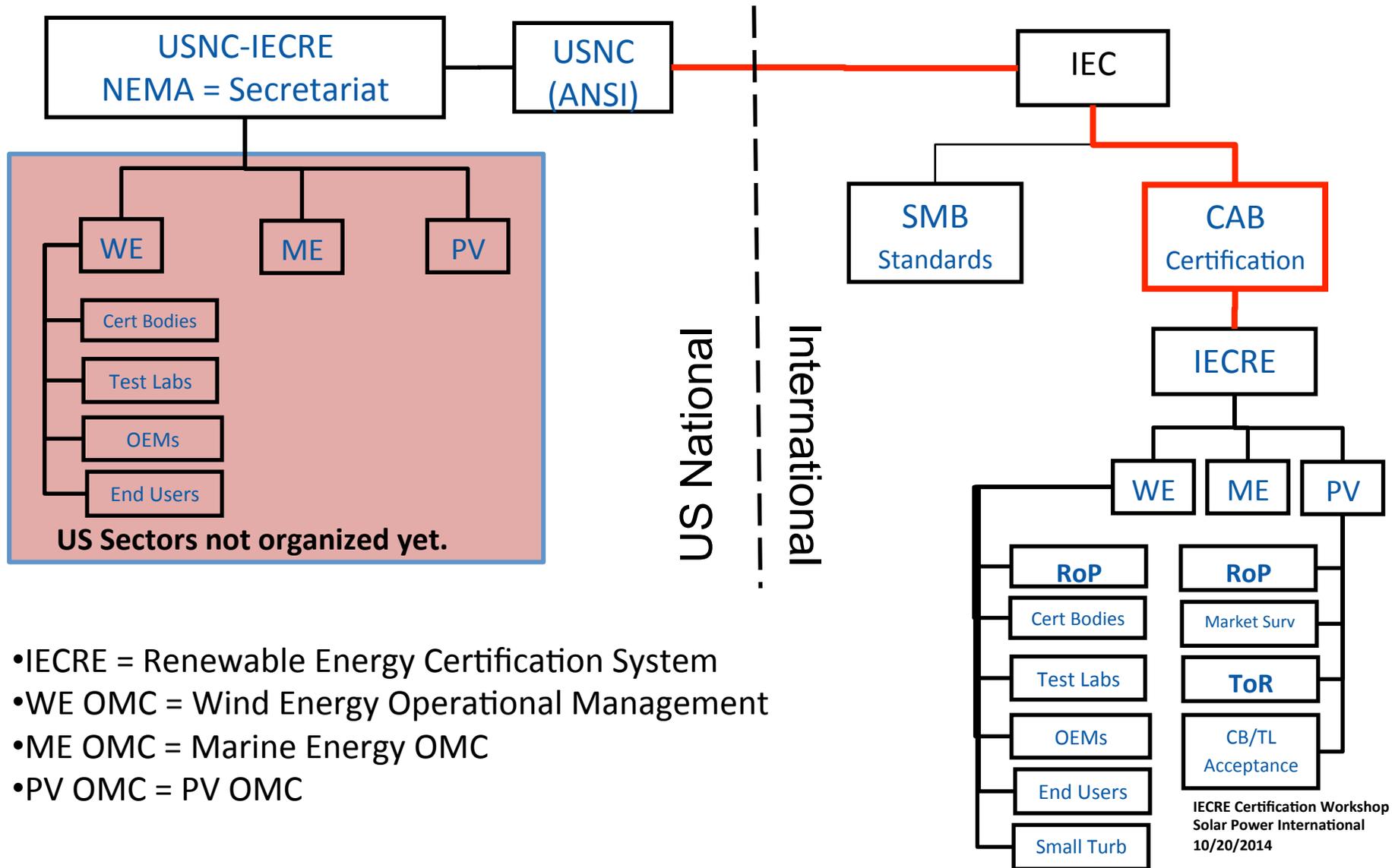
New Committees and Officers



Committee	Title	Chairmen ("Convener" for WGs)	vice Chair	members
IECRE REMC	RE Management Committee	Sandy Butterfield (US-confirmed)	(multiple pending)	
RE WG001	Rules of Procedure	Jonathan Colby (US-Confirmed)		Sumanth Lokanaph
RE WG002	QA Assessment & Audit	open		US Members needed
RE WG003	Customer Testing Laboratories	open		US Members needed
RE WG004	Promotion & Marketing	open		US Members needed
RE WG005	Infringements	open		US Members needed
RE WG006	Finance & Budget	Lars Sitzki (DE-Confirmed)		George Kelly
WE OMC	Wind Sector	Frank Ormel (DK confirmed)	(multiple pending)	
WG501	WE Rules of Procedure	Leo Jensen - DK (acting)		Toby Gillespie (GE)
WG506	Test Lab	Jeroen van Dam (US Nomination?) (NREL)		Jeroen van Dam (NREL)
WG503	Certification Bodies	open		US members needed
WG504	OEM	open		US members needed
WG505	End Users	Dan Brake (US Nomination?) (NextEra)		Dan Brake (NexEra)
WG502	Small Turbine	open		Trudy Frosyth (consultar
PV Solar OMC	PV Solar Sector	Adrian Haring (DE-confirmed)	Sewang Yoon (Korea-confirmed)	
PV Task Group 1	Terms of Reference	Rajan Bedi (US Nomination)		US members needed
PV Task Group 2	Acceptance of CBs and TLs	Sunny Rai (US Nomination)		US members needed
WG 402	Market Surveillance	open		US members needed
WG 401	Rules of Procedure	Miguel Martinez (Spain nomination likely)		US members needed
ME OMC	Marine Energy Sector	Jonathan Colby (US-confirmed)	Rebecca Sykes (UK-confirmed)	
WG301	ME Rules of Procedure	Peter Davies (UK nomination likely)		US members needed
WG302	Finance	open		US members needed
orange = immediate nominations or endorsements needed from the US				
Yellow = anticipated open positions that do not require immediate nominations				
Green = USNC IECRE nomination and endorsement ACTION Required)				



How US Companies Engage with IECPE Certification System.



- IECRE = Renewable Energy Certification System
- WE OMC = Wind Energy Operational Management
- ME OMC = Marine Energy OMC
- PV OMC = PV OMC

IECRE Certification Workshop
Solar Power International
10/20/2014



Next Steps



- Form the USNC IECRE / PV OMC shadow committee
- Call for more USNC PV-OMC shadow committee members
- Call for more US participation in REMC and OMC subcommittees
- REMC & OMCs Rules of Procedure need to be developed and harmonized.
- IECRE Budget and dues structure
- USNC/IECRE budget and dues structure
- Next REMC meeting: Beijing, September 8-9. not confirmed.
- Next PV OMC meeting: Likely Beijing, September 10-11?



Why Engage in IECRE:

Standards and Certification help Maturation Industries

- **Public / investor confidence**
 - Design compliance verification to consensus standards (implied reliability)
 - Credible performance verification
 - Permitting requirements clarity (international harmonization)
 - Credible community impact measures
- **Technology development**
 - Standardized (accurate / consistent) testing techniques
 - Defined design process
 - Design verification testing
 - Common definition of external conditions
 - Design goals (20 – 30 year life, safety systems, etc)
 - Level playing field in international market
 - Common design vocabulary (design load cases, coordinate systems, safety factors, etc)



Thank You



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IECRE Certification Workshop
Solar Power International
10/20/2014