Electromagnetic Transient Training Needs

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3/18/2026

The Workforce is Not Sufficiently Developed Globally

- Power systems internationally are **transforming** at a rapid rate
- Previous paradigms are no **longer sufficient**
  - Rapid changes in assumptions, inputs, study needs since ~2018
  - Creates a disconnect between real study needs and those perceived by industry leaders
- Routine compliance activities are **less routine**
  - New system constraints
  - More complex inputs
- While this is a global issue, **North America is far behind the world**

Risks of an Underdeveloped Workforce

- An underdeveloped workforce has numerous “ripple effects”
- Current **study practices are insufficient** for the modern system and may be carried out with **insufficient experience and engineering judgement**
  - Lack of engineering judgement adds uncertainty and risk
- New study practices are **not considered**
  - While currently having trouble within the current paradigm, there is little appetite to create “more work”
- Regulatory enhancements are **slowed significantly**
  - Little understanding of what is “needed”
  - Current paradigm often informs regulatory changes

Why is Workforce Development Hard

- The current workforce capability is generally **overestimated**, or the technical needs for a reliable system are **underestimated**
  - It is difficult to understand the needs of the modern power system if you haven't done modern power system studies
- Training opportunities teach skills, but maybe not the **right skills**
  - The workforce needs: software-specific skills, engineering judgement, perspective
- Training opportunities target specific stakeholders but not all
  - Management and leadership need development also
  - Many training opportunities are targeted at relatively new engineers
- Training, travel, and time away cost money - budgets are tight

Why EMT? Why now?

- The rapidly evolving power system and its changing electrical characteristics necessitate advanced studies in the EMT domain
- Recent strong focus on EMT gives momentum to provide education on modeling and study practices in all domains
  - Many EMT best practices can be applied to studies in other simulation domains
- Fewer predispositions about EMT studies and modeling tend to lead to more objective discussions and education

Thank you!

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- Contact me or any ESIG staff for information on:
  - ESIG's Interconnection Studies Short Course
  - ESIG's ongoing EMT education efforts supported by DOE CMEI