



ISO-NE IEEE 2800-2022 Adoption Update

NYSRC IEEE 2800-2022 Workshop

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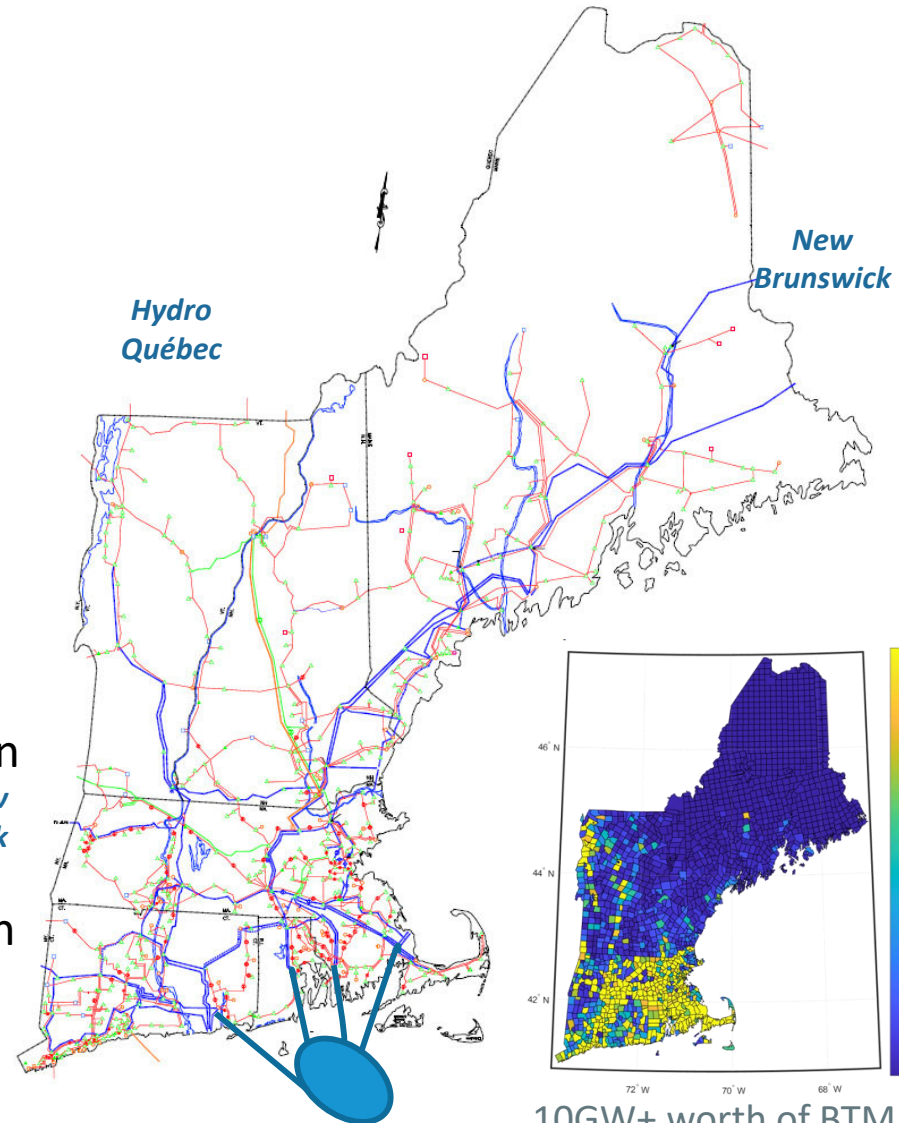
Presentation Outline

- About the New England electric grid
- Why Adopt IEEE 2800?
- ISO-NE Adoption Approach
- ISO-NE Adoption Timeline
- Questions



New England's Transmission Grid Is the Interstate Highway System for Electricity

- **9,000 miles** of high-voltage transmission lines (primarily 115 kV and 345 kV)
- **13 transmission interconnections** to neighboring power systems in New York and Eastern Canada:
 - New York (8 AC ties, 1 DC tie)
 - Hydro Québec (2 DC ties)
 - New Brunswick (2 AC ties)
- **16%** of region's energy needs met by imports in 2020
- **\$11.7 billion** invested to strengthen transmission system reliability since 2002; **\$1 billion** planned
- Developers have proposed multiple transmission projects to access **non-carbon-emitting resources** inside and outside the region

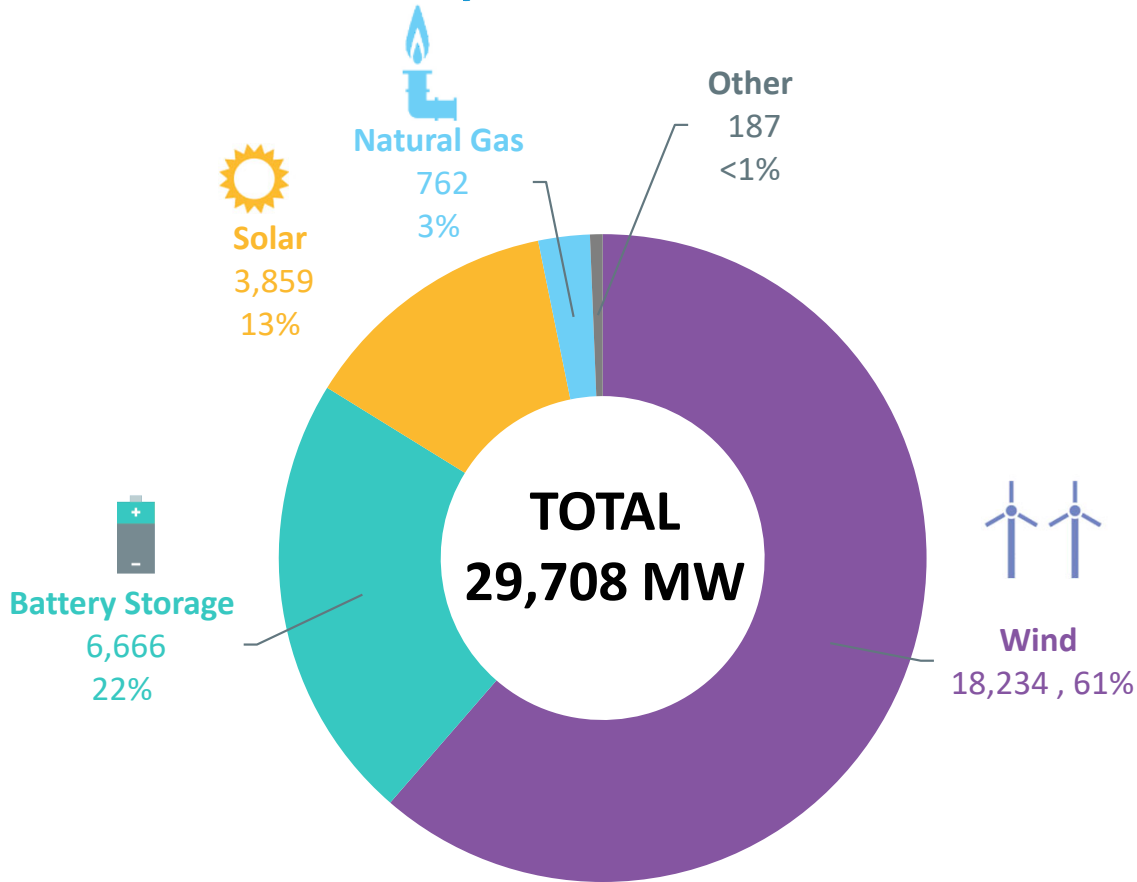


16GW~ worth of OSW in queue

10GW+ worth of BTM PV forecasted by 2030

Wind Power Comprises Almost Two Thirds of New Resource Proposals in the ISO Interconnection Queue

All Proposed Resources



Source: ISO Generator Interconnection Queue (May, 2022)

FERC Jurisdictional Proposals; Nameplate Capacity Ratings

Note: Some natural gas proposals include dual-fuel units (with oil backup).

Some natural gas, wind, and solar proposals include battery storage. Other includes hydro, biomass, fuel cells and nuclear uprate.

Proposals by State

(all proposed resources)

State	Megawatts (MW)
Massachusetts	17,971
Connecticut	4,604
Maine	5,107
Rhode Island	1,095
New Hampshire	827
Vermont	105
Total	29,708

Source: ISO Generator Interconnection Queue (May, 2022)

FERC Jurisdictional Proposals



Why adopt IEEE 2800?

- Rapid growth of inverter based resources in New England on both the transmission and sub-transmission
 - IBRs are software defined, so responses are programmed
 - Concerned with both local and system wide transient phenomena
 - Low system strength scenarios are becoming the norm
 - Can fill the gap between IEEE 1547-2018 and transmission
- Harmonizes technical minimum capability for Large Solar, Wind, and Storage Plants at the time of interconnection, including those connected via VSC-HVDC like offshore wind
 - Could create a “level playing field” for IBR developers, if adopted
 - Can streamline technical interconnection requirements
- Is consensus-based, voluntary IEEE performance standard
 - Developed by over 175 working group participants from transmission owners, OEMs, developers, and consultants
 - Successfully passed the industry peer review by 466 IEEE SA balloters (>94% approval, >90% response rate)



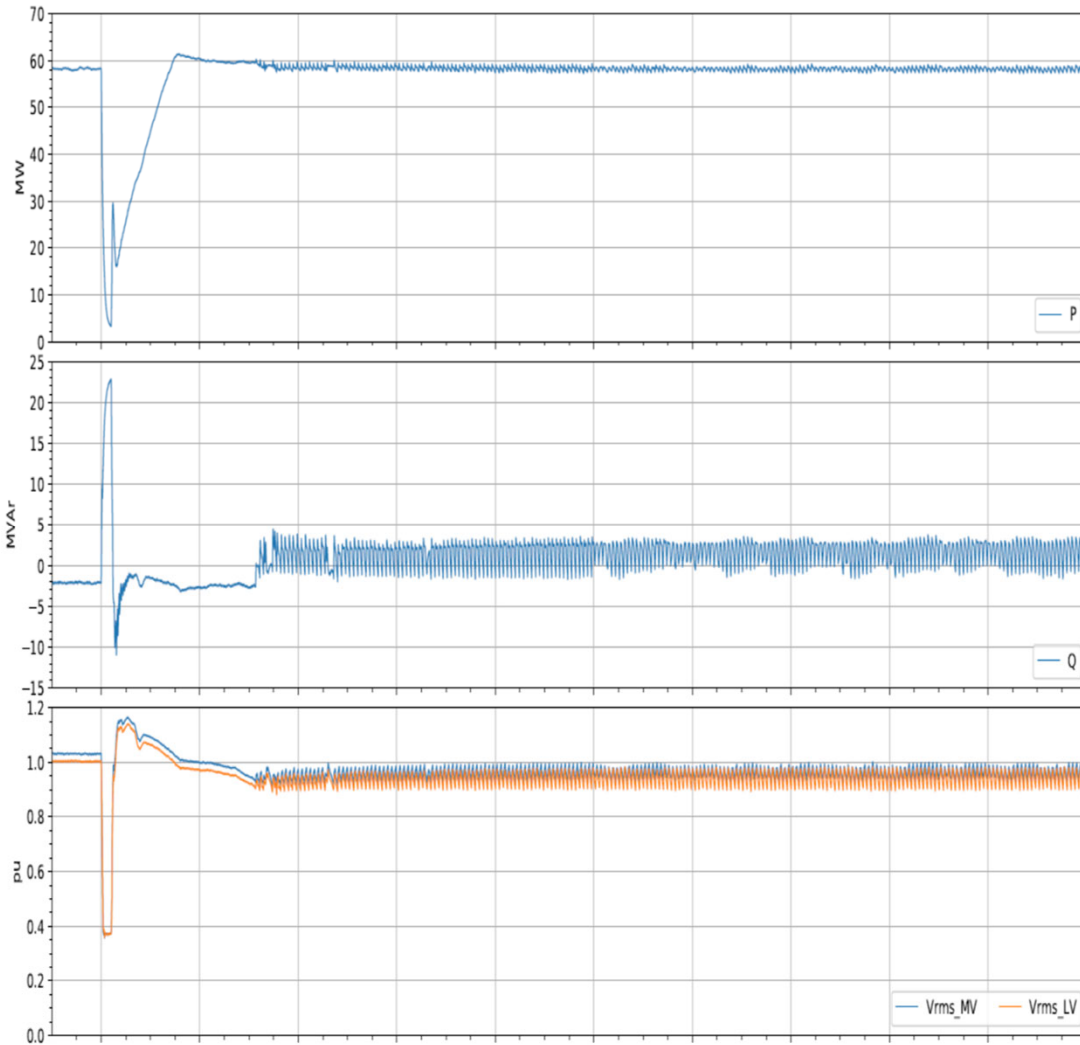
Adoption by ISO-NE: Approach

- Plan is to develop minimum performance specifications for newly interconnecting resources, using the IEEE Std 2800
- Seek to implement performance requirements clause by clause, rather than wholesale adoption for now.
- Performance specifications will be added to multiple planning and operating documents
- In future, adoption of IEEE Std 2800 by general reference, i.e., wholesale adoption, is possible
- Development of verification piece to follow in conjunction or after publication of IEEE P2800.2
 - Interim approach will be to accept developer provided verification/validation in conjunction with conformity assessment performed by ISO-NE

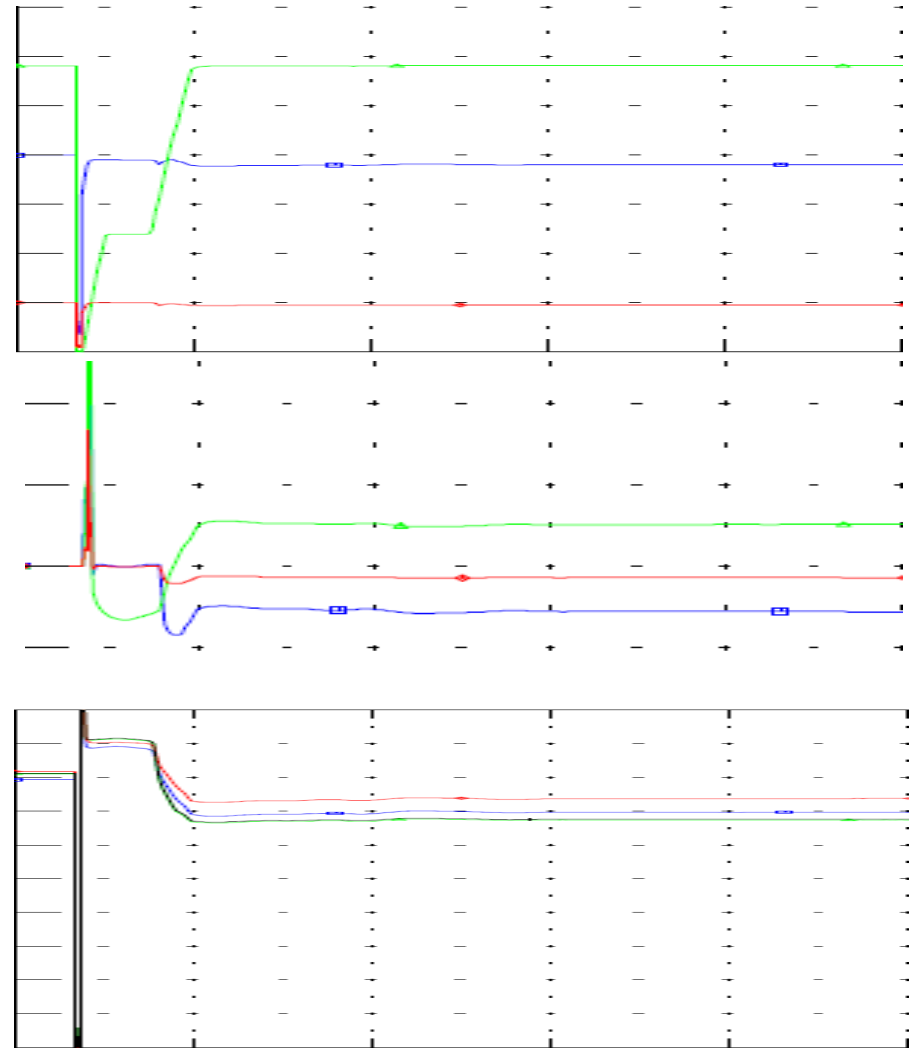


Verification - Comparison of PSCAD to PSS/e Model

PSCAD



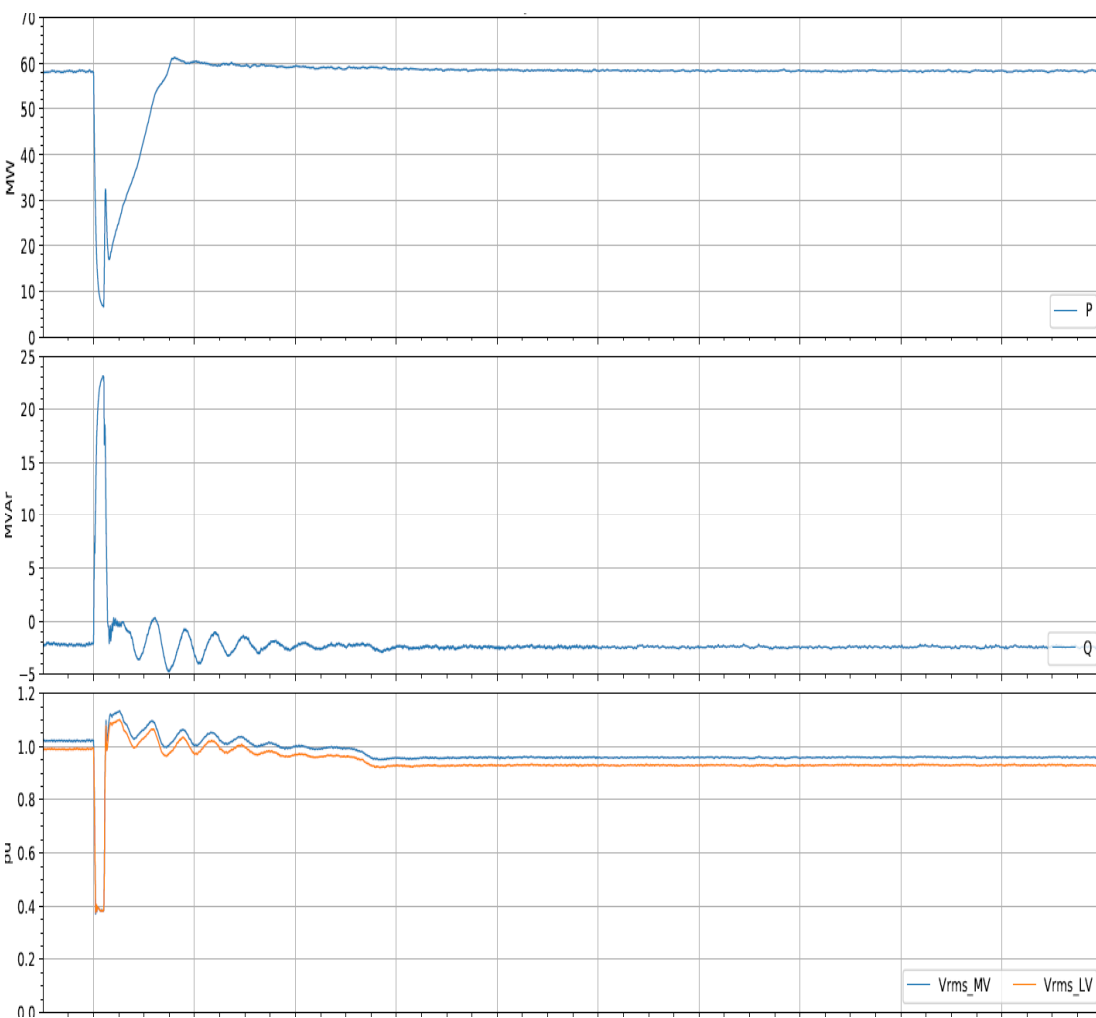
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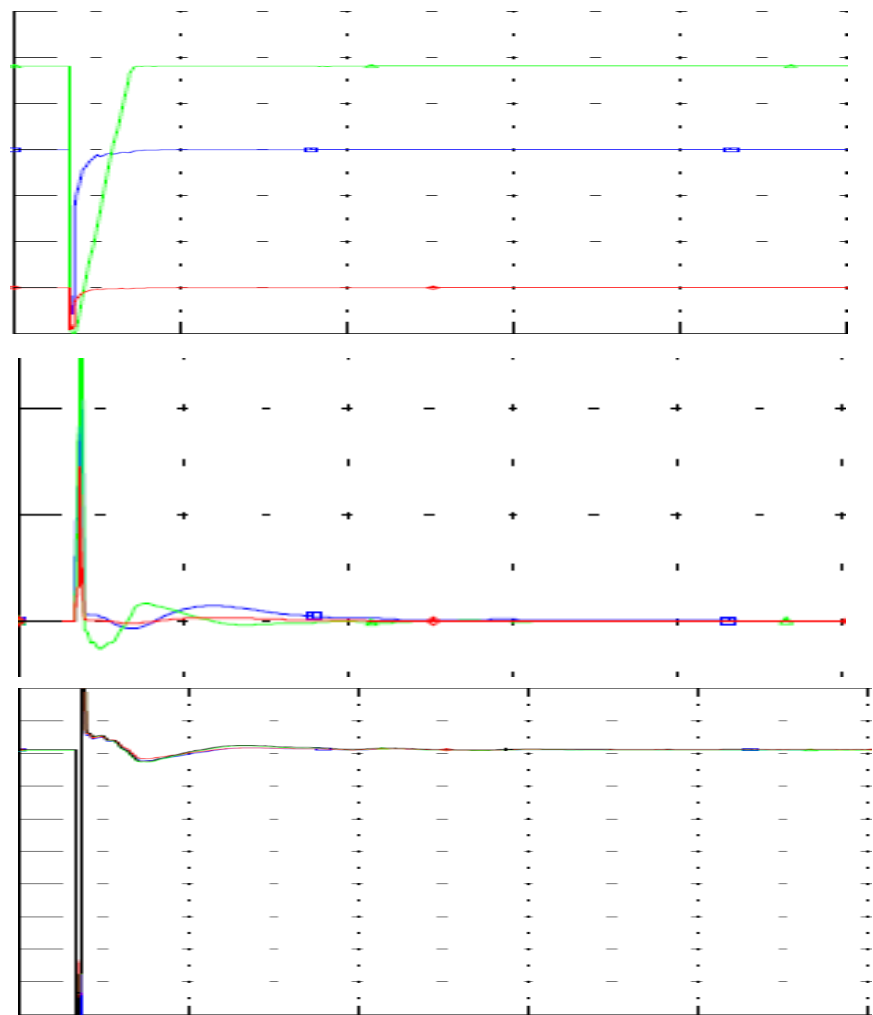
Verification - Comparison of PSCAD to PSS/e Model

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PSCAD

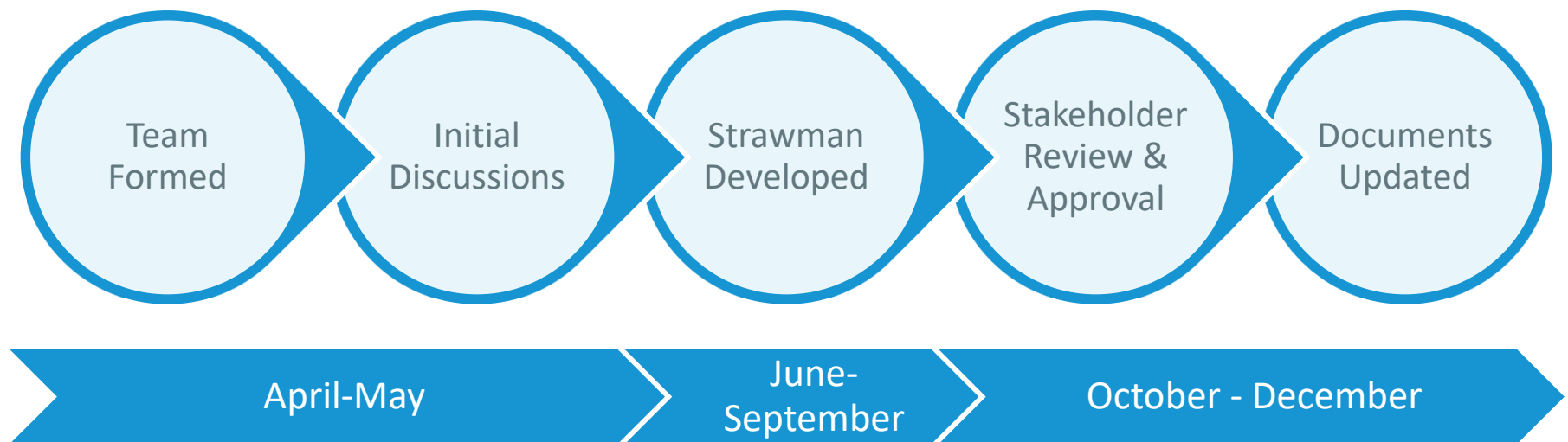


PSS/e



Adoption by ISO-NE: Timeline

- Tentative timeline – Update performance specs by end of 2022
 - Expect to update Planning Procedures and Operating Procedures with IEEE 2800 specifications
 - This is being done in tandem with update of Modeling Procedures



Questions

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