

FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

November 2-3, 2016
Bellevue, WA

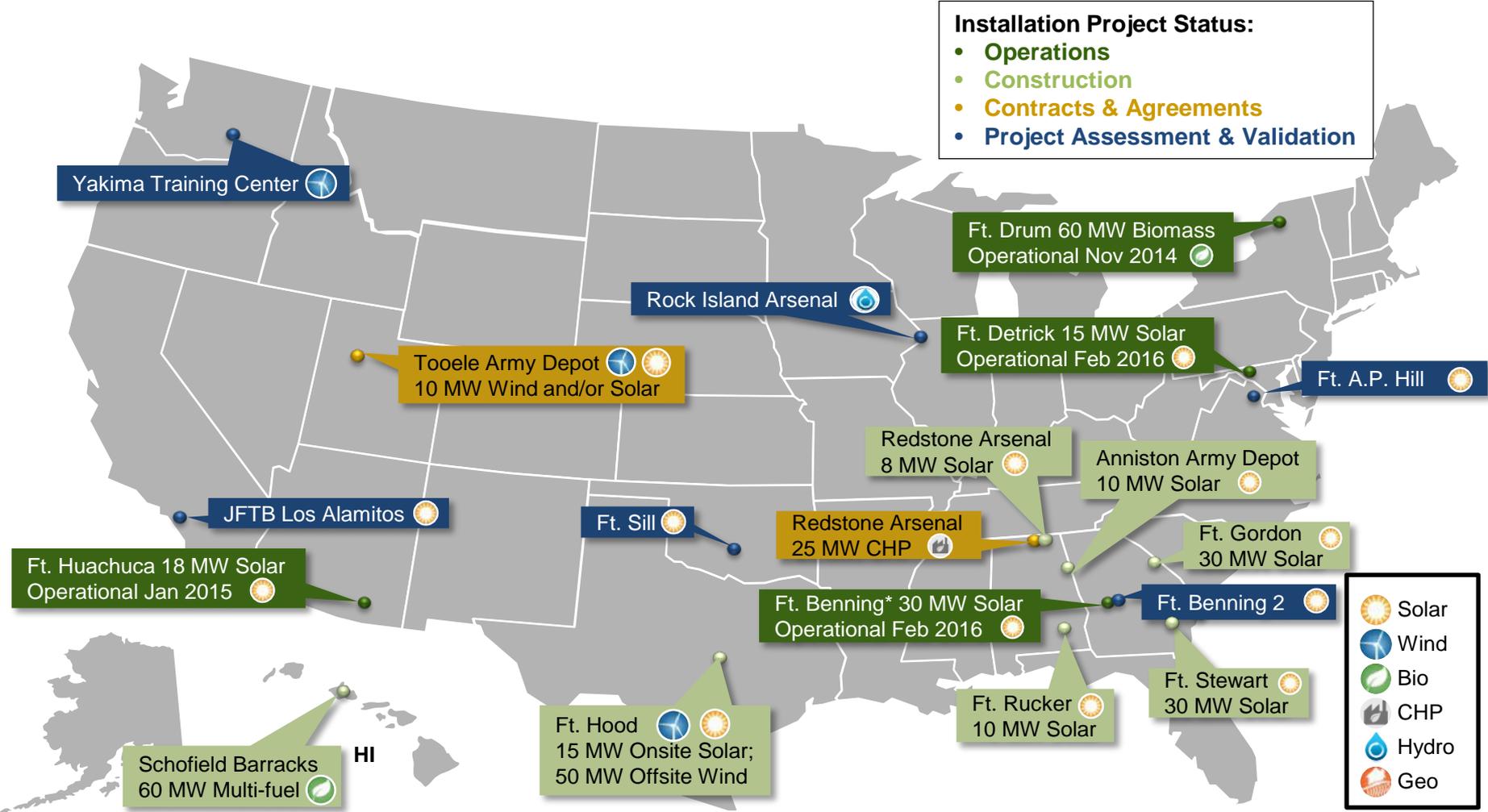
Strategies for Implementing Renewable Projects with Utilities

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Army Large-Scale Renewable Energy Projects



*Operational, awaiting final documents

Enterprise-Wide Portfolio

OEI develops projects through an enterprise approach to capitalize on the Army's diverse installations

- On or bordering Army land
- No taxpayer dollars
- Leverages private financing



Fort Benning, GA: 30 MW Solar Array; The project comprises 133,950 solar panels



Fort Hood, TX: 65 MW AC Hybrid Solar & Wind Projects; \$168 million in projected cost avoidance over the course of the contract

Army & Utility Collaboration

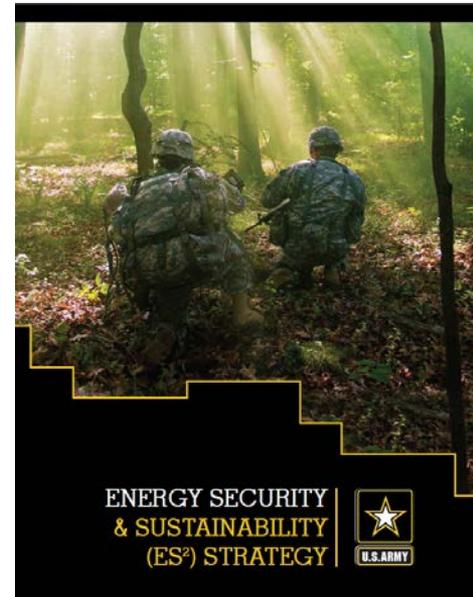
- Over 150MW So Far with Utilities
 - Rate based resources on Army land
 - Partners: TEP, GPC, APC, HECO
 - Leverages authorities through GSA Areawide and land outgrants
- Collaboration Opportunities
 - Share concepts that have worked and lessons learned
 - Develop new concepts, or relationships, to assist the federal government, utilities, and industry achieve clean energy goals
- FUPWG Feedback
 - What can we do better?
 - What other opportunities are available?
 - How might new utility business models help?



*Fort Huachuca, Arizona: 18 MW Solar Project;
Operational January 2015 with more than
57,000 solar panels*

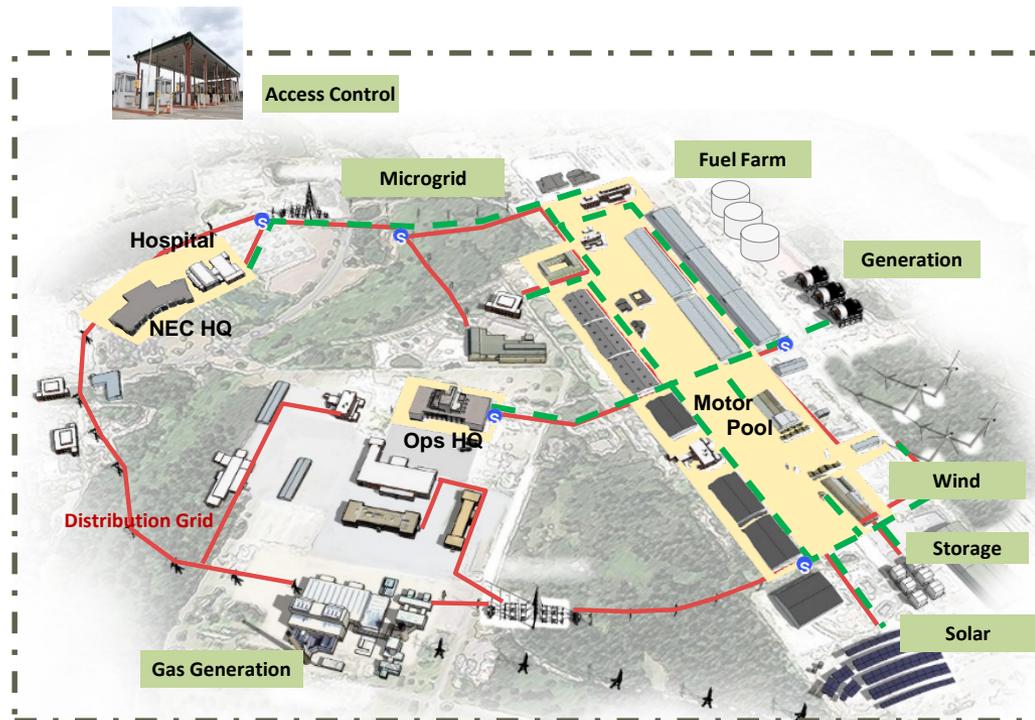
Complementary Army & Utility Needs

- Army Energy Security and Sustainability Needs
 - **Renewable Energy:**
1GW of RE for 25% RE by 2025
 - **Energy Resiliency:**
the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from service disruptions
- New Utility Business Models
 - New tariffs
 - Clean energy infrastructure
 - Resilient grids
 - Changing customer demands
 - Solar Impacts (DERS)
 - Internet of Everything



Pilot Proving Grounds

- Army can be a good partner for pilots
 - *Army land and security can be value add*
 - *Army hosts utility owned rate based energy resiliency assets*
 - *Army protects the assets for the community*
- Potential projects
 - *Renewables, smart grids, storage*
 - *Management of DERs at customer sites*
 - *Campus microgrids: industrial, office, residential*
 - *Agreements for mutual assistance for power restoration*
 - *Electric vehicles*



Utility Engagement Lessons Learned

- **Common Ground**
 - Utility stakeholders have demonstrated strong support for the military in their communities
 - New utility business models for clean energy and resilience complement the Army Energy Security and Sustainability Strategy
- **Communication**
 - We are similar organizations with a hierarchy for approvals, but use very different language
- **Process Awareness**
 - Utilities struggle with Army navigating Federal approvals and NEPA
 - Army struggles with utilities navigating the regulatory process
- **Economics**
 - Making projects ‘pencil out’ is rapidly changing
 - Economics of a utility tariff deal are complex
- **Uncertainty**
 - What we knew for sure 5 years ago may no longer be so

Any Questions?



Fort Benning, GA: 30 MW Solar Project; Operational February 2016