

# Microgrids and Energy Storage for Emergency Grid Resilience (Session 4)

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Project Manager  
Renewable Energy

BUILDING A WORLD OF DIFFERENCE®



**BLACK & VEATCH**



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# About Black & Veatch

- Since 1915, B&V has delivered reliable, innovative infrastructure solutions that have made life possible and prepared us for tomorrow.
- Over the last 100 years, B&V has grown to become one of the world's most successful engineering, procurement, consulting and construction (EPC) companies.
- 10,400 employees across 65 offices nationwide, 24 offices located in Asia, Europe, Middle East and Africa and field assignments.
- Headquarters located in Overland Park, Kansas (South of Kansas City, Missouri)



## • Business Lines:

- Power Generation and Delivery
- Gas, Fuels & Chemicals
- Mining
- Telecommunications
- Water
- Renewable Energy
- Data Centers / Cybersecurity
- Federal

## • Execution Lines:

- B&V – Engineering & Procurement
- OCI – Non-Union
- BVJV – Joint Ventures
- BVCI - Union
- BVI - International



# ASPIRE

When we continue to  
**Think • Plan • Act**  
we will achieve Zero Injuries Today

## About Brent Pryor

### Project Manager – Renewable Energy



- Graduated with a Bachelor of Science 2007
  - BS - Construction Management
  - Minor - Safety
- Started with Black and Veatch 2007 to present
- Professional Registration and Accreditations
- Worked both international and domestically
- Coal, Gas, Combined Cycle, Simple Cycle, Telecommunications, Renewable, Regasification LNG and Solar
- EPC, Union, Joint Ventures, Client Representative, and Consulting

# Why Are We Here Today?

- President and CEO Steve Edwards announces B&V would implement execution strategies to reduce our carbon footprint.
- B&V is awarded a 120MWac with 187MWdc Battery Energy Storage System (BESS) Solar Power Station located North of El Paso Texas.
  - 1000 acres / 16-month execution plan
- No power connection for construction power and services to complete the execution of the solar project.



## • Challenges:

- Power Requirements
  - Trailers, Tools & Equipment
- Location of Build
- IT Services
- GPS Location Services
- Security

## • Solutions:

- Run a generator 24 hours a day 7 days a week.
  - Labor, fuel, equipment and maintenance.
- 24 Hour Onsite Security
- Battery Storage



## Innovative Solution:

- **Baseline Solution:**
  - Generator - \$30k
  - Fuel - \$79k
  - Security Company - \$192k**Total Cost: \$301,000**
- **Innovative Solution:**
  - Micro Grid System - \$43k
- **Iowa State University**
  - 4 Tesla Power Walls
  - 36 Panel System
  - 1 Storage Crate
  - 2 SMA Inverters
  - 1 Tesla Gateway
  - 2 75kVA Generator



Micro Grid System (Solar / Wind)



Powering



Charging Stations / Electric Vehicles



Powering



Office Complex

# How Far Can We Push It?

- Honda
- Built Robotics
- Club Car
- Ford
- Wind Turbine

Autonomous Excavator / Equipment



Autonomous ATV



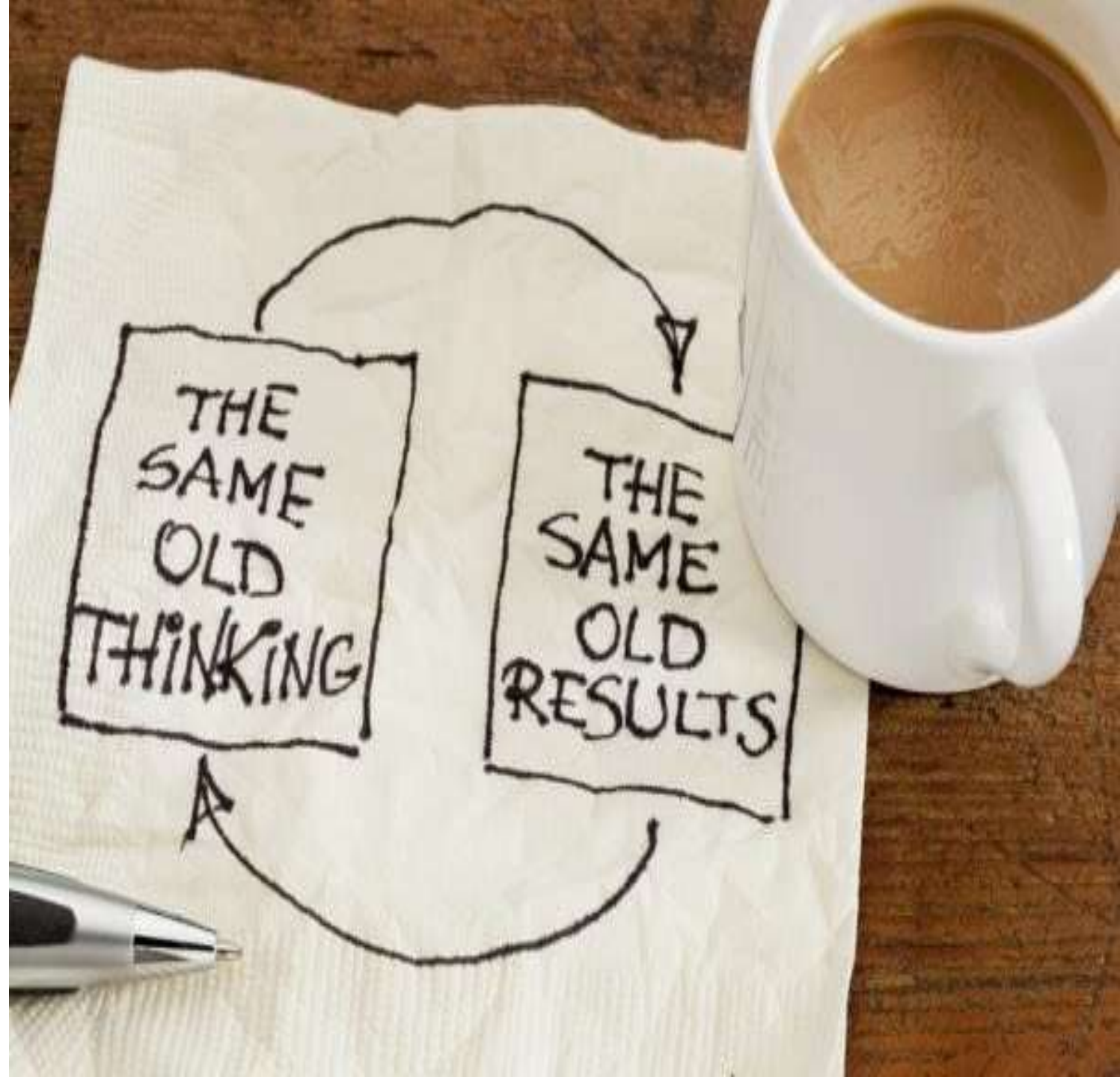
Autonomous Tool Caddy



- 7 Tesla Power Walls
- 104 Panel System
- 1 Storage Crate
- 6 SMA Inverters
- 1 Tesla Gateway
- 1 13.5 kVA Generator

# Path Forward

- Challenged the status quo
- Change is execution strategy
- Operational implementation
- Air drop style
- Versatility





# BUILDING A WORLD OF DIFFERENCE

BUILDING A WORLD OF DIFFERENCE®



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