IEEE Microgrid Controller Standard 2030.7 and Artificial Intelligence (AI) 
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What’s the Definition of Artificial Intelligence?
IEEE 2030.7 Standard for the Specification of Microgrid Controllers

- Interoperability
- Interface Configurations
- Facilitate wide adoption
- Modularity
- Define Key Functions
Figure 2—Relationship between transition and dispatch functions
IEEE Std 2030.7-2017
IEEE Standard for the Specification of Microgrid Controllers

Figure C.2—Microgrid control system time frame and action time domain
What about Contingency Management?

Contingency Planning and Resilience

- Business continuity
- Crisis communications
- Critical infrastructure protection
- Information system contingency
- Disaster recovery
- Cyber incident response
A Utopian End State for Microgrid Control Systems

SCALABLE

CUSTOMIZABLE

ADAPTABLE

REMOTE
Conclusion: We are early in the AI Journey when it comes to AI and Microgrid Control Systems
Thank You!

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Microgrid Value (from user standpoint) Grows with Complexity

- **Back-Up Generation**
  - Grid power, genset for backup, UPS, low renewable penetration

- **Simple Microgrid**

- **Advanced Microgrid**
  - Hybrid DER, high penetration renewable, CHP, Seamless Islanding, Grid Services, etc.

- **Hybrid DER system, not optimized, Grid services**

Microgrid Value (from user standpoint) Grows with Complexity
Microgrid Control System Cybersecurity and Trade-Offs

Source: Hudgens, Bryan; Hartner, Cameron; Adams, Brian; Regnier, Eva; Proceedings of the 52nd Hawaii International Conference on System Sciences | 2019; “Investing in Cyber Defense: A Value-Focused Analysis of Investment Decisions for Microgrids,”
Resources and References

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