



WPTF State-of-Charge Proposal

Kallie Wells – Gridwell Consulting

kwells@gridwell.com

916.306.1743

June 2019

About Western Power Trading Forum

- Western Power Trading Forum is a non-profit, trade forum dedicated to competitive markets and transparency at the California ISO and across the West
- CAISO Committee- paid monthly service for WPTF members that covers CAISO policy and important happenings
- *This presentation does not necessarily represent WPTF members' views*

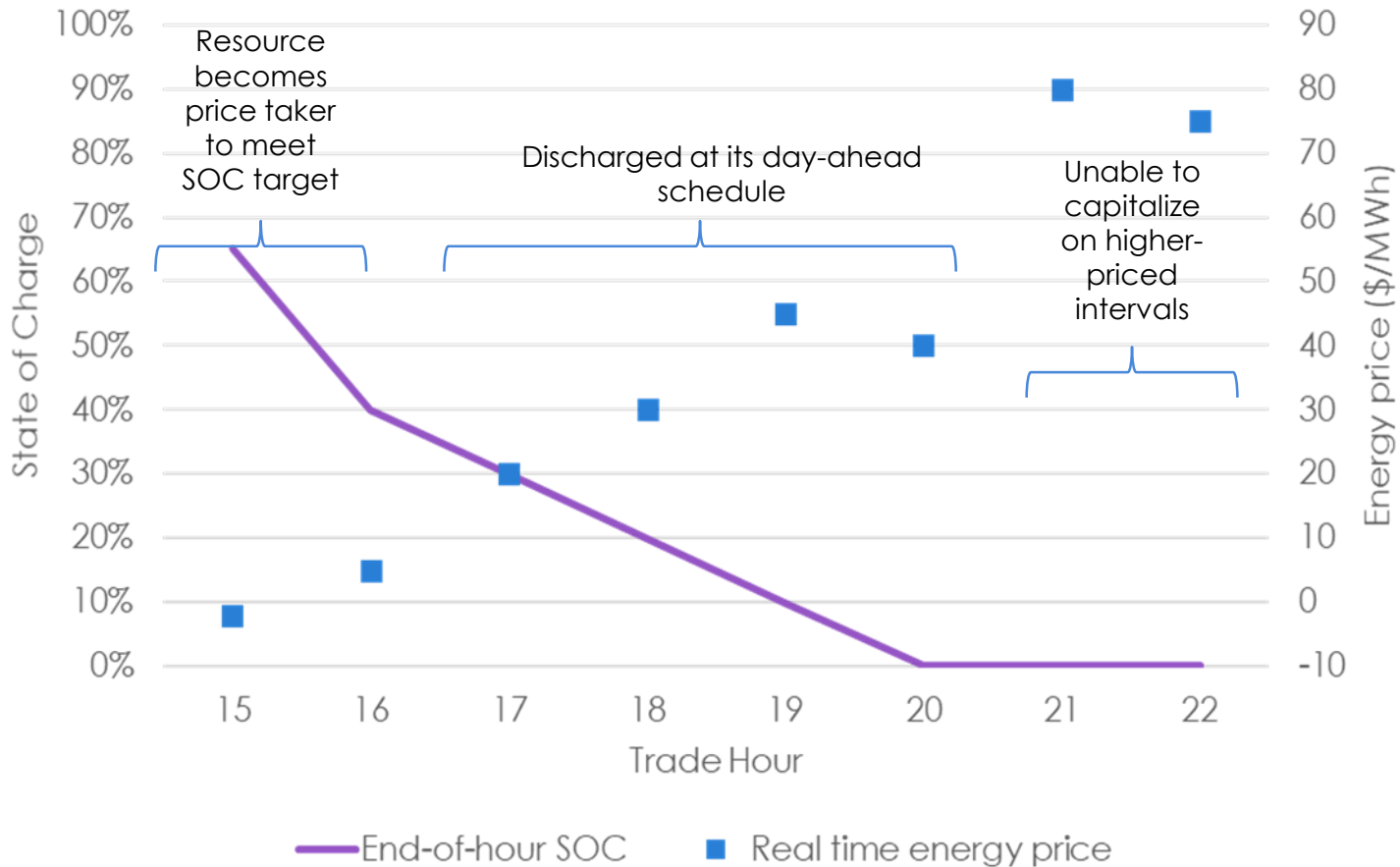
About Gridwell Consulting

- Gridwell is a boutique consulting firm located in Sacramento, CA
 - Battery energy storage consulting and modeling services
 - All things CAISO – transmission, interconnection, settlements, and energy markets
 - Resource adequacy in CA and west

Why is Improved State-of-Charge (SOC) Management Needed?

- Multi-use and SATA resources need the ability to ensure they can easily and effectively participate in and exit out of the CAISO market as needed
- SCs need the ability to manage resources such that they can meet day-ahead schedules
 - Cannot manage with bids today because of the difference between advisory and binding prices
 - Similar concept to ensuring MSG resources are operating in the day-ahead scheduled configuration
- Limit the financial risk between the day-ahead and real-time markets

Targeted End-of-hour SOC Example

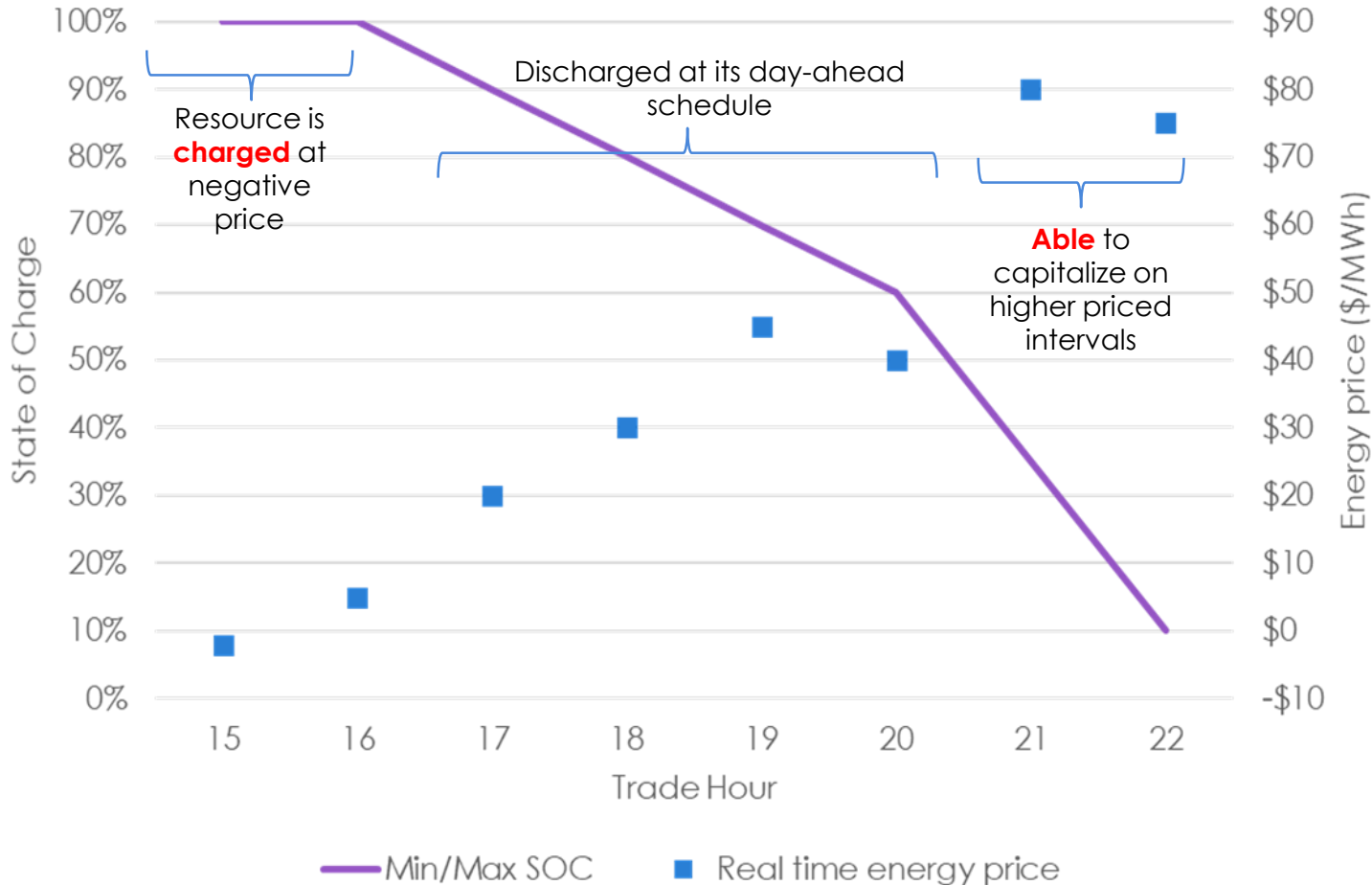


- 100MWh/25MW battery
- Initial SOC of 90%
- **40% SOC by end of hour 16**
- Day-ahead schedule of 10 MWs in hours 17-20

WPTF SOC Proposal

- Minimum and maximum end-of-hour SOC parameters
 - For example, resource needs to be between 40% and 100% charged by end of hour 16
- Minimum and maximum parameters can be the same
 - Allows resources to still meet a single targeted SOC if desired
- Biddable in both the day-ahead and real-time markets
 - Meets FERC Order 841 criteria

Min/Max End-of-hour SOC Example



- 100MWh/25 MW battery
- Initial SOC of 90%
- **100%-40% SOC** by end of hour 16
- Day-ahead schedule of 10 MWs in hours 17-20

Benefits of Alternative Proposal

- Still meets initial proposal objectives
 - Improved SOC management for multi-use resources
 - Provides more control for SCs to reduce financial risk between markets
- Provides resources the ability to take advantage of *all* real-time market opportunities
 - Does not constrain market to meet a single targeted SOC
 - Relieves SC of having to “guess” best end-of-hour SOC
- Helps address the issue with differing advisory and binding interval prices
 - Although does not entirely resolve this issue