

Exhibit to Agenda Item #1

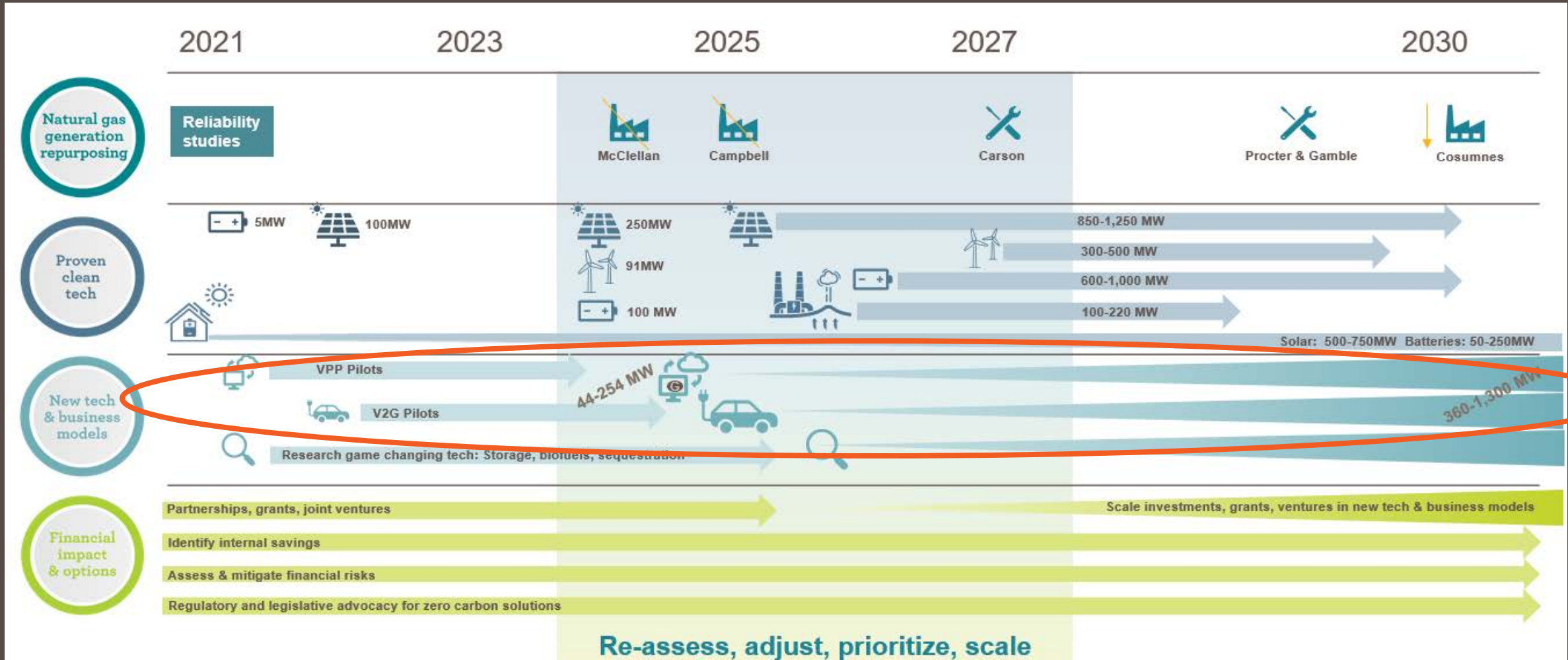
- a. Provide the Board an overview of Virtual Power Plants (VPP) and application within the industry.
- b. Brief the Board on SMUD's VPP pilot.

Board Energy Resources & Customer Services Committee and Special SMUD Board of Directors Meeting

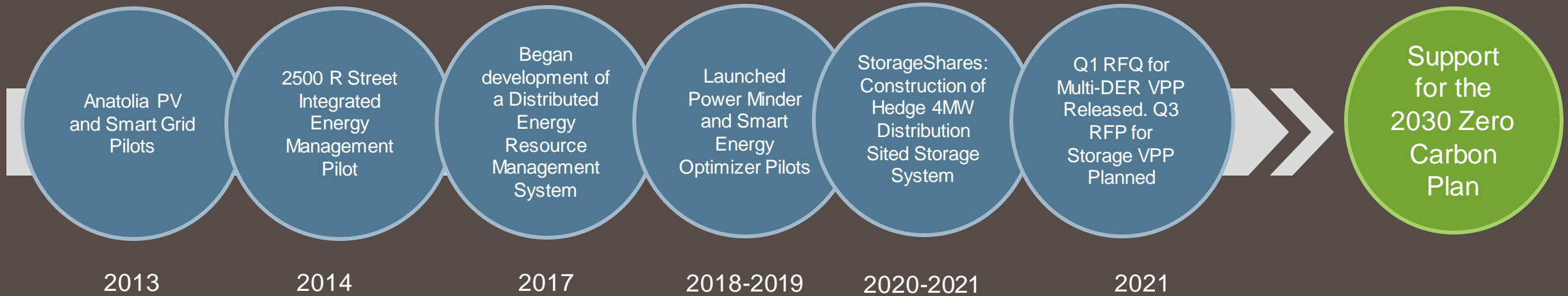
Tuesday, June 16, 2021, scheduled to begin at 5:30 p.m.

Virtual Meeting (online)

Virtual Power Plants in the 2030 Plan



SMUD's Virtual Power Plant Journey



Upcoming Virtual Power Plant Pilots

- Multi-DER Virtual Power Plant
- Vehicle to Grid & EV Managed Charging
- Storage Based Virtual Power Plant



Multi-DER Virtual Power Plant

- Technology aggregator to provide load flexibility through automated device response and incentives
 - Residential Thermostats, EVs, Batteries
- Optional Critical Peak Price (CPP) rate to provide customer benefit and additional price signals
 - Pilot will include control groups and non-CPP incentive-based groups
- Day ahead/Day of event notifications
- Future Integration with DERMS for streamlined operation



Storage Based Virtual Power Plant

- Near real time dispatch of behind the meter batteries through a 3rd party aggregator
- Intended for residential and commercial customers
- Initial battery incentive up to \$2,500 for residential customers
- Participation payments based on grid benefits
 - Final benefits dependent upon aggregator costs

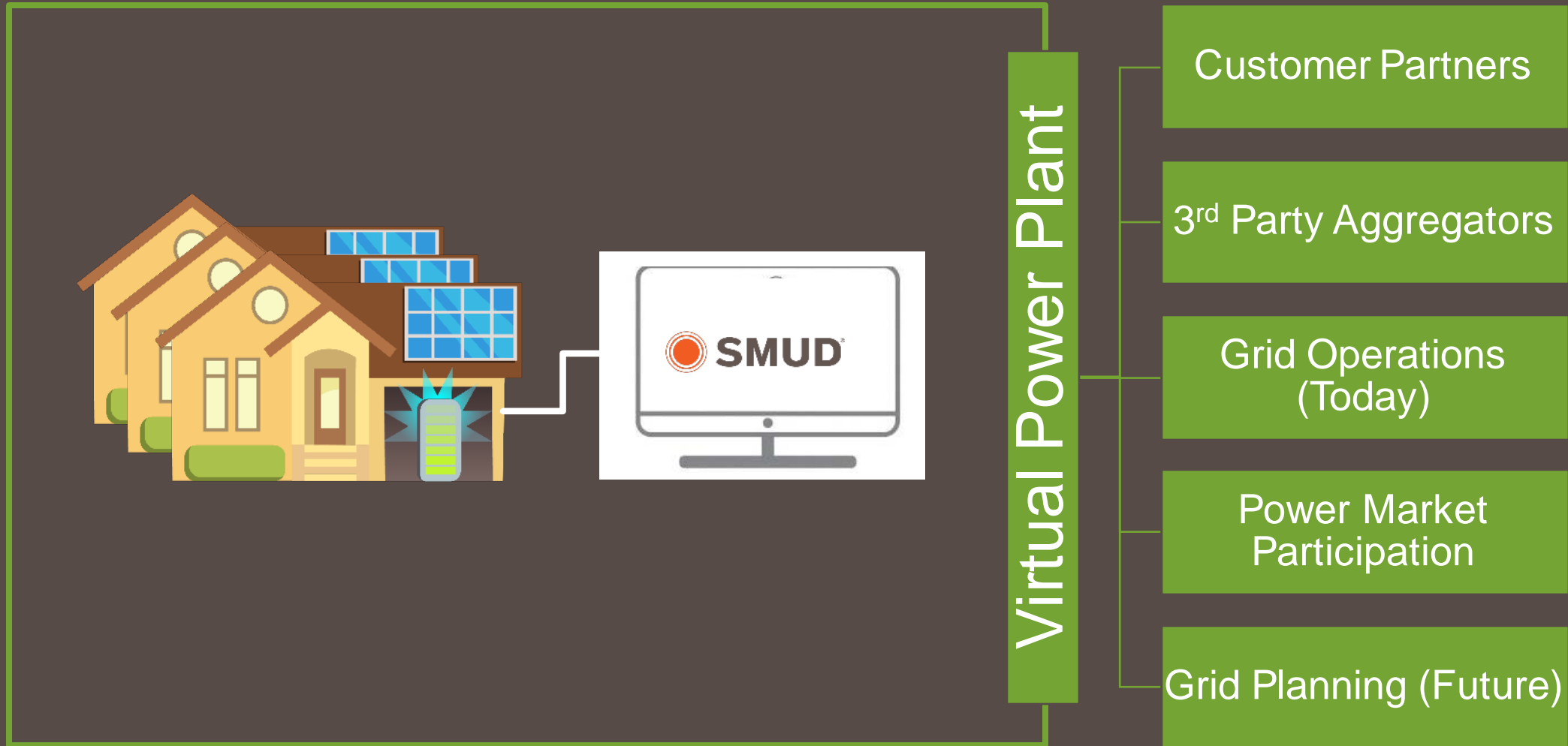


Vehicle to Grid Pilots

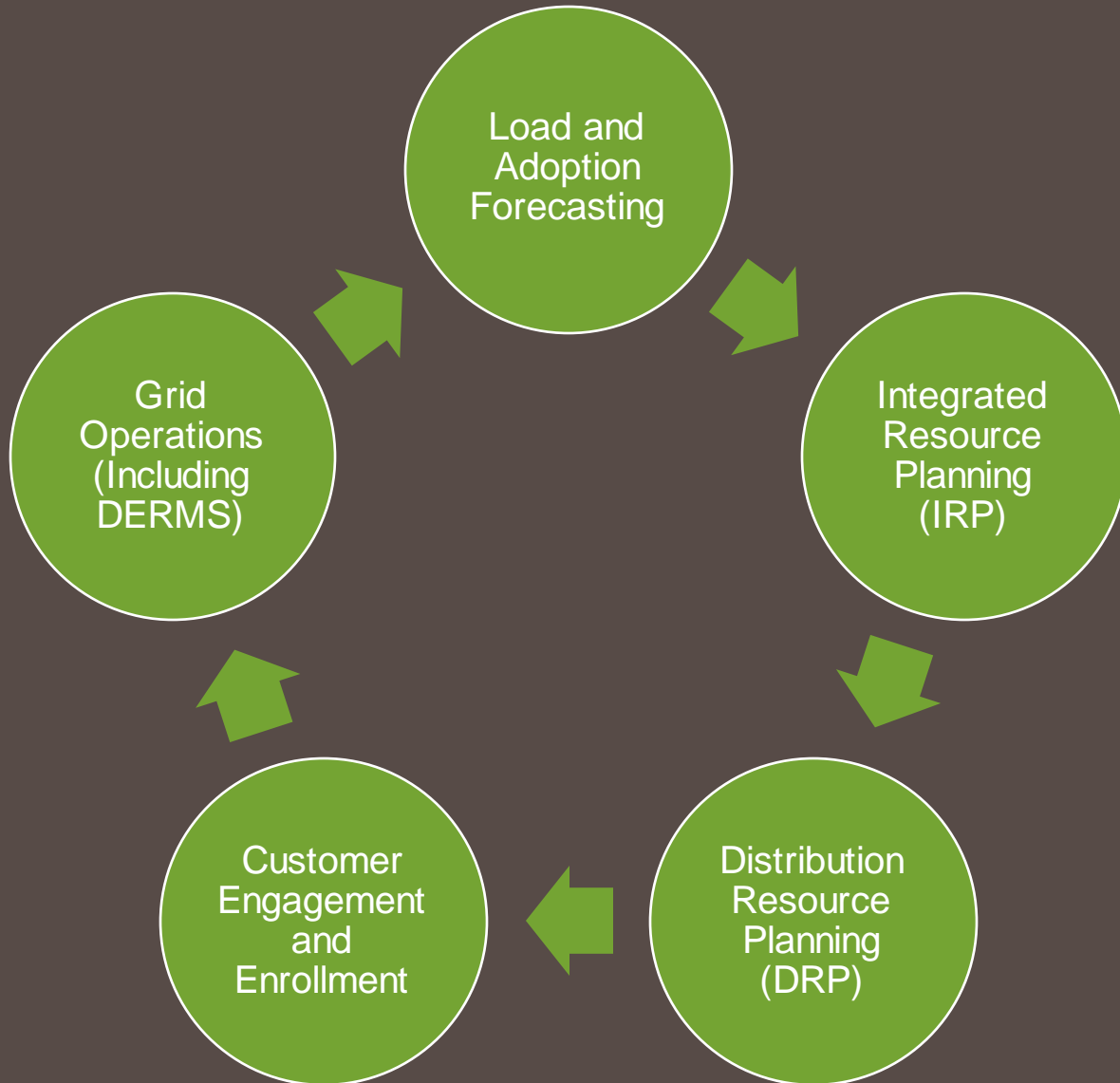
- Vehicle to Home, Building, or Grid (V2H, V2B, or V2G) adds the capability of discharging EV energy out the charger
 - V2G supplements EV charge management (traditional load flexibility or demand response) and introduces VPP capabilities
- Currently planning a V2G demonstration with Twin Rivers Unified School District
 - ~1 MW of discharge capable electric school buses
- Exploring additional Commercial and Residential Light Duty V2G project opportunities



Moving VPPs From Idea to Implementation



To Scale Up, Normal Processes Need to Adapt



Historical Consideration
Construction Time
Specific Purpose
Single Partner
SMUD Owned
20+ Year Equipment Life
Interconnection

VPP Differentiation
Customer Recruitment
Value Stacking
Aggregations
Customer Owned
5 – 20 Year Equipment Life
Interoperability

Questions?