



TC 82 perspective, activities and plans

SEMI Harmonization Meeting

April 18, 2017

George Kelly
TC82 Secretary

TC 82 Solar photovoltaic energy systems

<http://www.iec.ch>

Scope | Structure | Projects / Publications | Documents | Votes | Meetings | Collaboration Tools

IEC TC82 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 photovoltaic cell to and including **the interface with the electrical system(s)** to which energy is supplied.



TC 82 Summary

- Established 1981
- 40 P-members
- 10 O-members
- 350+ experts
- 6 WGs / 4 JWGs / 1 PT
- 90 publications
- 69 active projects
 - Largest work program of all IEC TCs





TC 82 Working Groups



WG 1: Glossary

WG 2: Modules, non-concentrating

WG 3: Systems

WG 6: BOS components

WG 7: Concentrator modules

WG 8: Cells



JWG 1: Off-grid systems

JWG 4: Grid code compliance (SC 8A)

JWG 32: Electrical safety of PV system installations (TC 64)

JWG 82: Secondary cells and batteries for Renewable Energy Storage (TC 21)

PT62994-1: EH&S risk assessment



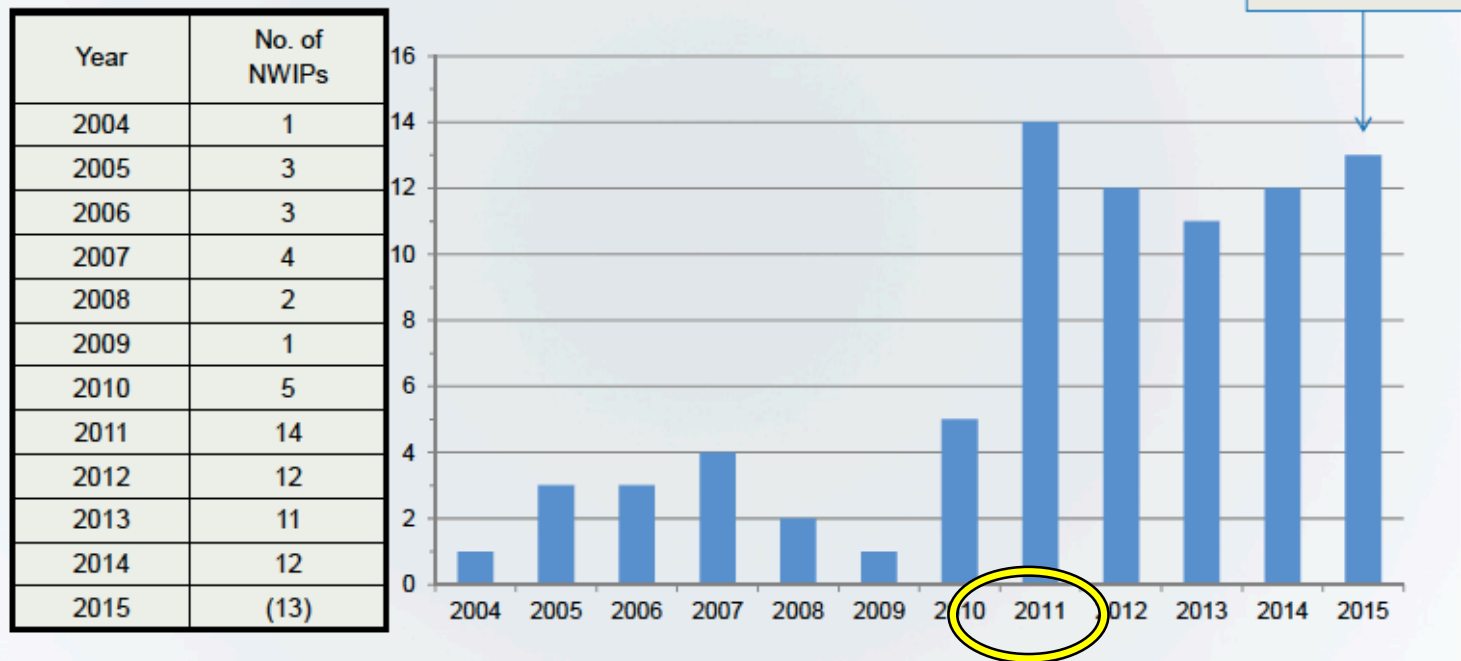
Context and Background

- Industry **growth**
 - Demand increasing 20%+ per year
 - Significant increase in large commercial plants
 - Transfer of manufacturing base to China
- Concern for **quality** / **bankability**
 - Need for confidence in existing standards
 - Need for improved understanding of reliability
 - Validation of product lifetime for investors
- International PV Quality Assurance Task Force (PVQAT)
 - Formed 2011; currently 13 task groups
 - Mainly focused on scientific methods to characterize and predict possible failure modes
 - Work feeding into TC82 for NWIPs



‘PVQAT Effect’ on TC82

Number of New Proposals launched in IEC TC 82

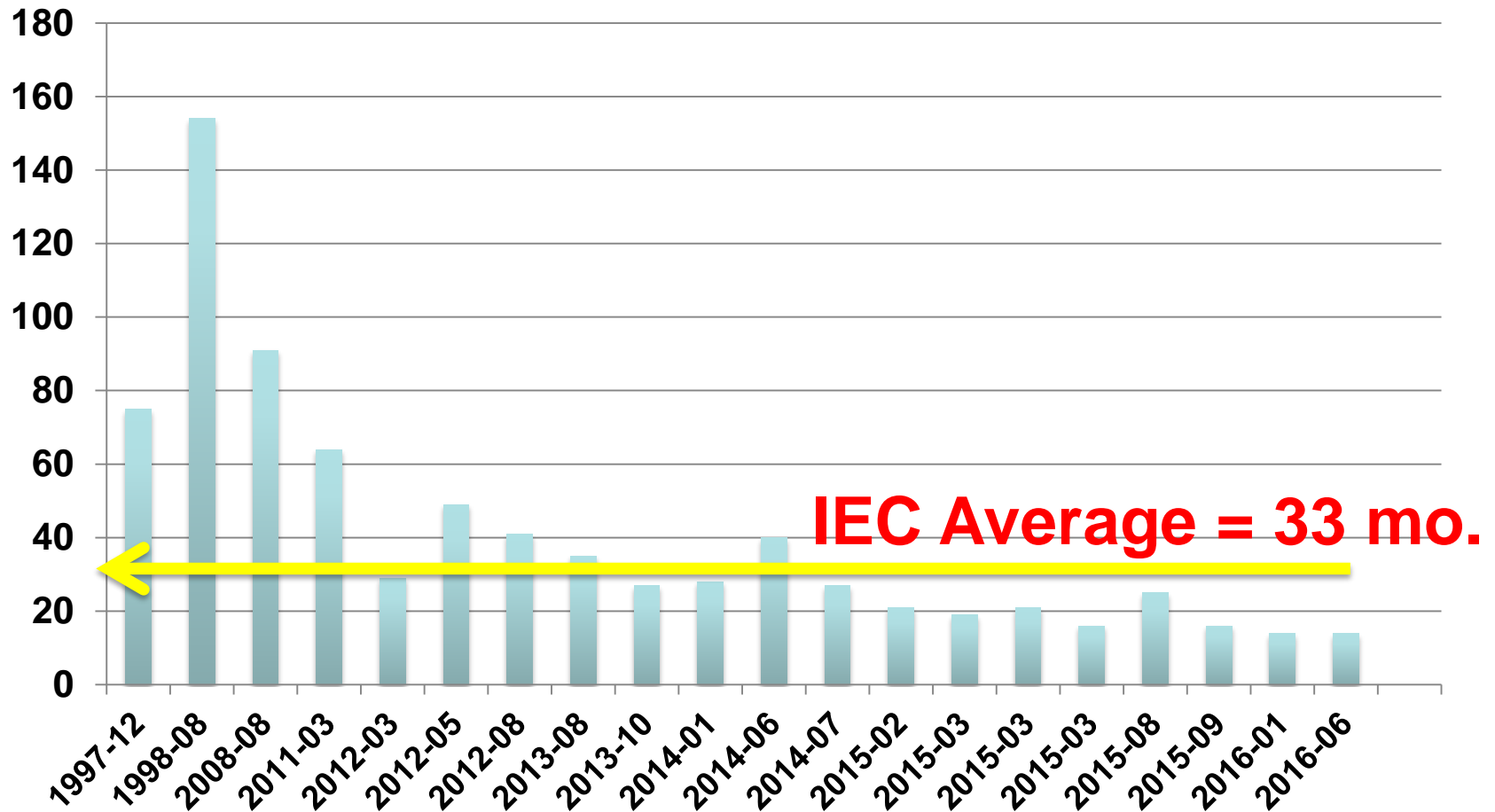


Remarkable development, demonstrating importance and visibility of IEC standards in the field of solar photovoltaics



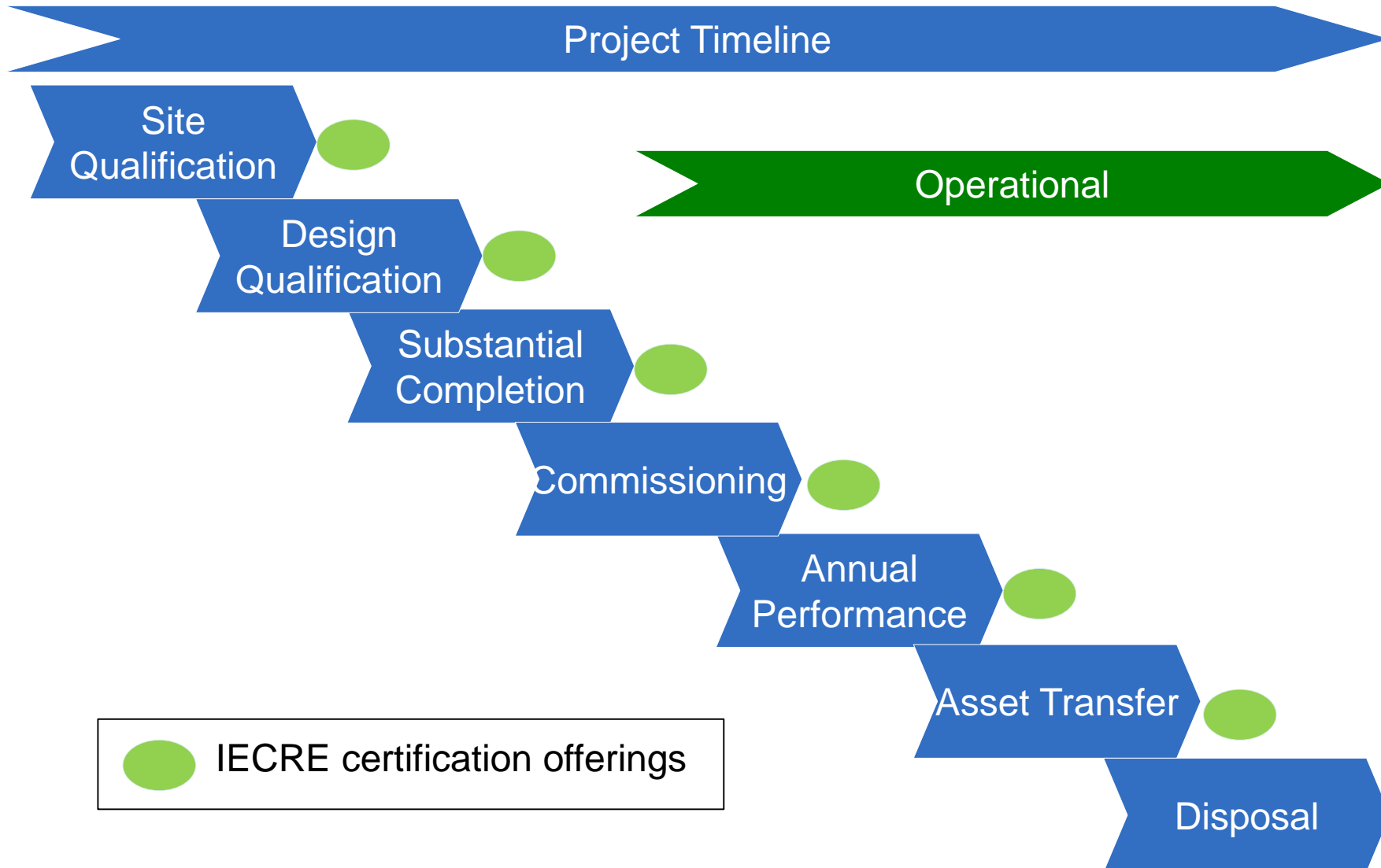
TC82 Productivity

Publication time (months) by Start date





System Certifications





Standards Development

- Comprehensive review of existing international and national standards conducted by TC82 experts in 2014
- Determination of which standards would most likely be **required to conduct** conformity assessments
- Consideration of all IEC standards and others where appropriate (ASTM, UL, VDE, etc.)
- Used to **prioritize** the work of TC82 and supporting efforts by PVQAT
- Results presented at IEEE PVSC in June 2014



“Certifiable” Standards

- Design
 - 62548 Array Design (or 62738 Power Plant)
 - 61724-1 Performance Monitoring
- Commissioning
 - 62446-1 Documentation, Test & Inspection
 - 61724-2 Capacity Evaluation
- Operation
 - 62446-2 System Maintenance
 - 61724-3 Energy Evaluation
- Quality Management
 - 62941 PV Module Manufacturing
 - 63049 PV System Installation



Important New Efforts

- Amendment of 61215 module qualification test
 - Includes requirements for bifacial and flexible modules
- TR for emerging cell types
 - Measurement techniques for OPV and Perovskites
- Collaboration with ISO TC 160 on BIPV standards
 - Based on EN 50583 (modules/systems)

Thank You



Questions?



Contact george@sunset-technology.com