North American Transmission FORUM

North American Transmission Forum (NATF)

CIGRE/GOTF – Importance of Collaboration

October 24, 2017 / Cleveland, OH

Open Distribution

“The future ain’t what it used to be”

Yogi Berra

Topics

- Industry changes / risks
- NATF: Background, Membership, Programs
- Intra-membership collaboration
- External collaboration and coordination

Industry Changes …… (2015/17 predictions)

Source: Utility Dive

2015

- Coal power decline
- Growth in natural gas
- Renewables parity
- Growing load deflection
- Utilities move into Solar
- Debates: Rate Design / DERs
- Modernizing the grid
- Buying into storage
- More customer centric
- Business models changing

2017

- Coal: new lease on life?
- Gas: growth and acceleration
- Renewables at parity, growing
- Markets in flux (nuclear at risk)
- Storage viable gird-scale resource
- DER proliferation
- Utilities push rate design reform
- Federal policy uncertainty
- States lead clean energy transition
- Continued business model reform

RISC Priorities (September 2017)

- Cybersecurity Vulnerabilities
- Changing Resource Mix
- BPS Planning
- Resource Adequacy
- Increasing P&C and Asset Management Complexity
- Loss of Situational Awareness
- Physical Security Vulnerabilities
- Extreme Natural Events
- Human Performance and Skilled Workforce

- **Emerging** – The risks are known to exist but not clearly understood. More analyzes are required to further define the risks and to develop mitigating actions.
- **Evolving**– The risks have been identified but they are changing or progressing beyond the original identified threat to reliability. New or additional mitigating actions need to be implemented.
- **Known/Existing**– The risks can be identified, analyzed and mitigated in advance. They are predictable and understood by industry, regulators and policy makers.

Strategic Goals / Focus Areas

Strategic Goals

1. Increase NATF Impact
2. Achieve Results
3. Manage Knowledge Effectively
4. Continually Improve
5. Address Emerging Issues

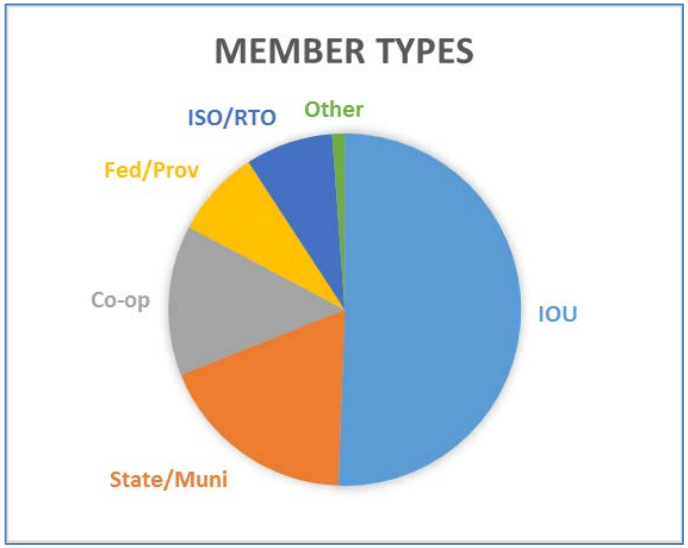
Technical/Ops Focus Areas

- Resiliency (includes Security)
- Asset Mgmt / Equipment
- Worker Skills / Human Performance
- Sharing Operating Experience
- Continuous Performance Improvement

NATF Members

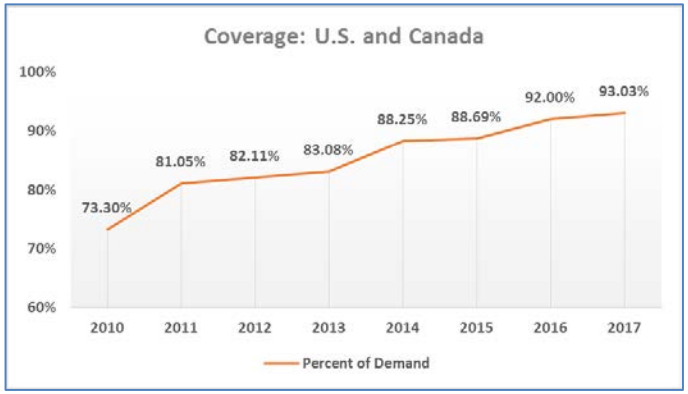
NATF Membership / Value Add / Principles

- U.S. and Canadian
- **87** members & growing
  - Plus 57 affiliates
- ~**80%** miles 200 kV+
- ~**90%** net peak demand



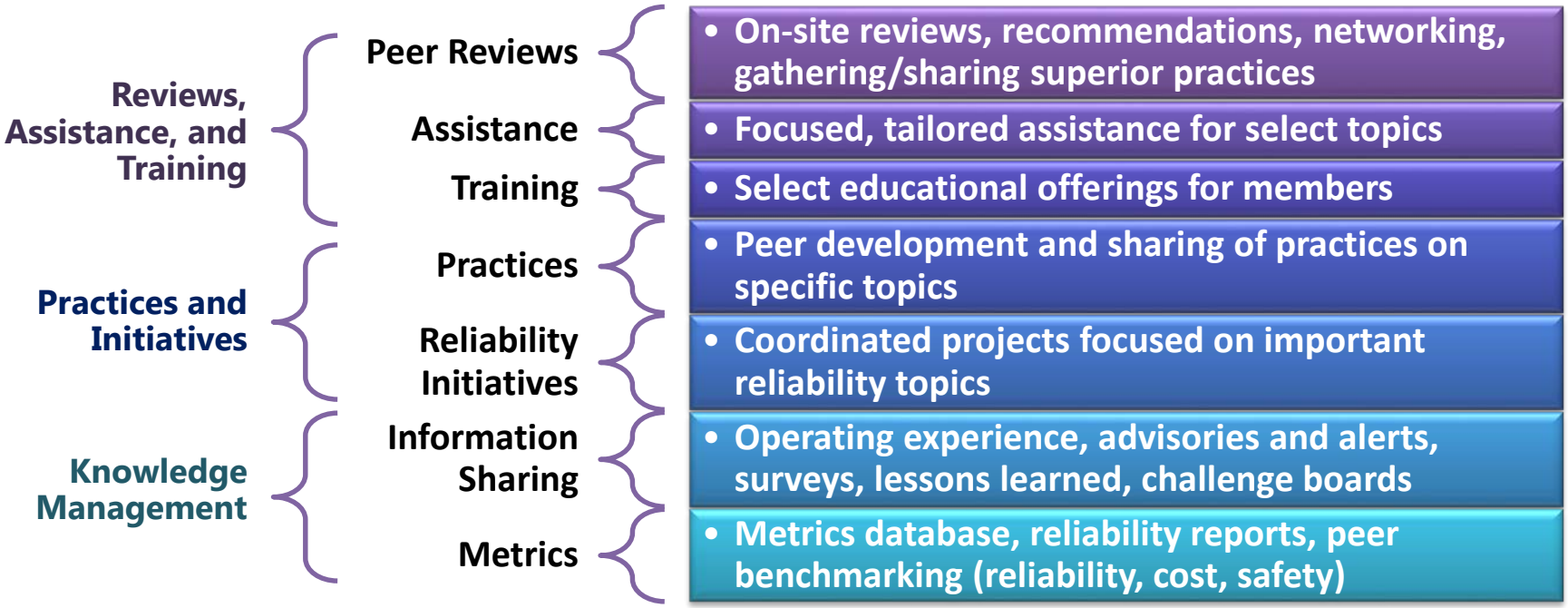
Value Propositions

1. Improved reliability/resiliency
2. Increased compliance margin
3. Efficient use of industry resources



COMMUNITY CONFIDENTIALITY CANDOR COMMITMENT

NATF Programs



More than 6,500 subject matter experts participate in NATF working groups, committees, and programs

Intra-Membership Collaboration Examples

- Hitachi HVB Breakers (NERC Alert)
- Cold weather preparations (seminars/practices)
- CIP-014 development/input (criticality determination)
- Key spare parts (Transformers plus)
- Right-of-way (ROW) maintenance best practices
- Restoration and Recovery Plans
- Operational practices (San Diego area blackout)
- Supply Chain Management Cyber
- New Control Center Design and Construction
- Hardening: Control Centers, Substations, Lines
- Specialized cabling upgrades
- Various compliance implementation topics

External Coordination

ORG	MOU?	Frequency	Topics
INPO	2012	Q	Benchmarking; NPP offsite power
EPRI	2013	Q	Resiliency, Equipment Issues
NERC	2013	2x / Yr.	Various
IEEE (PES)	Working	TBD	Protection system performance
DOE		*	Resiliency
NAGF		*	Trans/Gen interface issues
Trades		*	Various: policy / operational alignment
AEIC		*	Trans/Dist. interface issues
FERC		*	Periodic updates; security issues
EISC		*	Resiliency issues

* As Needed

Example: NERC / NATF Coordination

- NERC/NATF MOU executed July 2013
- Senior leadership meets quarterly
- Good cadence, increasingly productive
  - Example: NERC Alert/NATF response – Electrical Circuit Breakers
- April 2017 agenda
  1. RISC priorities
  2. Resiliency / Security
  3. Equipment Performance Issues
  4. Human Performance *(March 2017/8 Joint HP Conferences)*
  5. Vegetation Management
  6. Joint June 2017 Modeling Workshop
  7. Misoperation / Measure Definition
  8. Information Sharing / Compliance Implementation Guidance

Example: NAGF

- Changing resource mix
  - Renewables integration
  - Distributed Energy Resources (DER)
- Non-Synchronous Generator Attributes
- System Operations Workshop
- Program benchmarking / emulation

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