

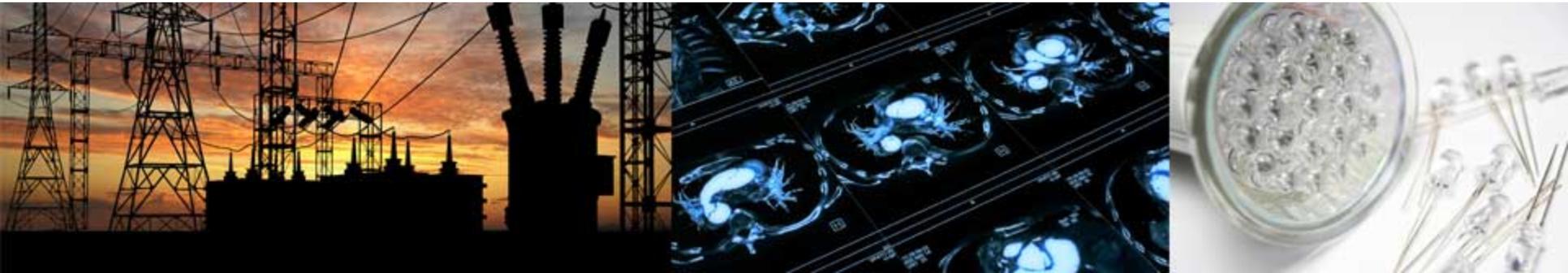
# Best Practices Supporting Conformity Assessment - focus on IEC

Joel SOLIS

Conformity Assessment Manager, NEMA



The Association of Electrical Equipment and Medical Imaging Manufacturers





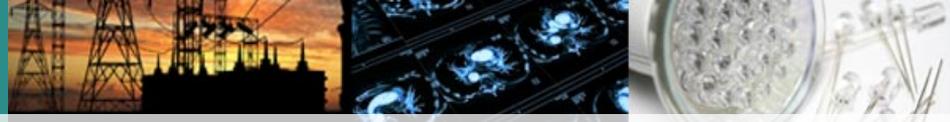
# NEMA Technical Policy

## Vision

- Uniform electrical practices and principles nationally, regionally and internationally.

## Mission

- Advocate for the development, adoption and enforcement of model consensus codes for building, life safety, energy efficiency and electrical installation;
- provide national, regional and international leadership in development and maintenance of electrotechnical standards, including new and emerging technologies;
- and advocate for equitable conformity assessment practices without redundant testing.



# Technical Policy - Governance

## Standards and Conformity Assessment Policy Committee

- Oversee standardization and conformity assessment activities
- Policy position on proposed or enacted legislation
  - NEMA Standardization Strategy
  - Policy on Adoption of the NEC
  - Position on Conformity Assessment
- Recommends and approves core and horizontal programs

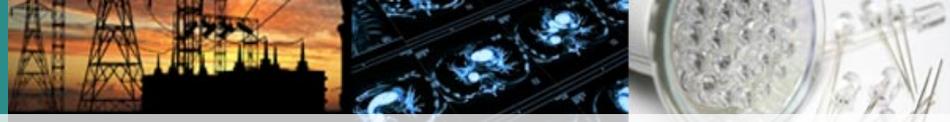
## Codes and Standards Committee

- Approves NEMA's technical positions
- Endorses NEMA representatives to outside organizations

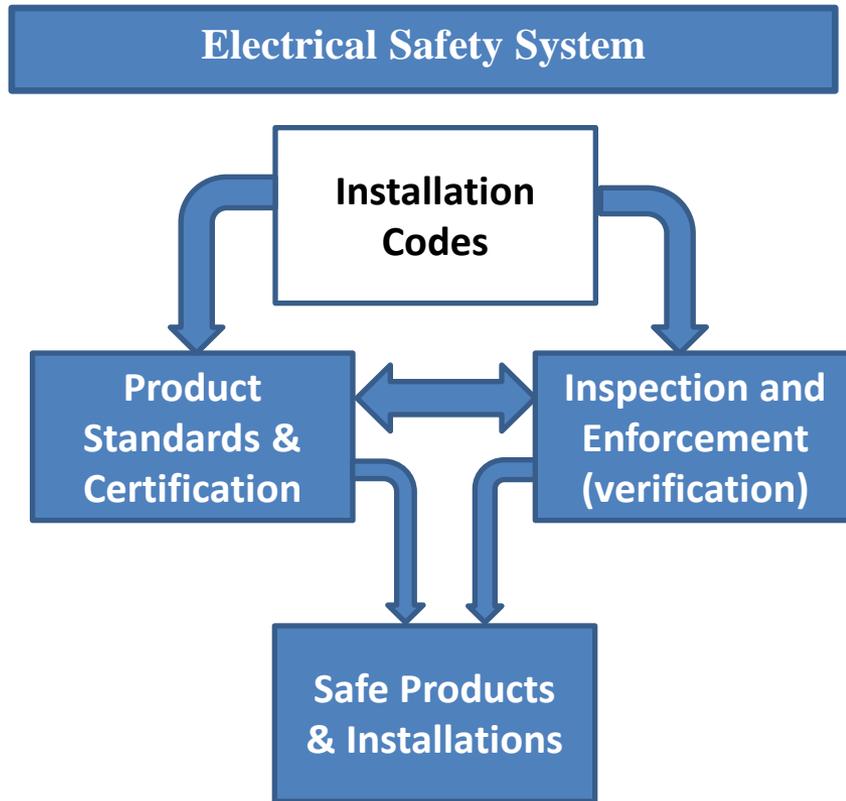
## International and Regional Standardization Committee

- Develops NEMA's technical positions and provides guidance on regional and international electrotechnical standards, including conformity assessment

<p><b>Toward a National Standards Strategy to Meet Global Needs</b></p> <p><i>Malcolm E. O'Hagan</i> President, National Electrical Manufacturers Association</p>	<p>NEMA</p>	<p><b>NEMA Statement on the NEC-IEC 60364 Analysis: Electrical Installation Requirements – A Global Perspective</b></p> <p><i>NEC* provides a practical, enforceable, and adoptable electrical installation code.</i></p>	<p>Standardization Policies and Procedures of the National Electrical Manufacturers Association</p>
	<p>STANDARDIZATION</p> <p>STRATEGY</p>		
<p>NOVEMBER 2001</p>			



# Installation Codes

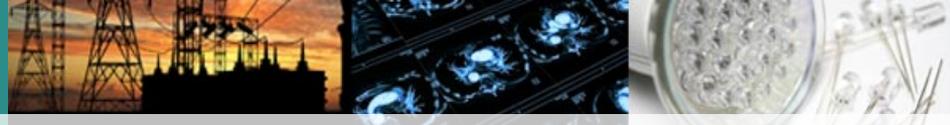


## Provide uniform practices and principles

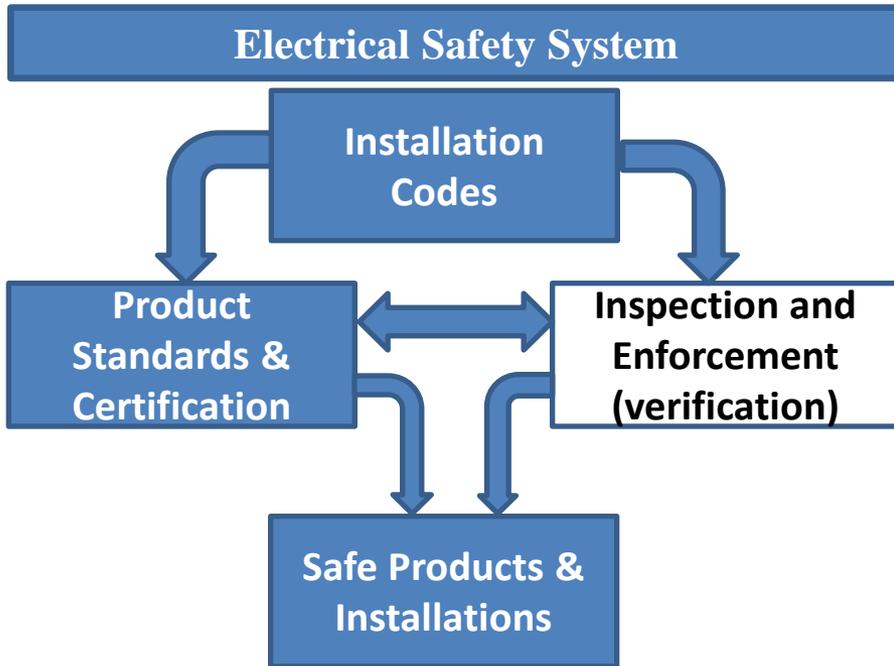
- Installation codes drive product standards and vice-versa
- Installation Codes drive Inspection and Enforcement and vice-versa

## State and Local Code adoptions

- Promote the adoption and enforcement of the latest edition of the code



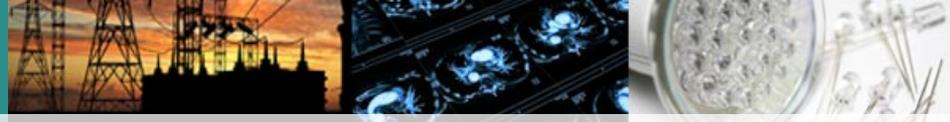
# Inspection and Enforcement



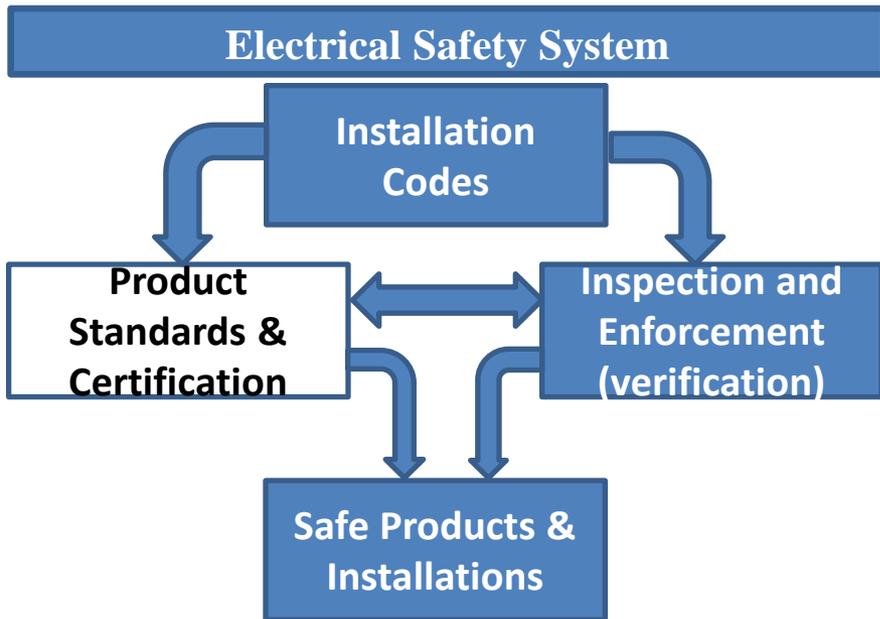
## NEMA's Field Rep Program

- Relation with AHJs
- Training on latest code regulations and products
- Direct adoption and enforcement w/o amendments

## NEMA Code Alerts



# Product Certification



## Policy

- NEMA Position on Conformity Assessment



## Resolve technical issues

- NEMA-UL Technical Forum
- NEMA-CSA Technical Forum



## Oversee National Policy

- ANSI Conformity Assessment Policy Committee
- ANSI International Conformity Assessment Policy Committee
- USNC Conformity Assessment Policy Coordination Committee
- ANSI Accreditation Committee



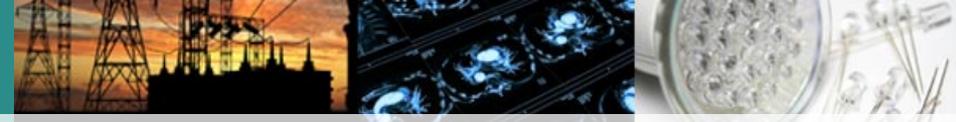
## Regulators

- OSHA, FCC, FDA, MSHA, USCG, BSEE



## Accreditation Bodies

- ANSI, FCC, OSHA, USCG, ILAC/IAF
  - ISO CASCO standards and guides



# Product Safety Standards

## Why they matter

- Accepted safety standard sets industry compliance levels and reduces product liability risk

## NFPA 70, NEC

- Best know standard, parts of NEC developed by Code Making Panels and widely reviewed by the public.
- Every firefighter is schooled in NFPA fire codes.

## UL-Independent, non-profit standards developer

- Was at one time the only agency recognized in the NEC

## NEMA's Role

- Facilitates NEMA member input into NFPA and UL Standards

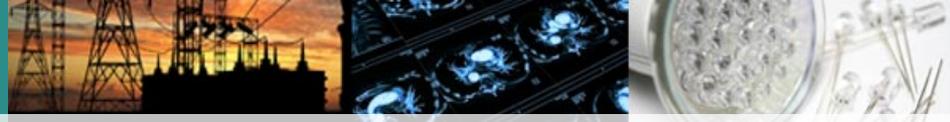
## Annex A Product Safety Standards

*Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only.*

This informational annex provides a list of product safety standards used for product listing where that listing is required by this Code. It is recognized that this list is current at the time of publication but that new standards or modifications to existing standards can occur at any time while this edition of the Code is in effect.

This annex does not form a mandatory part of the requirements of this Code but is intended only to provide Code users with informational guidance about the product characteristics about which Code requirements have been based.

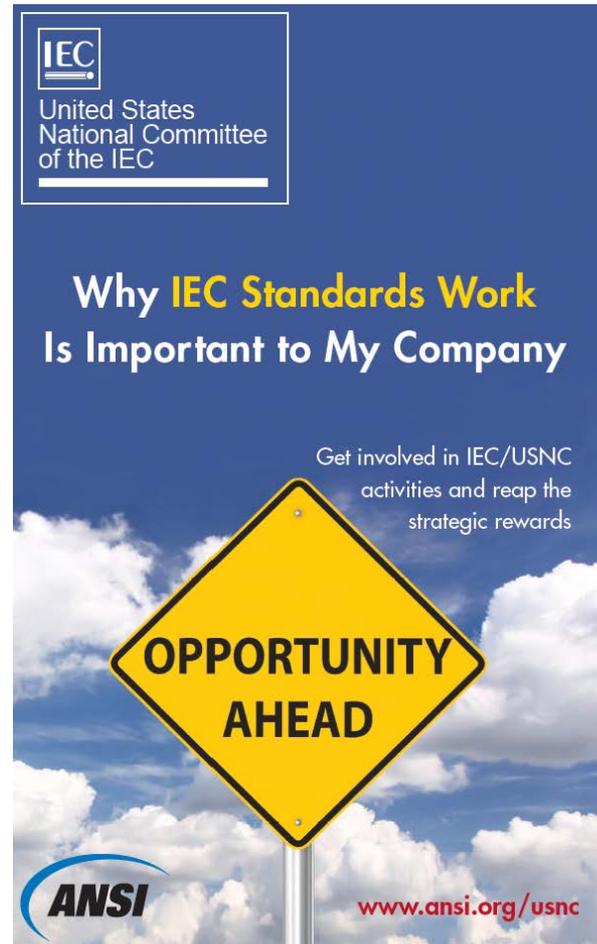
Product Standard Name	Product Standard Number
Antenna-Discharge Units	UL 452
Arc-Fault Circuit-Interrupters	UL 1699
Armored Cable	UL 4
Attachment Plugs and Receptacles	UL 498
Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use	UL 60065
Audio-Video Products and Accessories	UL 1492
Busways	UL 857
Cables — Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables	UL 493
Cables — Thermoplastic-Insulated Wires and Cables	UL 83
Cables — Thermoset-Insulated Wires and Cables	UL 44
Cables for Non-Power-Limited Fire-Alarm Circuits	UL 1425
Cables for Power-Limited Fire-Alarm Circuits	UL 1424
Capacitors	UL 810
Cellular Metal Floor Raceways and Fittings	UL 209
Class 2 and Class 3 Transformers	UL 1585
Class 2 Power Units	UL 1310
Commercial Audio Equipment	UL 813
Communication Circuit Accessories	UL 1863
Communications Cables	UL 444
Community-Antenna Television Cables	UL 1655
Conduit — Type EB and A Rigid PVC Conduit and HDPE Conduit	UL 651A
Continuous Length HDPE Conduit	UL 651B HDPE
Control Centers for Changing Message Type Electric Signs	UL 1433
Cord Sets and Power-Supply Cords	UL 817
Data-Processing Cable	UL 1690
Dead-Front Switchboards	UL 891
Electric Motors	UL 1004
Electric Signs	UL 48
Electric Spins, Equipment Assemblies, and Associated Equipment	UL 1563
Electric Vehicle (EV) Charging System Equipment	UL 2202
Electric Water Heaters for Pools and Tubs	UL 1261
Electrical Apparatus for Explosive Gas Atmospheres	(UL 60079 Series)
Electrical Apparatus for Use in Class I, Zone 1 Hazardous (Classified) Locations Type of Protection — Encapsulation "m"	ISA S12.23.01
Electrical Apparatus for Use in Class I, Zones O & 1 Hazardous (Classified) Locations: General Requirements	ISA 12.0.01
Electrical Apparatus for Use in Class I, Zone 1 Hazardous (Classified) Locations: Type of Protection — Increased Safety "e"	ISA S12.16.01
Electrical Apparatus for Use in Class I, Zone 1 Hazardous (Classified) Locations: Type of Protection — Flameproof "d"	ISA S12.22.01
Electrical Apparatus for Use in Class I, Zone 1 Hazardous (Classified) Locations: Type of Protection — Powder Filling "q"	ISA S12.25.01
Electrical Apparatus for Use in Class I, Zone 1 Hazardous (Classified) Locations: Type of Protection — Oil-Immersion "O"	ISA S12.26.01



# Technical Policy - International

## International Electrotechnical Commission (IEC)

- US electrical industry provides 300 active participants and over \$2 million annually to IEC participation
- NEMA is a member of the USNC Council and Technical Management Committee
- NEMA administers 58 U.S. Technical Advisory Groups
  - U.S. participation ensures foreign market access remains open to U.S. technology and eliminates non-tariff trade barriers.
- Administrative Secretariat for 5 IEC technical committees



**IEC**  
United States  
National Committee  
of the IEC

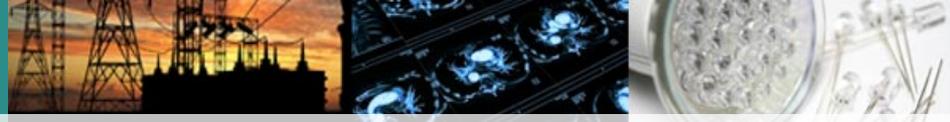
**Why IEC Standards Work  
Is Important to My Company**

Get involved in IEC/USNC  
activities and reap the  
strategic rewards

**OPPORTUNITY  
AHEAD**

**ANSI**

[www.ansi.org/usnc](http://www.ansi.org/usnc)



# OSHA Acceptance of IECEx

## Purpose of the OSHA NRTL Program

- Qualify certification bodies that meet the requirements in OSHA regulations under 29 CFR section 1910.7 to perform independent product safety testing and certification.

## 14 February 2007 Final Rule on Electrical Standards

- OSHA workplace standards require certain equipment and products be 3<sup>rd</sup> party approved
- Final rule includes the 2000 edition of NFPA 70E by reference.
  - NEC contains an alternative method for classifying and installing equipment into Class I hazardous locations.

## Status

- OSHA in the process to recognize U.S. zone related standards. Next step is to approve NRTL's request for scope extensions to cover those standards and revise rules regarding acceptance of IECEx.

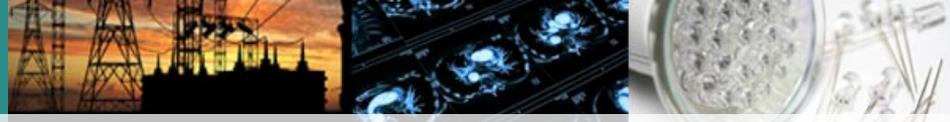


# USCG/BSEE Acceptance of IECEx



## Rulemaking: Electrical Equipment in Hazardous Locations

- Rulemaking initiated following aftermath of Deepwater Horizon tragedy.
- Key Finding: Importance of proper electrical equipment installations in hazardous locations
  - Expand list of national and international explosion protection standards
  - Recognize the IECEx as an acceptable method to testing and certifying electrical equipment intended for use in outer continental shelf activities classified as hazardous locations



# Main differences between EU and US conformity assessment systems

## US

- 💡 NFPA 70 - 52 edition
  - Enforceable code
  - Cost \$89.50 Paperback
- 💡 Use of pre-market, 3<sup>rd</sup> party certification

## EU

- 💡 IEC 60364-1: 5<sup>th</sup> edition
  - Fundamental principles
  - 47 separate publications, costing approx. 8 930 CHF
- 💡 Tendency to use SDoC + market surveillance

**Thank you**  
**[www.nema.org](http://www.nema.org)**



Joel SOLIS email: [joel.solis@nema.org](mailto:joel.solis@nema.org)  
Standards in Trade Conference on Conformity Assessment  
for the Electrical and Electronics Sectors in the ASEAN Region  
March 24-27, 2014