

Exhibit to Agenda Item #2

Discuss the monitoring report for **Strategic Direction SD-10, Innovation.**

Board Policy Committee and Special SMUD Board of Directors Meeting
Wednesday, October 8, 2025, scheduled to begin at 6:00 p.m.

SMUD Headquarters Building, Auditorium

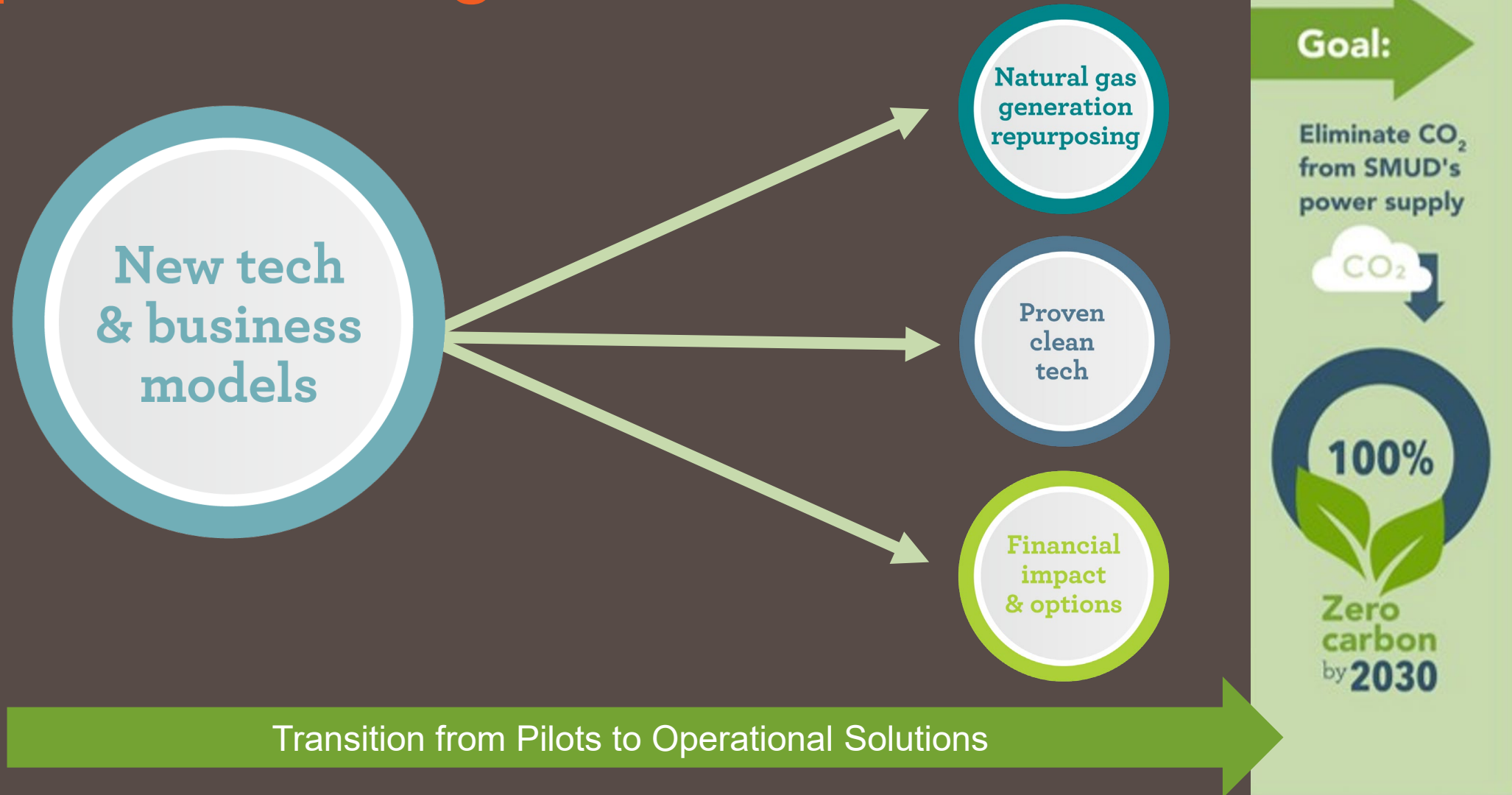
SD-10 Innovation

Delivering innovative solutions, products and services to our customers is a core value. To assure our long-term competitiveness, SMUD shall invest in research and development projects that support its core and key values and integrate emerging technologies and new business models into SMUD's customer offerings in a way that balances risk and opportunity and benefit our customers and community.

Aligning to the Zero Carbon Plan



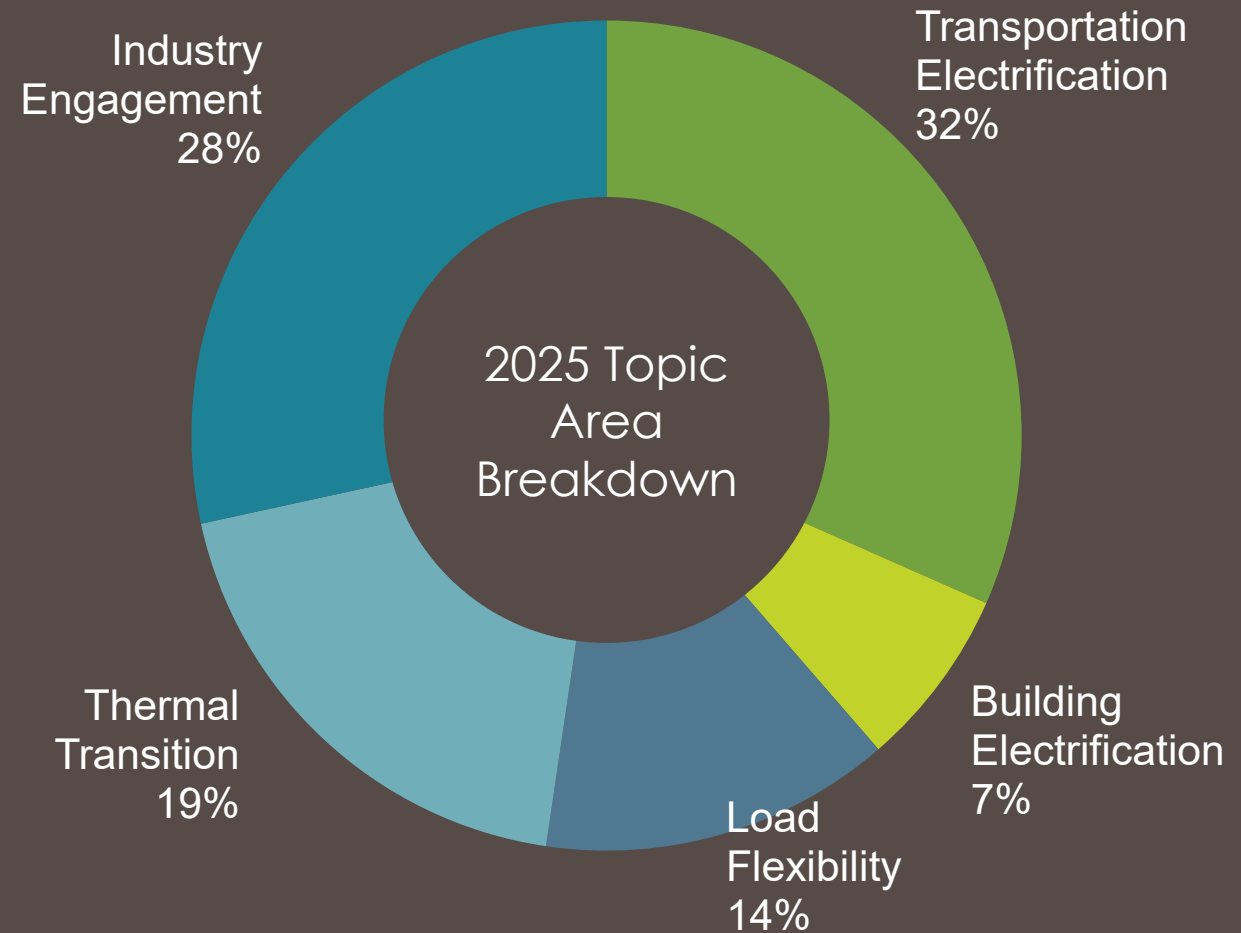
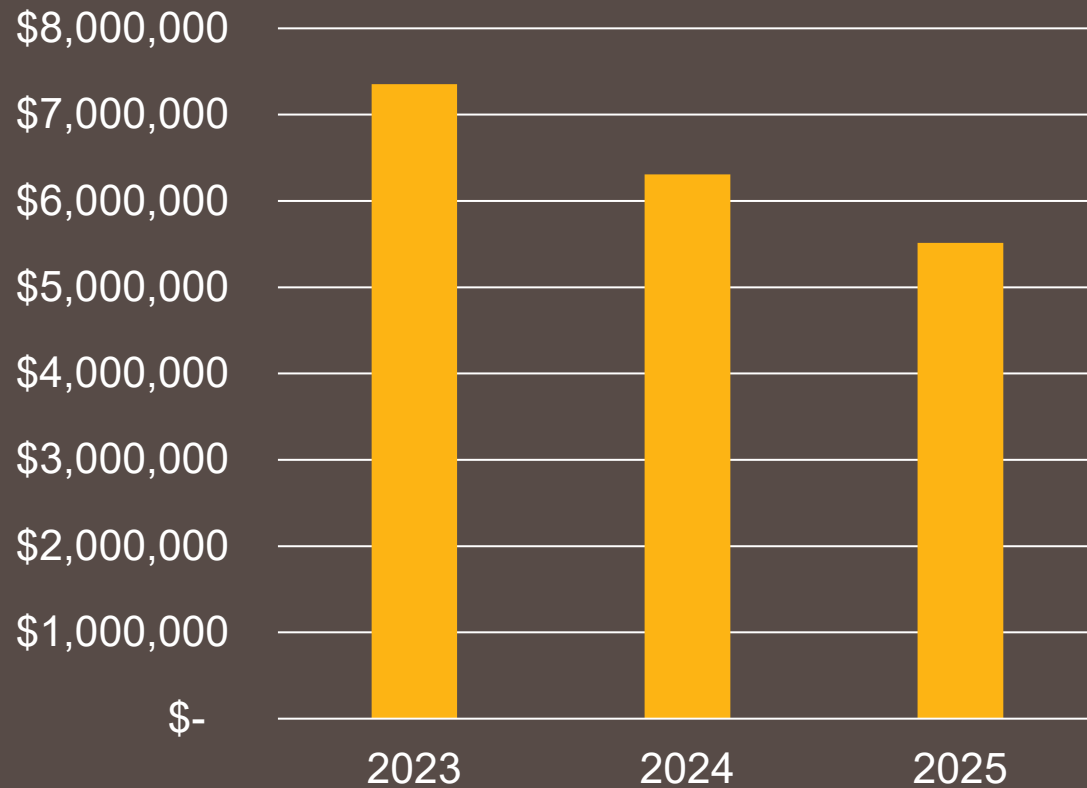
Operationalizing Innovation



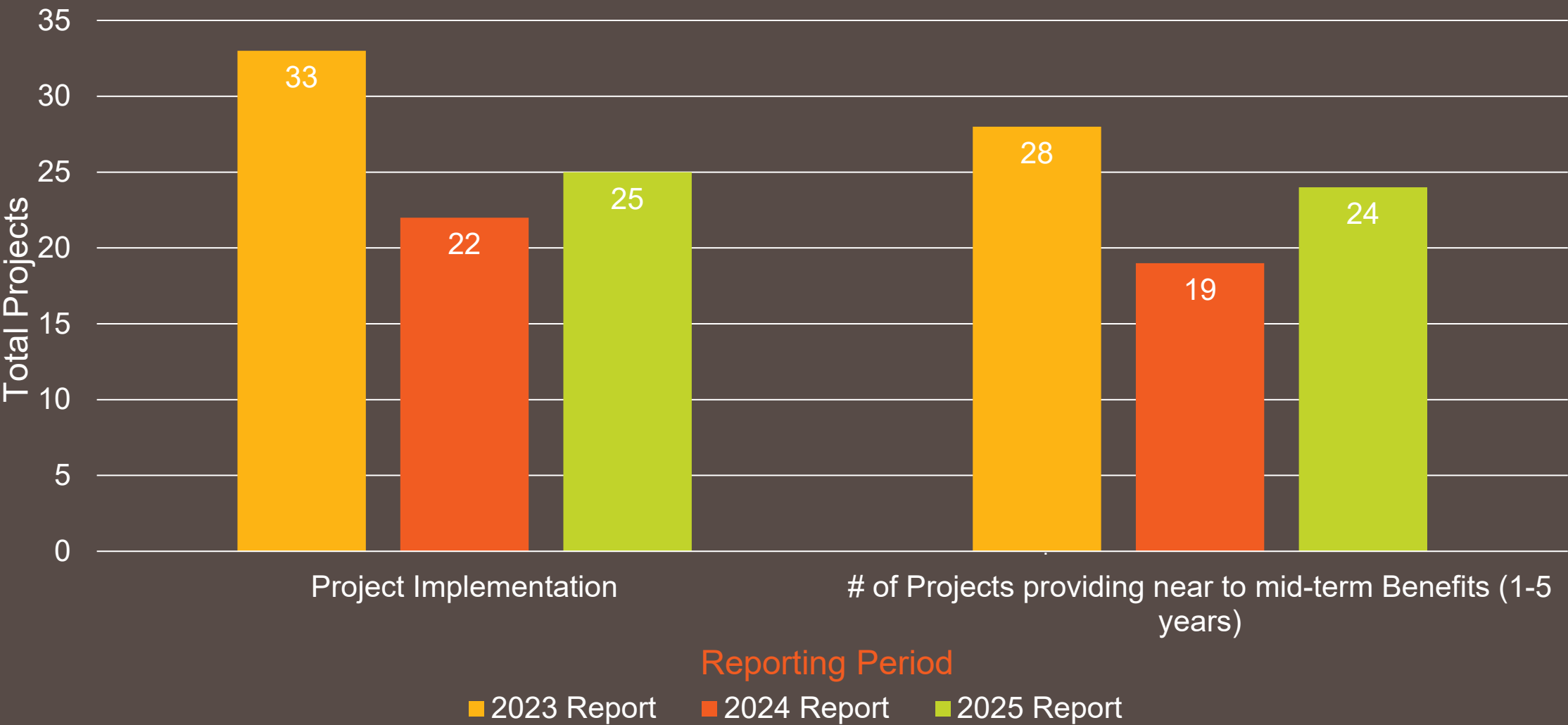
Portfolio Overview

3-Year Budget Trend

Research and Development Budget Trend



3-Year Project Trend



Project Highlights

EV Ecosystem

Theme: Access to EV charging

- Smart plug technology evaluation
- Co-Development of EV charging App with SEW in process
- Projects underway to install ~500 level 2 charging handles at multi-family dwellings
- Deploying 15 Fast Chargers at Sac State, the Sacramento Valley Amtrak station, and the airport (SMF)



Theme: Vehicle to Grid Solutions

- Residential EV managed charging pilot
- Light duty vehicle to grid charging demonstration
- Completed technology support and analysis for Twin Rivers V2G bus pilot
- Demand response analysis for school bus fleet opportunity (On-going)
- Planning for expansion of school bus electrification projects



Distributed Energy Resources

Theme: DER Operation and Control

- Implementation Complete for Phase 2 and Phase 3 of the Distributed Energy Resource Management System for managing localized grid support and enhanced DER operations
- Planning and design for multi-family dwelling virtual power plant project



Theme: DER Integration

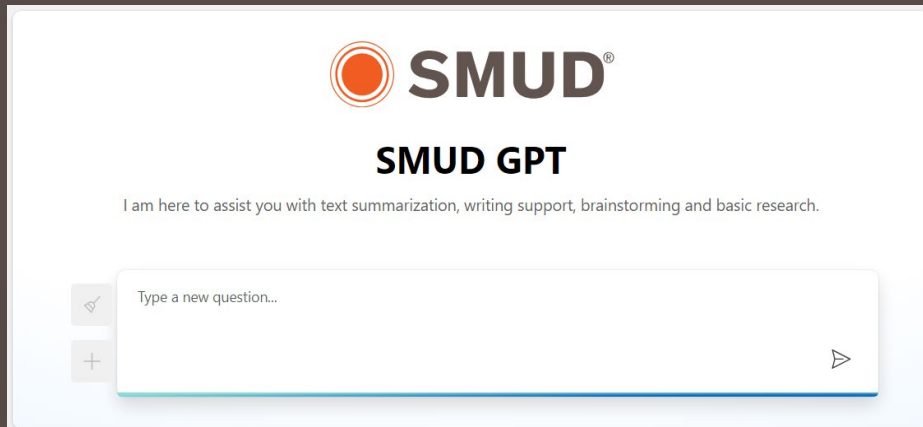
- Launched smart panel evaluation pilot targeting up to 80 homes
- Planning and pilot implementation of technology evaluation process to vet 3rd party solutions such as meter collars



AI at SMUD

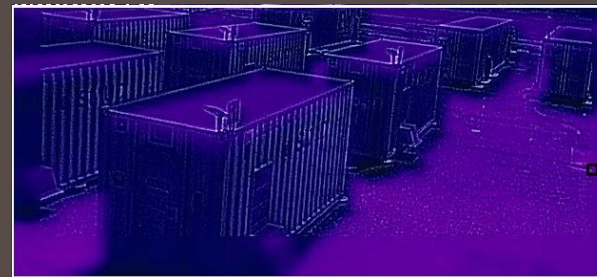
Theme: AI and Machine Learning

- Piloted ChatGPT for staff to leverage the benefits of large language models and generative AI while keeping data local to SMUD
- Developed machine learning model to estimate potential outages for storms, leveraging weather forecast info



Theme: Robotics

- Visual and thermal battery and solar monitoring pilot. Proactive approach to safely monitor batteries and solar arrays.
- Robotic inspection pilot. Evaluation of robots to support inspection processes.



Grid Innovation

Theme: Hydrogen

Hydrogen Blending Research

- Collaborating on \$12.45M DOE HyBlend Grant
 - Pipeline impact study
 - Pipeline upgrade analysis
 - Opportunity assessment

Theme: Transmission Line Technology

- Dynamic line ratings pilot: Data analysis and opportunity assessment
- Planning for evaluation of advanced conductors

Theme: Carbon Farming & Ecosystem Services

- Four-year study aiming to restore California prairie under PV panels at Rancho Seco II (2021 – 2025)
- Emphasize low-maintenance pollinator methods on an expanded footprint
- Goal to achieve Bee-Better Electric certification



Utility Scale Energy Storage

Theme: Grid Integration

- 4 MW Lithium battery project at Hedge
 - Experience supports grid scale battery power purchase agreements
 - Establishing best practice safety and response procedures
 - Standardized operations and control testing
 - Planning black start and inverter-based resource testing



Theme: Long Duration Energy Storage

- ESS Flow Battery Pilot Conclusion
 - ESS undergoing organizational restructuring
 - Focus shifted to next gen product
- Decision to conclude pilot and monitor next generation technology
 - Consideration in future Integrated Resource Planning



Conclusion

Request the Board accept the
SD-10 Monitoring Report.