

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

North American EMT Strategy

Widespread Adoption of EMT Modeling to Support BPS Reliability Studies
across North America

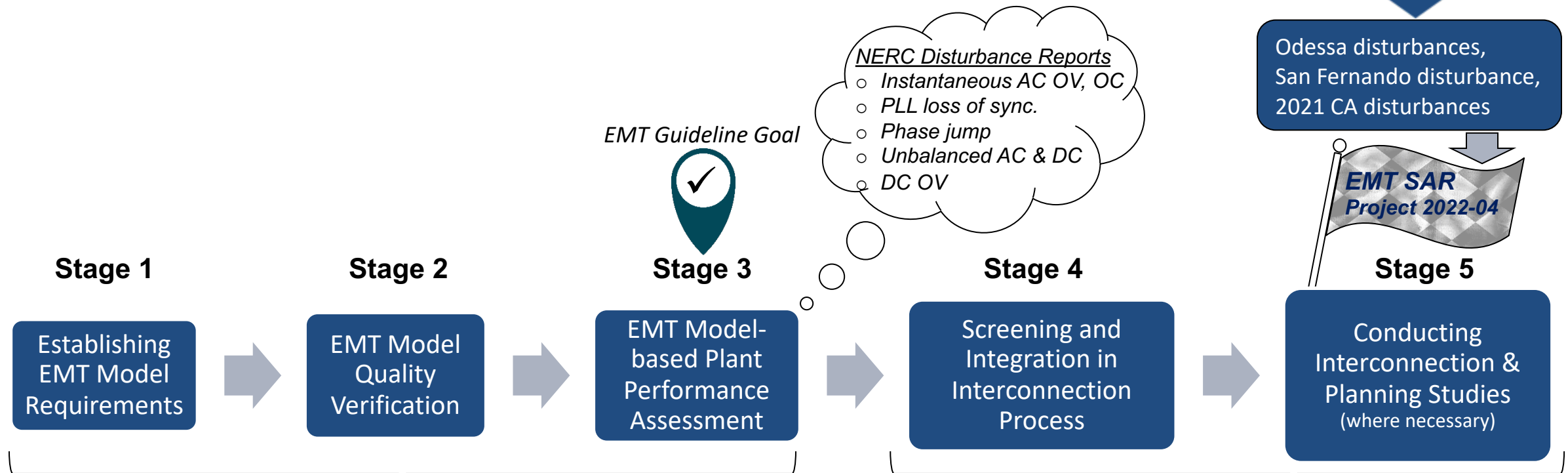
Aung Thant, Senior Engineer, NERC
EMT Workshop, ORNL, Knoxville, TN
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- End Goal
- Strategies & Tactics
- EMT Adoption in Stages
- NERC EMTTF
- Education and Outreach

- Routine and widespread use of EMT Tool in interconnection and planning studies

- Make EMT modeling more accessible and approachable
 - Fill knowledge gap with education and outreach
 - Identify and tackle challenges
 - Break it down and prioritize
 - Automate and streamline work flow
- Create common understanding
 - Develop clear set of expectations for industry to converge on
 - Reliability Guidelines
 - e.g. what are the principles of model quality and how to require and verify them?

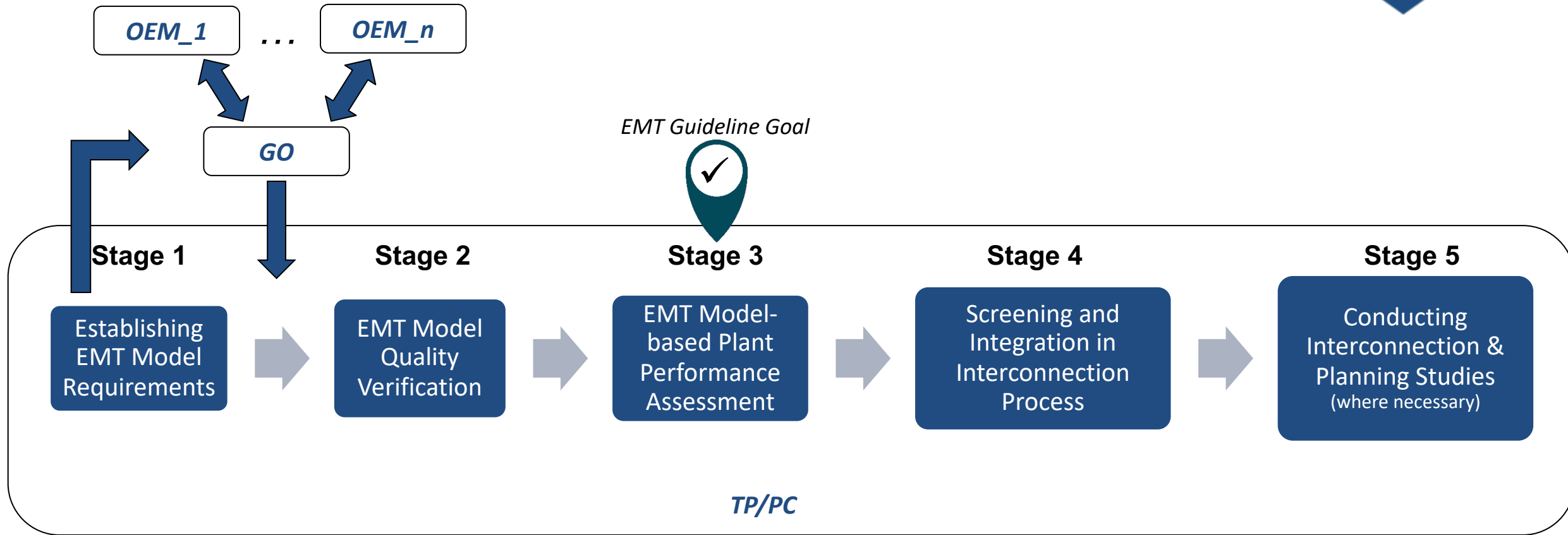
- Promote motivation
 - Continue to highlight and document the gaps, needs and benefits
 - Develop clear consequences upfront – restudy cost, liquated damages, etc.
- Decouple from other processes and unknowns
 - Do what we can now while other broken processes get fixed
 - Define desirable outcomes if not compromised for dependencies
- Create a baseline, unified approach
 - Develop Reliability Standards – EMT SAR Project 2022-04

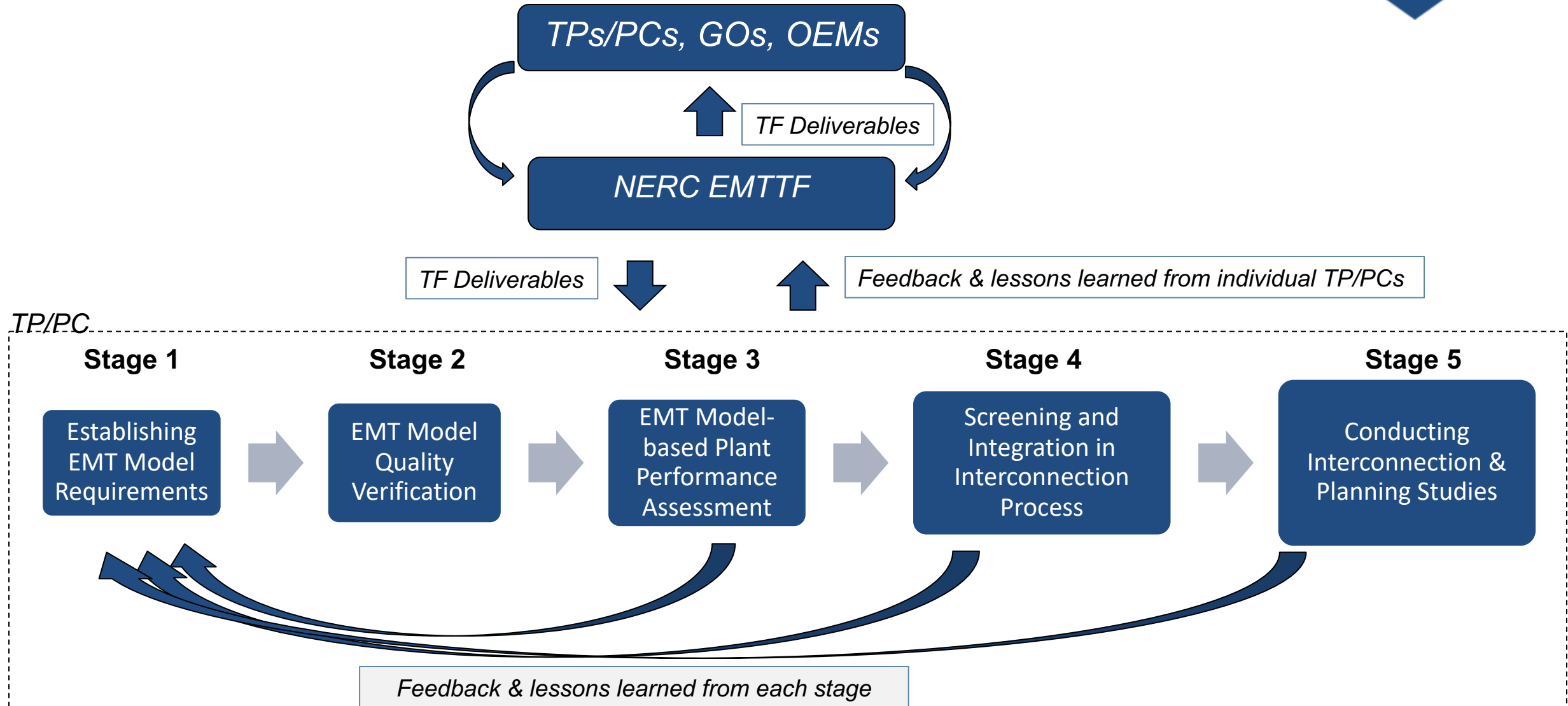


Released EMT Guideline Scope

Chapter 1	Chapter 2	Chapter 3	Chapter 4
<ul style="list-style-type: none"> Recommended EMT Model Requirements Sample Checklist 	<ul style="list-style-type: none"> Principles of Model Quality Verification Processes Attestations – unit models & plant model Unit Model Validation 	<ul style="list-style-type: none"> Model Adequacy Tests Functional Tests Disturbance Ride-through Performance Tests 	<ul style="list-style-type: none"> EMT Study Use Cases Common situations needing an EMT study

Future EMT Guideline Scope





- Provides industry support and help execute the strategy
- Reports to IRPS
- Work items
 - **EMT Modeling Standard Monitoring and Support**
 - Monitor and support the activities of Standard Project 2022-04 EMT Modeling
 - **Reliability Guideline: Electromagnetic Transient Modeling and Simulations**
 - Reliability Guideline on EMT modeling and simulations of BPS-connected inverter-based resources – Screening and Studies, Application and Implementation of Results
 - **Organized Repo of Curated EMT Modeling Resources (“EMT Curriculum”)**
 - Repository of carefully curated EMT modeling and study references (recommended modeling and study practices, including verification, and validation of models, analysis approach and results, references to educational materials, tutorials and workshop presentations, case studies, automation approaches, frequently asked questions (FAQs) gathered from event Q&A sessions, webinars, and other outreach efforts), organized in such a way that a beginner can self-guide their learning curve

- Work items
 - **White Paper: Case Study on Adoption of EMT Modeling and Studies in Interconnection and Planning Studies for BPS-connected IBRs**
 - Identify TPs and PCs adopting EMT modeling and studies in their interconnection and planning studies for BPS-connected IBR and document challenges and progress
 - **White Paper: Assessment of The Need for EMT Modeling and Simulation in Offline Operation Studies and Requirements**
 - Identify the EMT model use cases in offline operation studies, unique challenges and requirements that differ from interconnection and planning study use cases
- Meets monthly on every 4th Tuesday between 11 – 12:30 pm Pacific
- Sub-groups meet more frequently to work on work items
- Website
 - <https://www.nerc.com/comm/RSTC/Pages/EMTTF.aspx>

- NERC and DOE Labs Collaboration
 - August 3 – EMT Boot Camp 1 (virtual)
 - September 14 – EMT Boot Camp 2 (virtual)
 - August 24 – 25 – EMT Simulation Workshop (in-person)
- Also exploring additional region-specific training opportunities in 2024 (in-person + virtual option)



Questions and Answers

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