



The Association of Electrical and
Medical Imaging Equipment Manufacturers



National Electrical Manufacturers Association (NEMA)

North American Electrical Equipment Manufacturers Cybersecurity/Supply Chain Initiative

Steve Griffith, NEMA Industry Director
NIST Standards in Trade Workshop w/ India
September 16th, 2014



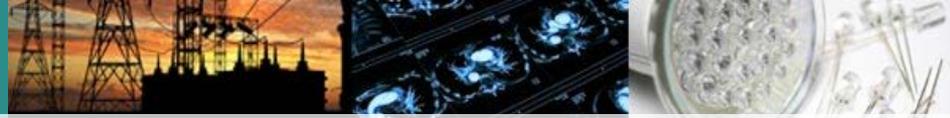
Agenda

-  Introduction to NEMA
-  Historical Overview-Cybersecurity/Supply Chain Initiative
-  North American Manufacturers Supply Chain Best Practices Document



NEMA's CORE ACTIVITIES

-  Developing Standards
-  Advocacy at the International, Federal, & State level
-  Industry and Market Data



NEMA PRODUCT SECTIONS

Industrial Automation Division

1CM	Carbon/Manufactured Graphite
1EW	Arc Welding
1IS	Industrial Automation Control
1MG	Motor and Generator
1PE	Power Electronics

Lighting Systems Division

2BL	Ballast
2EM	Emergency Lighting
2LC	Lighting Controls
2LE	Luminaire
2LL	Lamp
2SL	Solid State Lighting

Electronics Division

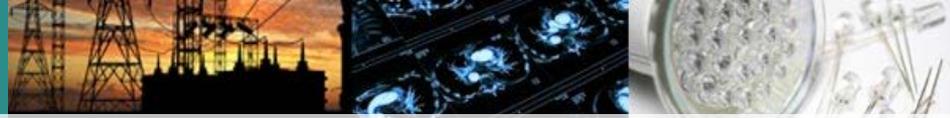
3DB	Dry Battery
3DC	Residential & Commercial Controls
3DCRH	Electric Resistance Heating
3SB	Signaling Protection & Communication
3SB-2	Health Care Communications
3TS	Transportation Mgt. Systems

Industrial Imaging Division

4IIC	Industrial Imaging and Communications
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Building Systems Division

5CT	Cable Tray
5EN	Enclosures
5EVSE	Electric Vehicle Supply Equipment
5FB	Conduit Fittings
5FB-2	Cable Ties
5FU	Fuse
5HC	Health Care Facility Equipment
5LVDE	Low Voltage Distribution Equipment
5OS	Outlet and Switch Box
5PP	Ground Fault Personnel Protection
5PR	Pin & Sleeve Plug
5RN	Steel Conduit
5TC	Polymer Raceway Products
5VS	Low Voltage Surge Protective Devices
5WD	Wiring Device



NEMA PRODUCT SECTIONS

Insulating Materials Division

6IM	Insulating Materials
6MW	Magnet Wire

Wire and Cable Division

7HW	High Performance Wire and Cable
7MO	Modular Wire
7WC-1	Building Wire
7WC-2	Power & Control Cable
7WC-4	Flexible Cords

Power Equipment Division

8CC	Electrical Connector
8CP	Capacitor
8EI-1	Electricity Metering Group
8EI-3	Meter Mounting/Test Equipment
8HV	High Voltage Insulator
8LA	High Voltage Surge Arrester
8SG	Switchgear
8DA	Distribution Automation
8TP-1	Dry Type/Specialty Transformers
8TP-2	Transformer

Medical Imaging and Technology Alliance

9MII	Medical Imaging Informatics
9MS	Magnetic Resonance
9MO	Molecular Imaging
9RT	Radiation Therapy
9UD	Ultrasound Imaging
9XR	X-Ray Imaging Products

Strategic Initiatives

Energy Storage
High Performance Buildings
Industrial Energy Efficiency Coalition
Smart Grid/Smart Cities/Microgrids



Cybersecurity/Supply Chain Initiative

- 💡 NEMA's work with the Edison Electric Institute (EEI is the association representing US investor owned electric utilities)
 - High level discussions started in mid-2012.

- 💡 EEI's Threat Scenario Project (late 2012)
 - Purpose
 - Potential attacks
 - Appropriate mitigation polices



Cybersecurity/Supply Chain Initiative

Outcome Report

- Supply Chain disruption & compromise- Identified as one of the 9 major threats facing the electric utility industry.

Supply Chain Link

- North American Electrical Equipment Manufacturers sell products & services to EEI member companies.



Cybersecurity/Supply Chain Initiative

- 💡 EEI/NEMA Shared Principles Document (mid-2013)
 - A secure supply chain is essential to a secure grid.
 - Cybersecurity aspects part of the design consideration for a product at its inception, not after its completion.
 - Open lines of communication between operators & manufacturers.



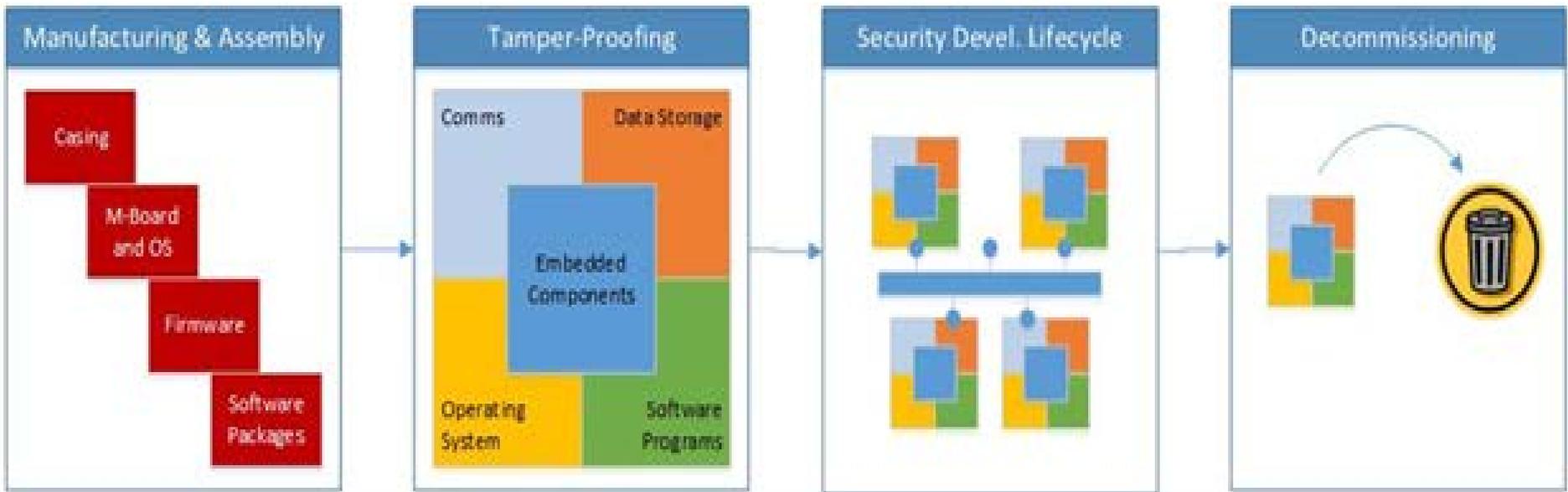
North American Electrical Equipment Manufacturers Supply Chain Document

NEMA's Cybersecurity Council

- Launched August 2013
- Collaboration with EEI
- North American Electrical Equipment Manufacturer's guideline document of recommended supply chain best practices thru the four phases of the security development life cycle.



North American Electrical Equipment Manufacturers Supply Chain Document





North American Electrical Equipment Manufacturers Supply Chain Document

Manufacturing & Assembly

- Detect and eliminate anomalies in the embedded components.

Tamper-proofing

- Configuration of device can't be altered between production line & operating environment.



North American Electrical Equipment Manufacturers Supply Chain Document

- 💡 **Security Development Life Cycle**
 - Manufactured device complies with security requirements of the operating environment.

- 💡 **Revocation & Decommissioning**
 - Processes to prevent obsolete/discontinued devices from being used to penetrate active networks.



North American Electrical Equipment Manufacturers Supply Chain Document

- 💡 Some key additional principles
 - Risk Tolerance:
 - Understanding and documenting a manufactured products acceptable risk level-critical
 - Supply Chain Communication
 - Unspoken risk-lack of communication

- 💡 Document expected to be finalized by the end of the year



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Questions?

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