

Universal Participation Model Redux

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Parameterized model for any generator/load resource

Example parameters: Pmax, Pmin, ramp rate, startup time, max energy limit, state of charge, charge/discharge times, transition time...

- Flexible parameters can describe any resource
- Platforms (EMS, MMS) implement one model
- Market offers include their parameter values
- Market participants can use parameters for novel resources without needing a new model

ESIG Blog: [The Universal Market Participation Model](#) (April 2018)

Ideal Resource Model for any generator/load/HVDC resource

No technology parameters allowed

- Like a self-charging, self-managing BESS
 - “An always online, grid-forming resource?”
- Internally, manages gen & storage (and load?)
- Uses analytics, hedging, innovation, LDES to manage risk and optimize convex offers

ESIG Blog: [Why Storage Might Solve Really Big Problems – But Different Ones Than You Think](#) (May 2018)

Why consider the Ideal Resource Model?



- Motivation (for both approaches) is to encourage innovation and manage increasing system-level complexity
- With today's technology (batteries, power electronics, software controls, analytics, etc.) it is possible to make any generator, load, hybrid, microgrid, or behind-the-meter subsystem operate as an ideal resource at point of interconnection (POI)
- Motivates deployment of additional technologies to improve performance or provide new services without altering electrical properties at the POI
 - LDES, peaker, load response, etc.
- Distributes computational burden to market participants to simplify system-wide market and operational burden
 - Convex offers simplify market clearing
 - Supports beneficial hedging and active participation in forward market constructs
 - Builds on decades of experience in the design of complex software architectures
- Underlying interconnection requirements, injection limits, reliability services, and technical standards remain fully in place (including grid-forming BESS if desired)