

ENERGISE Program Kickoff

DOE Award #: DE-EE0008002

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Keystone Solar Energy Future Project
PPL Electric Utilities

Topic
Area 1

October 11, 2017

Project Team

Name	Role	Main Responsibilities (High level tasks/sub-tasks)
Matt Green	Sponsor	Vision and strategic direction
Megan Toomey	PI	Program Management
Paul Toub/Ed Harakel	Technical Manager	Technical scope and execution
Josh Elmer	Project Manager	Project Management – controls, integrated schedule and budget
BRIDGE Energy Group	Subawardee	Cybersecurity
Drexel University	Subawardee	DERMS Simulation
EPRI	Subcontractor	Technical Standards and Industry Collaboration
SEPA	Subcontractor	Change Management and Industry Collaboration
GE Grid Solutions	Subcontractor	DERMS Contractor
Landis & Gyr	Subcontractor	Communications Provider
Forecast Provider (tbd)	Subcontractor	Load and Generation Forecast Provider

PROJECT PARTNERS



PPL's Keystone Solar Energy Future Project (KSFP)

Leverage Solar and other Distributed Energy Resources (DER) as assets to enhance the reliability of PPL's distribution grid as penetration levels continue to rise.

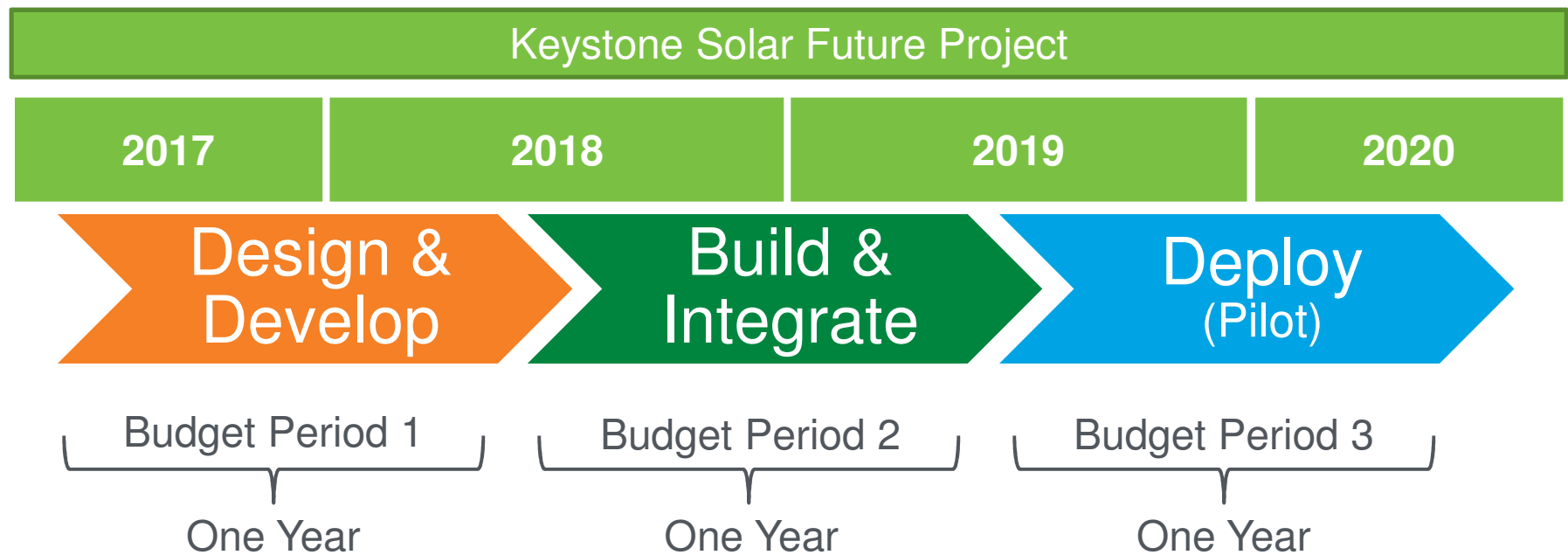
- ❖ **Build on our foundational technologies**
 - *Distribution Management System (DMS)*
 - *Distributed Automation*
 - *AMI RF Network*

- ❖ **Create a Distributed Energy Resource Management System (DERMS) platform (expansion of DMS)**
 - *Proof of Concept through Pilot in Lancaster Region*

- ❖ **Create a automated process for DER applications**
 - *Reducing the time for approval*

Main Project Tasks/Subtasks

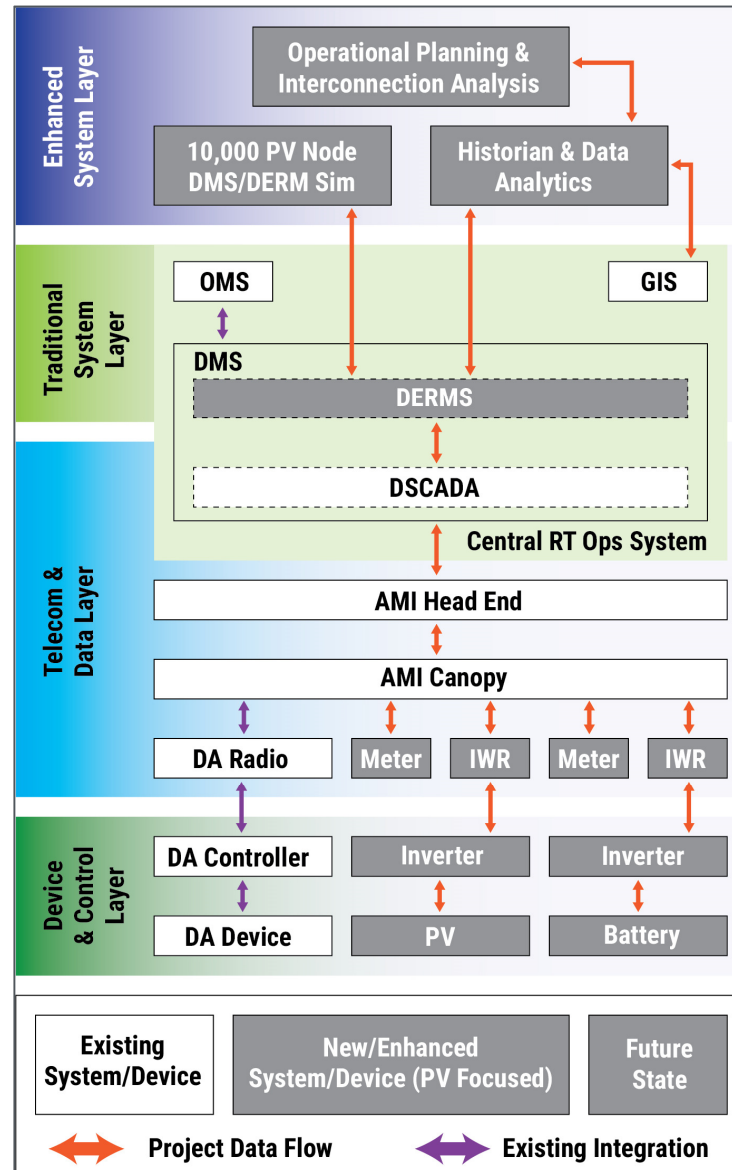
❖ Project Start: October 1, 2017



- ❖ Highly accurate Distribution System State Estimator (DSSE; bus load allocation expansion)
- ❖ Accurate load and generation forecast, at customer level
- ❖ DMS application enhancements
 - Fault Location, Isolation, System Restoration (FLISR), *fully implemented*
 - Volt/Var Optimization (VVO), *currently piloting*
 - Advanced Feeder Reconfiguration (AFR), *future*
 - DMS Study Tool, *used for Outage Planning*

- ❖ Solutions and algorithms in the operational software suite (i.e. DMS, DERMS, load and generation forecasting etc.) that allow for the control and operation of an electrical system with high penetration of DER
 - I.e. planning tools, advanced applications (i.e. FLISR), and enhanced displays for electrical attributes
- ❖ Web Portal for customer DER enrollment
- ❖ Workforce trained to operate and maintain an distribution system with high penetration of DER
 - I.e. training materials for both electrical workers and system operators

Project Architecture



- ❖ High level plan to be submitted within first 90 days
- ❖ Cybersecurity
 - Budget Year 1: Cybersecurity Strategy and Planning
 - Initial plan to include, but not be limited to:
 - Network and security topology
 - Data types/classifications/flows and data-handling requirements
 - Applications and infrastructure system interfaces
 - Regulatory and compliance requirements
 - Access roles (including 3rd parties if applicable) and privileges
 - Remote access and protection requirements
 - Budget Year 2: Execute Cybersecurity Strategy and Plan
- ❖ Interoperability
 - Seeking to leverage industry standards for components and interfaces so parts can be exchanged with minimal to no adjustments

- ❖ Customer Enrollment
 - *500 Customer totaling 20MW, in Lancaster region of service territory*
- ❖ Forecasting engine
 - *Accuracy at customer level*
- ❖ DMS-AMI Interface
 - *OT v. IT - Gateway vs. Interface, IEEE 2030.5, CIM Compliant*
- ❖ Ensuring Scalability for Enterprise Solution

Questions?