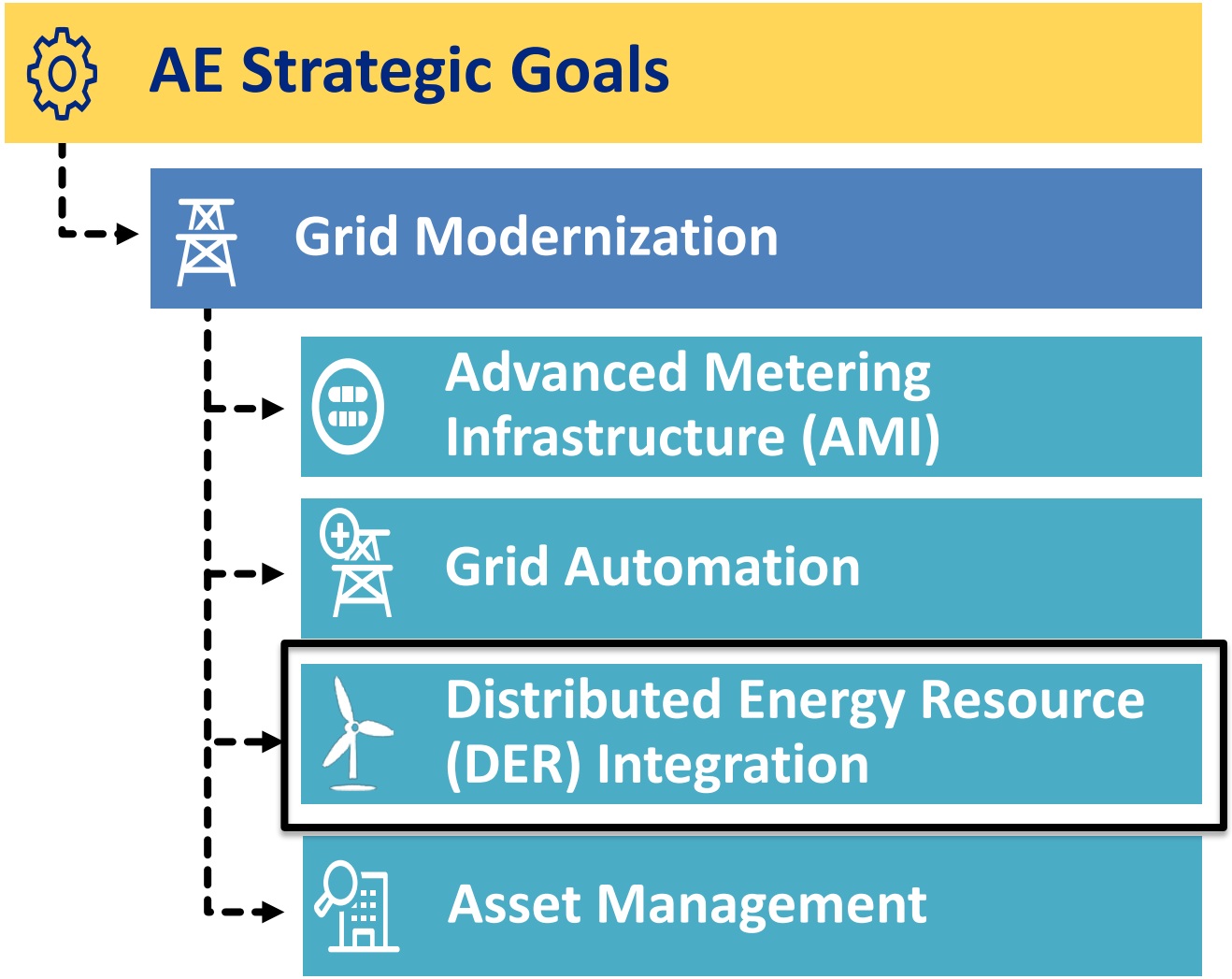
Austin SHINES Update

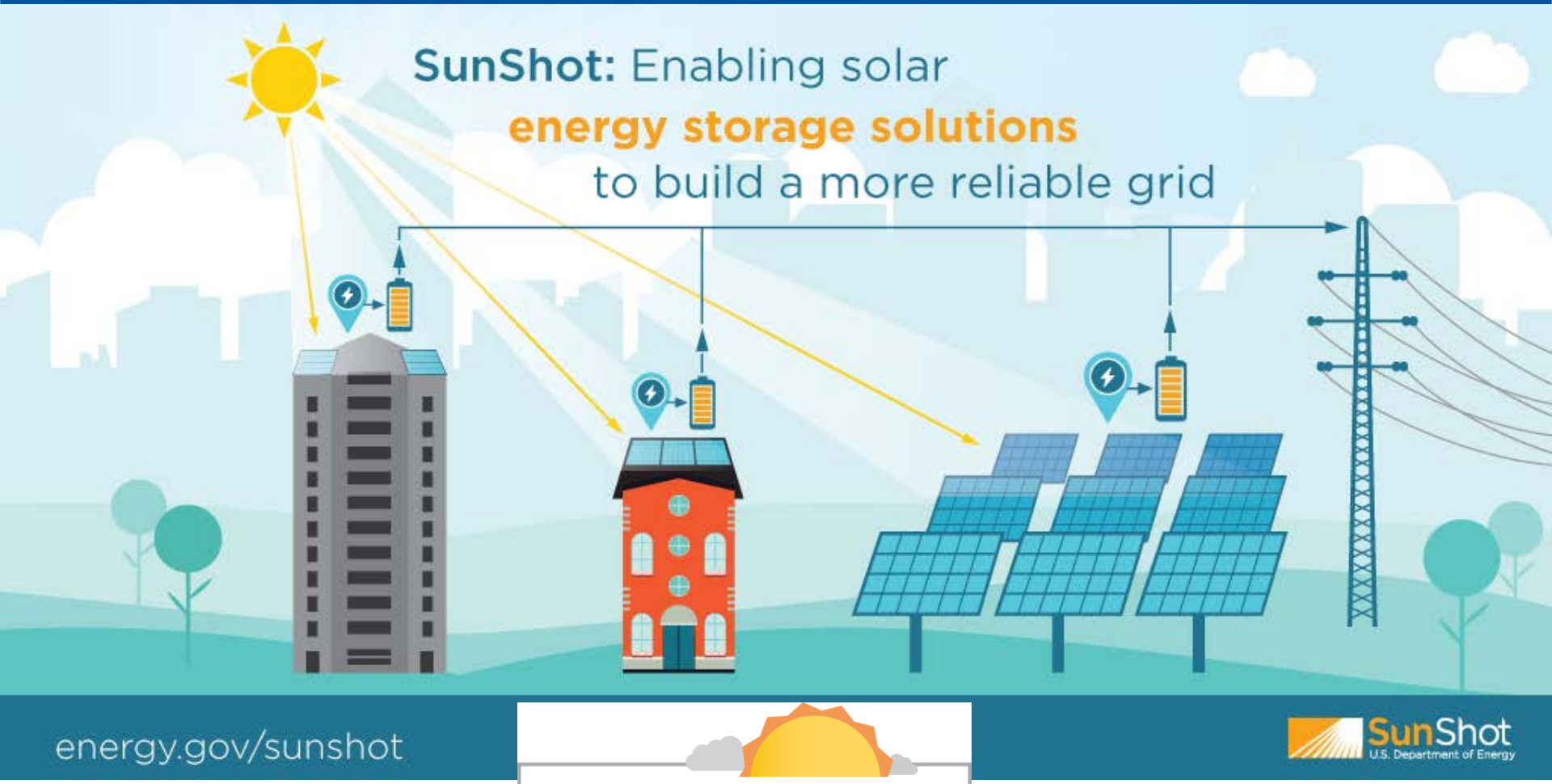
Austin Energy
Utility Oversight
Committee Meeting
May 23, 2018

Dan Smith, P.E. – Vice President
Electric Service Delivery

Grid Modernization Strategy



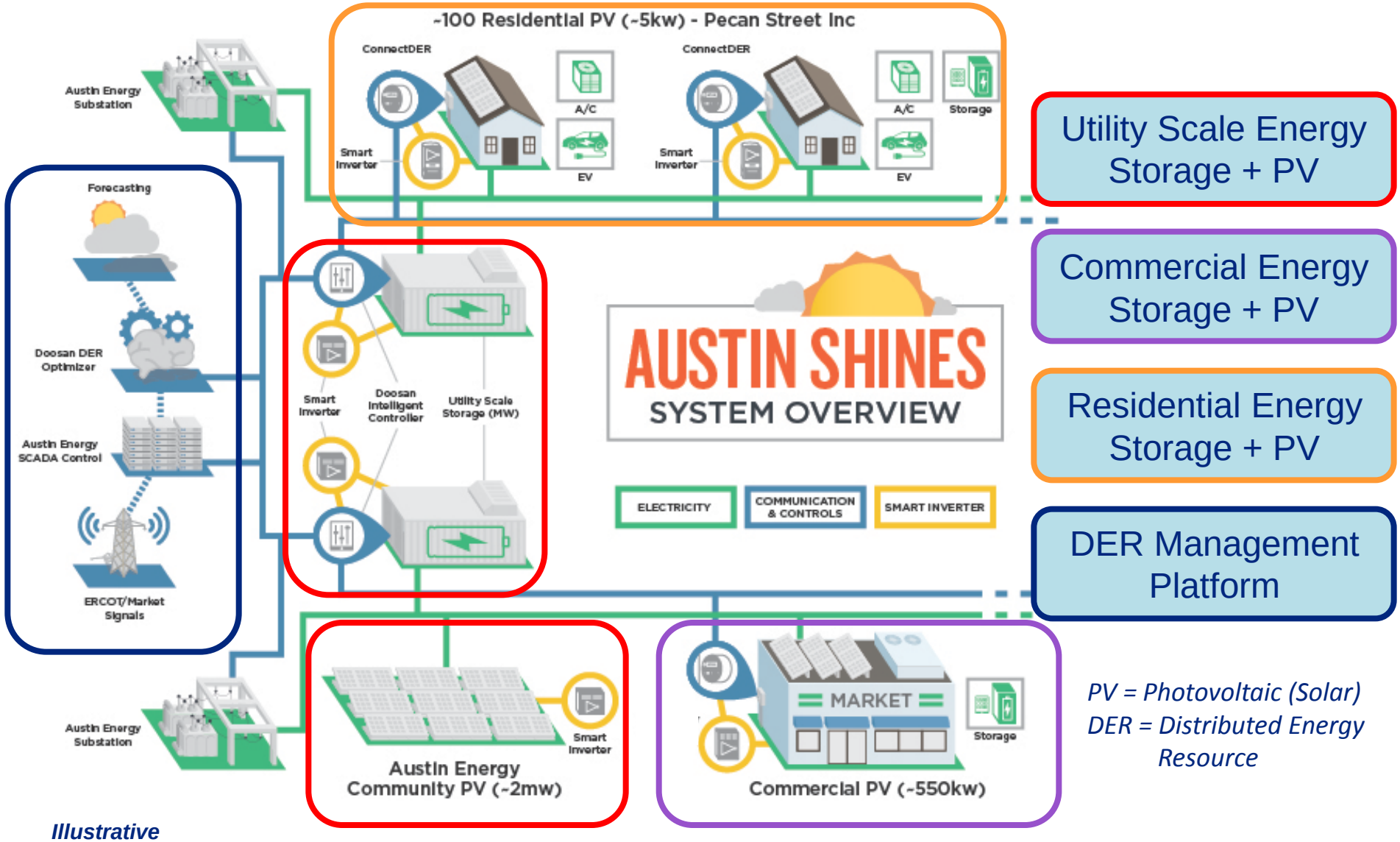
DOE SunShot & SHINES Vision



AUSTIN SHINES

Sustainable and **H**olistic **IN**tegration of **E**nergy Storage and **S**olar PV

Austin SHINES Concept



Utility Scale Energy Storage + PV

Commercial Energy Storage + PV

Residential Energy Storage + PV

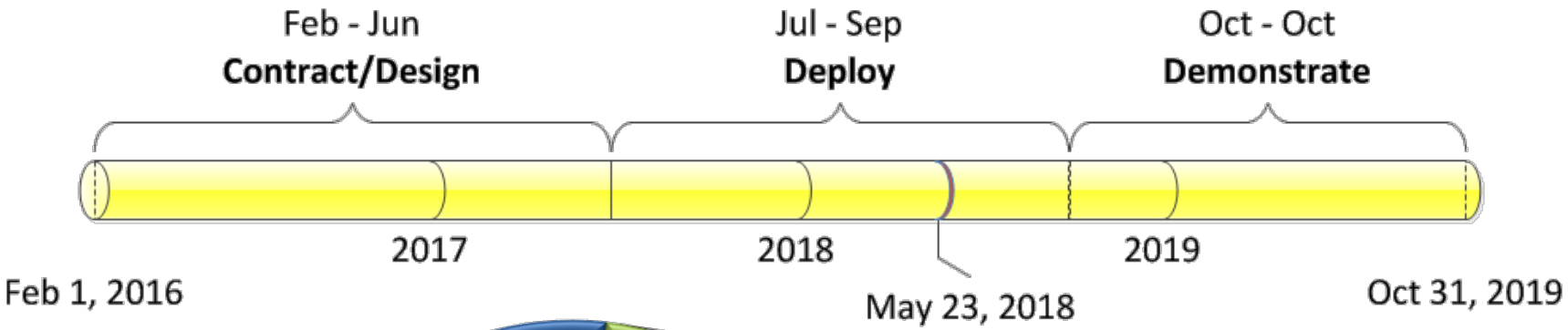
DER Management Platform

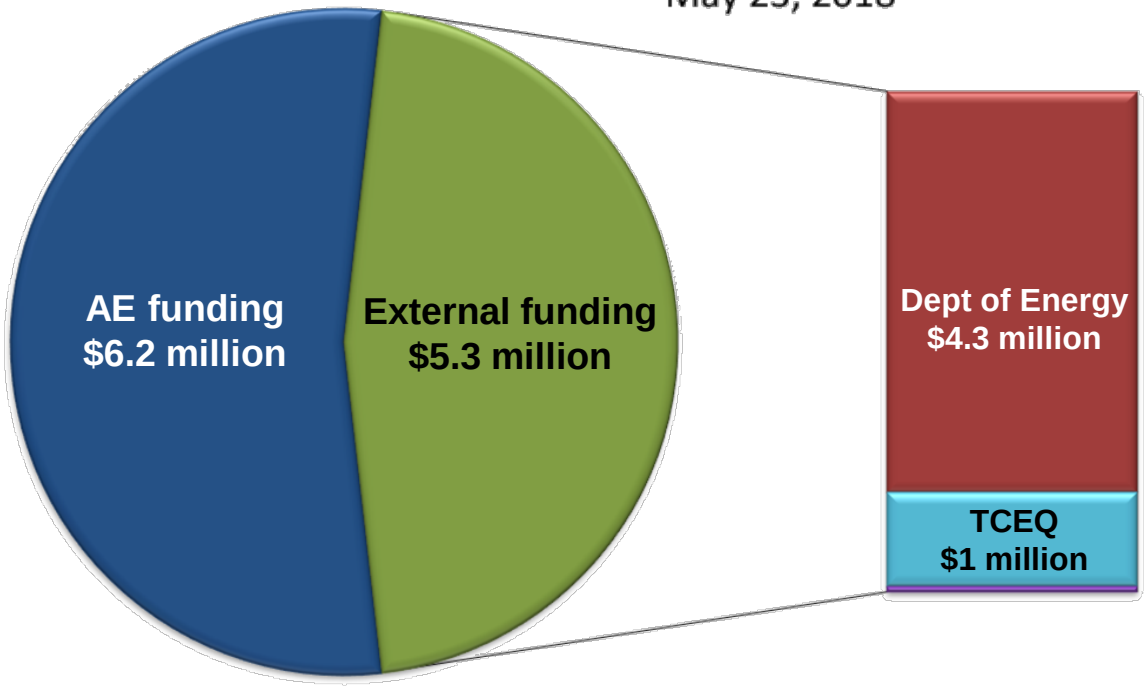
PV = Photovoltaic (Solar)
DER = Distributed Energy Resource

Illustrative

Austin SHINES Partnerships

Project Timeline and Funding





AE is leveraging over $5.3 million in external funding to accomplish an innovative and complex project

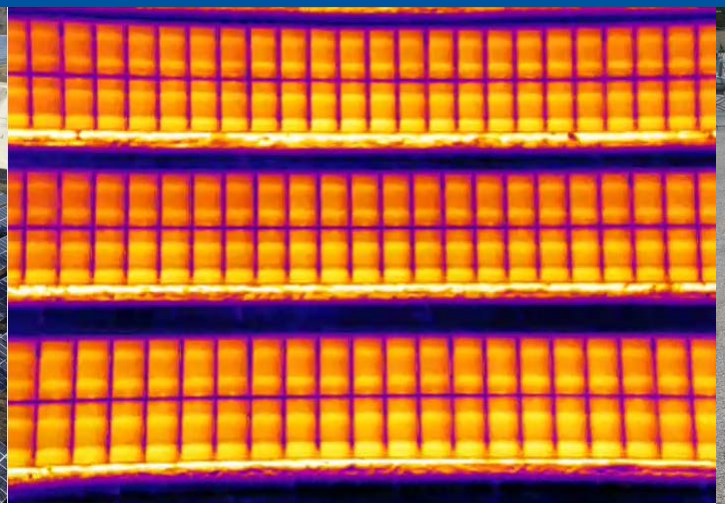
Kingsbery Energy Storage Site

Current Status

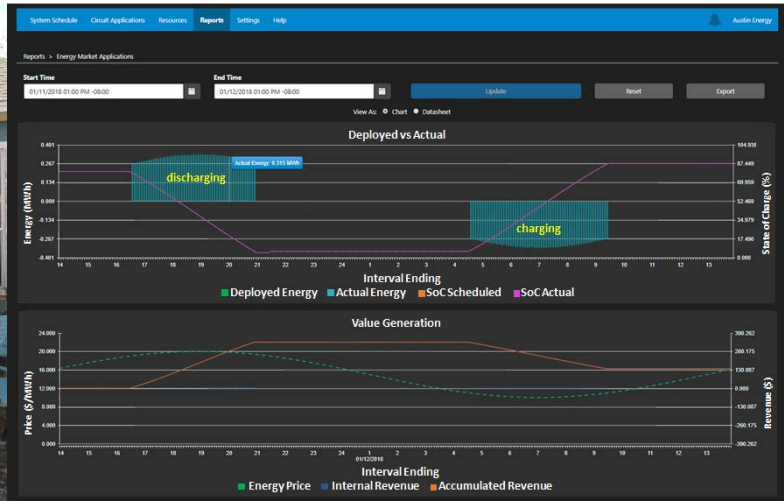
Kingsbery ESS: 1.5 MW / 3 MWh

Lithium Ion

Current Status


Installed and Energized La Loma Community Solar and Kingsbery Battery

Installed Commercial and Residential Batteries and Software Development in Progress

Commercial & Residential Installations

Figure 1: 72kW/144kWh commercial battery

Figure 2: Electrical installation work

Figure 3: 1kW battery packs

Figure 4: External interconnection equipment for solar and storage

Figure 5: 5kW/10kWh residential battery

Figure 6: Solar smart inverter

Civil Site Prep for Mueller Battery

Figure 1: Crews working on rebar structures for battery foundations

Figure 2: Aerial view of the civil work for Mueller Battery

Figure 3: Prep work for interconnection foundations

Figure 4: Battery foundation

Figure 5: Crews working on rebar structures for battery foundations

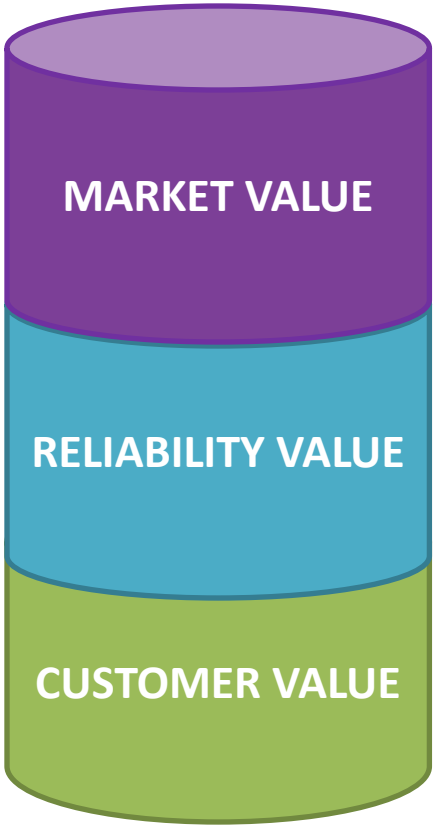
Figure 6: Battery foundations ready

Mueller Energy Storage Site

Educational Signage & Viewing area
Security Wall that Meets Mueller Neighborhood Design Guidelines

Distributed Energy Resource Value Stacking

“Stacking the Value”



	Application	Benefit
MARKET	Utility Peak Load Reduction	Lower Transmission Cost Of Service obligation
MARKET	Day-Ahead Energy Arbitrage	Price differences create economic value
MARKET	Real-Time Price Dispatch	Economic value from real-time price spikes
RELIABILITY	Voltage Support	Reduce losses and increase PV generation
RELIABILITY	Distribution Congestion Management	Increase local grid reliability
CUST	Demand Charge Reduction	Customer and system benefit

Awards and Recognition

In December 2017, SmartCitiesDIVE named Austin Energy the

2017 Utility of the Year

including references to Austin SHINES

Mayor Adler Retweeted

Austin Energy @austinenergy · 4 Dec 2017

JUST IN: @austinenergy has been named Utility of the Year by @smartcitiesdive magazine bit.ly/2iju8WT

3 14 39

https://www.smartcitiesdive.com/news/utility-of-the-year-austin-energy/511127/

Awards and Recognition

In April 2018, GreenTech Media awarded Austin SHINES

2018 Grid Edge Innovation Award

GRID EDGE

Meet the Top Companies Changing the Face of the Electric Grid in 2018

The 2018 Grid Edge Innovation Awards: Our top picks for the projects, companies and partnerships breaking new ground on the grid edge.

Photo Credit: New York Power Authority

https://www.greentechmedia.com/articles/read/the-2018-grid-edge-innovation-awards#gs.=dyK1Ao

Integration of energy storage and solar PV: Austin Energy, Doosan GridTech and SHINES

Back in 2016, Austin Energy, the municipal utility serving Texas' capital city, landed a $3.4 million grant from DOE's Sustainable and Holistic Integration of Energy Storage and Solar PV (SHINES) program, to stand up a platform that could manage solar PV, battery, demand response and other DERs across its distribution system. There are many different names for this kind of capability — virtual power plant and distributed energy resource management systems are two common ones — but few examples of projects at scale.

The end goal was solar-storage costs of about 14 cents per kilowatt-hour — a complicated metric, meant to represent a "credible pathway to a competitive levelized cost of energy for solar energy when augmented by storage and other DER management and optimization tools," as GTM Research puts it.

Austin Energy's long list of SHINES project partners have put together a smorgasbord of DERs, including two utility-scale energy storage systems, multiple customer-sited energy storage systems, rooftop solar systems at residential and commercial properties, smart inverters, forecasting tools, market signals, and advanced communications.

To optimize this mix of assets, Austin Energy has turned to the DER optimizer from Doosan Gridtech, the platform acquired by the South Korean industrial giant when it bought Seattle-based 1Energy in 2016. 1Energy has deployed a set of battery-grid systems across the Pacific Northwest using a software platform built to standards from the Modular Energy Storage Architecture (MESA) Standards Alliance.

Austin Energy is testing multiple communications pathways to see how they perform for different applications. It has until April 2019 to complete the project and report on results. The stakes for Austin Energy are high. Austin has set a goal of 65 percent renewable energy generation by 2027, along with local solar and energy storage goals. Austin Energy is working toward 10 megawatts of distributed storage and 55 percent renewable energy by 2025.

Awards and Recognition

Smart Cities Connect awarded Austin SHINES a **2018 Smart 50 Award** in the field of energy (Awardee List)

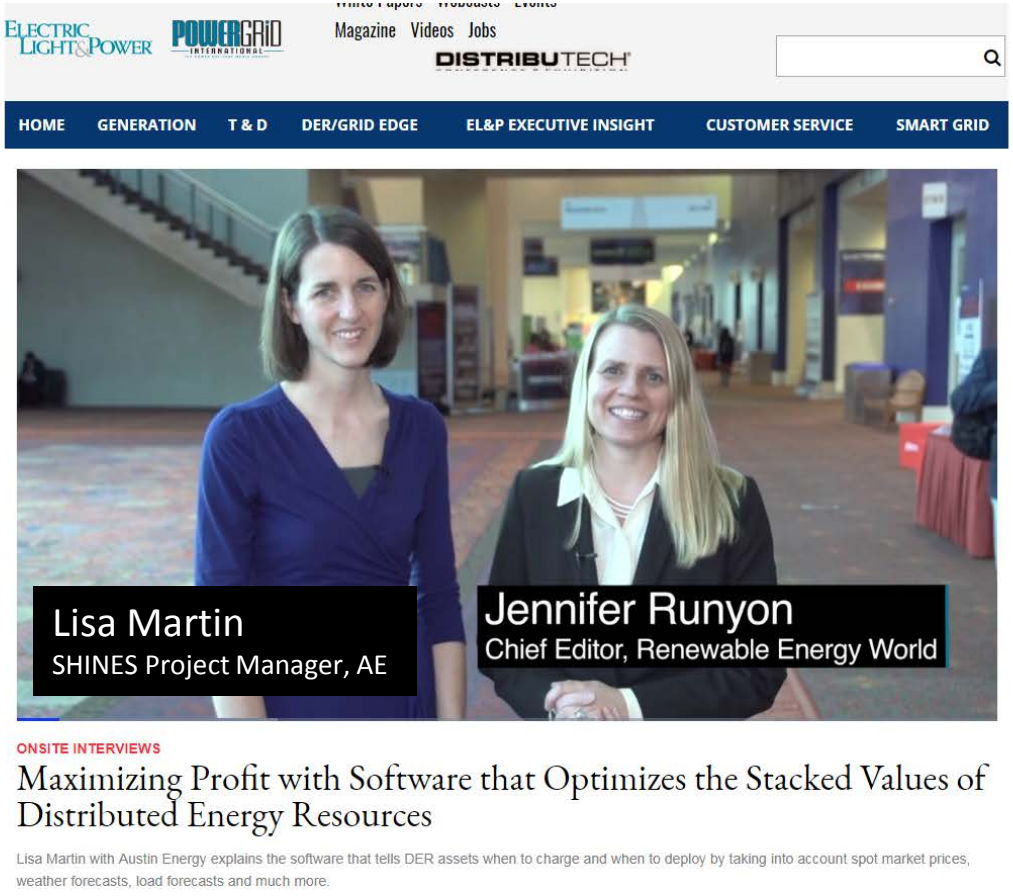
Austin Energy takes home two Smart Cities awards for innovation

Thursday, April 12, 2018

Cameron Freberg accepted two awards on behalf of Austin Energy at the Smart Cities Conference and Expo.

Awards and Recognition

DistribuTech Editorial Spotlight highlighting DERO's ability to optimize stacked value of DER (video interview)



Awards and Recognition

Local NPR piece on pairing La Loma Community Solar with Kingsbery Energy Storage (KUT radio; Austin Monitor)

KUT 90.5 Austin's NPR Station

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Community Solar Farm And Batteries Test Power Of Austin's Electric Grid

By MOSE BUCHELE • APR 11, 2018

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La Loma Community Solar Farm in East Austin holds enough solar panels to power 440 households.

GABRIEL C. PÉREZ / KUT

QUESTIONS?

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