DDSR Aggregation Tariff and Residential Energy Storage Pilot

Tom Hines

Customer to Grid Solutions

Background on Decision No. 77855

- APS to file a tariff that permits and provides compensation for the aggregation of distributed energy storage and Distributed Demand-Side Resources ('DDSR')

- Calls for the valuation of operating characteristics and various DDSR technologies (*right*)

- Provide a process to incorporate stakeholder feedback before submitting the proposed tariff

Value Streams

- **Capacity**
- **Demand Reduction**
- **Load Shifting**
- **Locational Value**
- **Voltage Support**
- **Ancillary and Grid Services**

Technologies

- **Connected Smart Thermostats**
- **Water Heating Controls**
- **Pool Pump Controls**
- **Managed EV Charging**
- **Electric Batteries**
- **Building Energy Management System**

DDSR Tariff Work to Date

- Coordinated team with strong understanding of APS DSM programs (Guidehouse) and IRP valuation process (E3)

    E3: stakeholders, tariff design, valuation

    GH: tariff assessment, impact analysis

- Conducted a review of ~50 DDSR tariffs and proceedings across 12 states and 19 utilities

- Developed a workplan and framework to guide research, analysis and stakeholder engagement

- Held February 19, March 8 and 29 meetings attended by 30+ stakeholders

APS

E3   Guidehouse
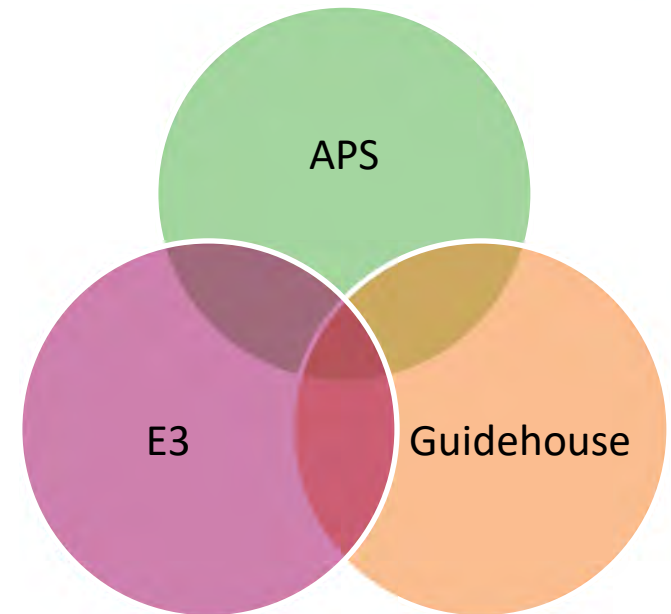
Strategy Wheel – Defining Goals & Desired Outcomes

Clean – Build a clean energy future with the goal to deliver 100% clean, carbon-free energy to customers by 2050

Affordable – Help customers save on their energy bills; make cost-effective investments in DDSR technologies

Reliable – Ensure DDSRs respond as expected when called and DDSR impacts can be measured

Customer Focused – Make sure DDSRs are easy to install and use. Provide as many customers as possible with opportunities to adopt/use DDSRs

Empowering Customers to Save – Help customers save on their energy bills through modern rate architecture, and sending meaningful and actionable cost-based price signals

Enabling DDSRs – Support unique tariff designs that fairly and completely compensate for the value of DDSRs

Creating Innovative Partnerships – Focus on expanding partnerships to multiple market players to help APS and its customers achieve their goals

But do we have the right goals & desired outcomes?

DDSR Tariff Design

Affordable | Clean | Customer Focused | Reliable

Empowering Customers to Save

Enabling DDSRs

Creating Innovative Partnerships
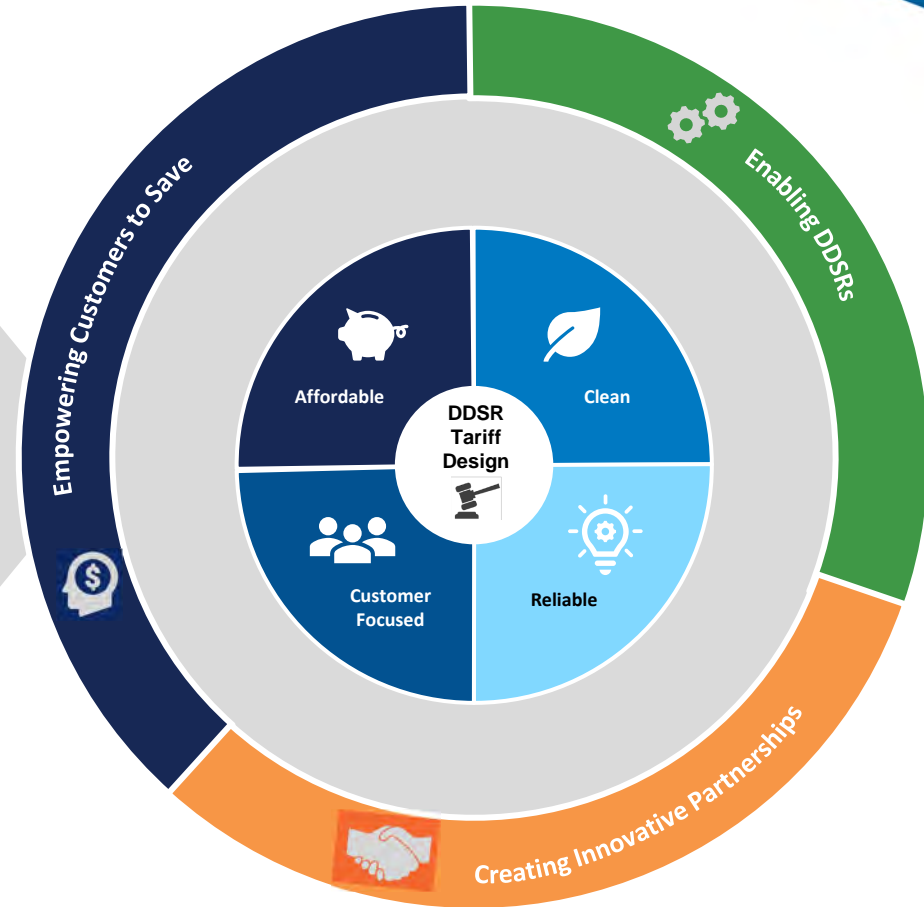
Recommended DDSR Design Concepts

Expand Current Successful Efforts

- Already good aggregation results happening in Cool Rewards smart thermostat DR and Peak Solutions C&I DR

Add Performance Payment Option

- Propose adding a performance payment element to the Residential Energy Storage Pilot
- Offer additional upfront incentive for 3-year commitment to share up to 80% capacity for 100 events/yr.
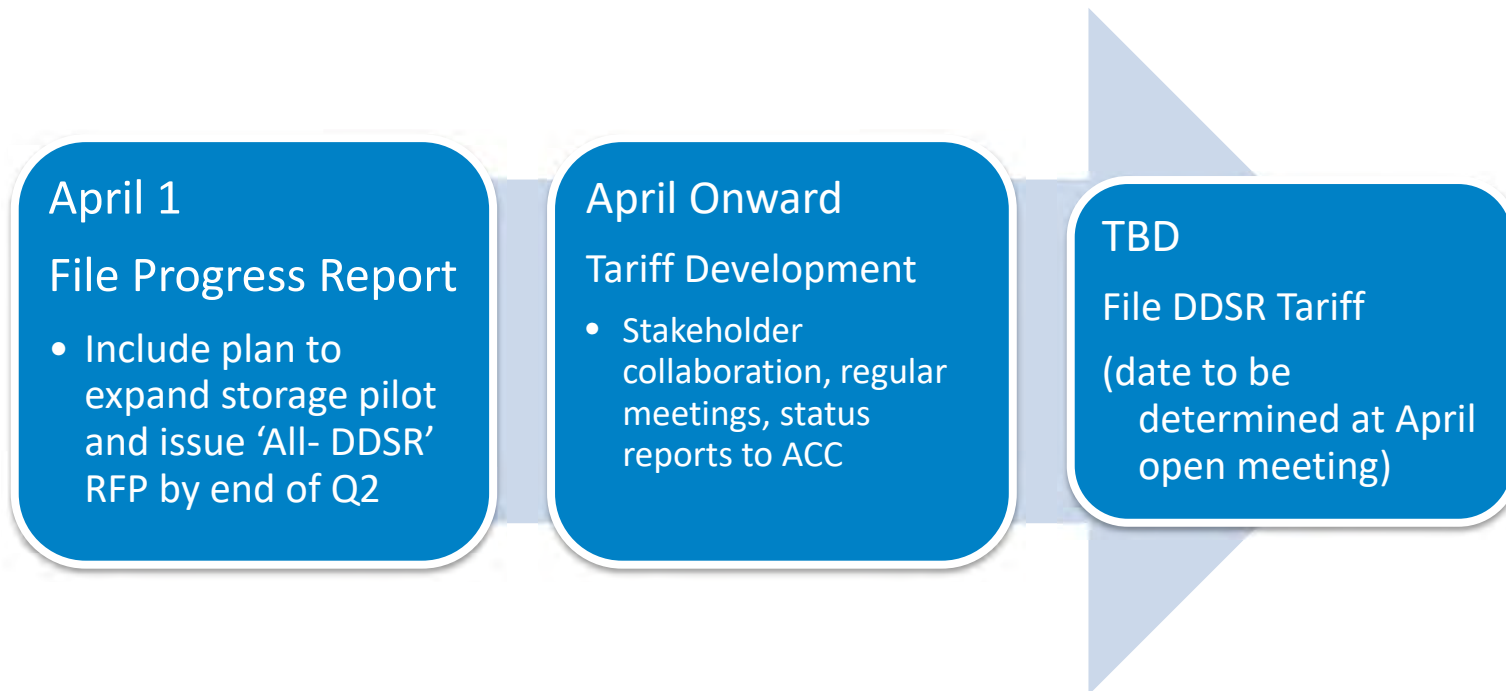
Issue 'All-DDSR' RFP

- Seek proposals for system needs and to solve constraints on a specific feeder to explore locational value
- Include all DDSRs being discussed
- Include performance guarantees, penalties for non-performance to provide market-based cost info

Potential Future Option – New Pilot Tariff

- How to make it work for 'aggregation'?

DDSR Tariff Next Steps

April 1

File Progress Report

- Include plan to expand storage pilot and issue 'All- DDSR' RFP by end of Q2

April Onward

Tariff Development

- Stakeholder collaboration, regular meetings, status reports to ACC

TBD

File DDSR Tariff

(date to be determined at April open meeting)
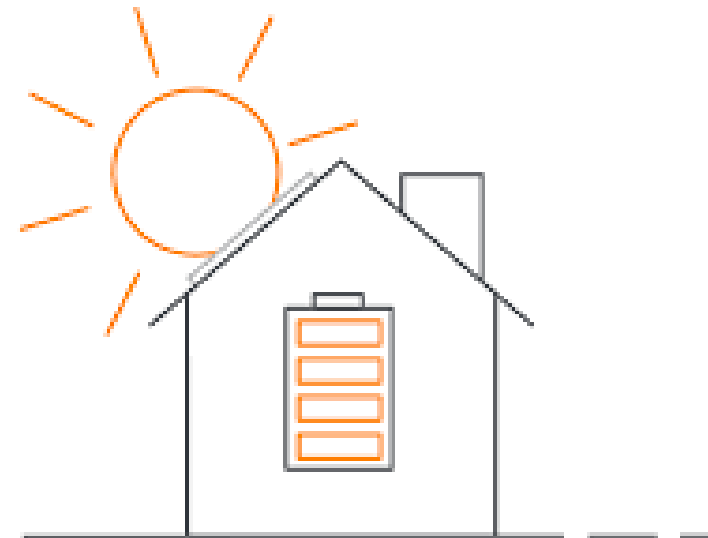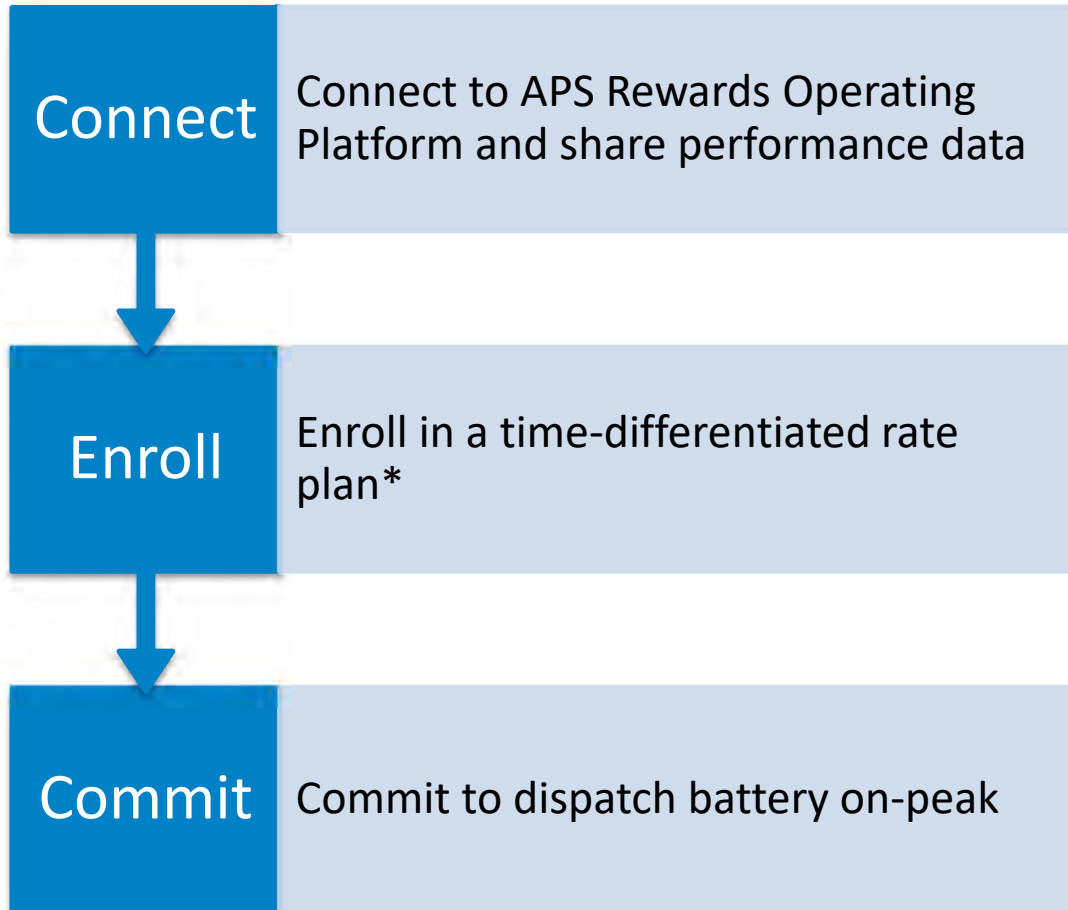
Residential Energy Storage Pilot Overview

- Approved in RES October 2020, Moved to 2021 DSM Plan
- 3-year pilot with $3 million total budget
- Upfront incentives up to $2500/system for eligible new residential battery installations
- Customers commit to share battery data and to minimal performance requirements

Customer Requirements

Connect — Connect to APS Rewards Operating Platform and share performance data

Enroll — Enroll in a time-differentiated rate plan*

Commit — Commit to dispatch battery on-peak

*Participating grandfathered solar customers may retain current service plan and RCP purchase rate.

Eligibility

- Newly installed battery systems
- Customer enrolled in qualifying APS rate
- Batteries connect to the APS Rewards Operating Platform for data share
  - Current EnergyHub partners shown below. Final list of eligible batteries for APS program TBD.

Customer Incentives

- One-time upfront incentive of **$500/kW**, capped at **$2500/system**
- Paid when connected to APS Rewards Operating Platform (EnergyHub)
- Paid directly to customer or assigned by customer to third party
- APS Proposing to add upfront performance incentive to share capacity

Optional Upfront Performance Payment

- In the DDSR Tariff proceeding, APS is proposing to add a performance payment option to the Energy Storage pilot
- Additional upfront incentive for customers who agree to share capacity
 - Up to 100 events/year, 80% capacity for 3 yrs.

Customer journey

Marketing

Purchase

Enrollment

Data
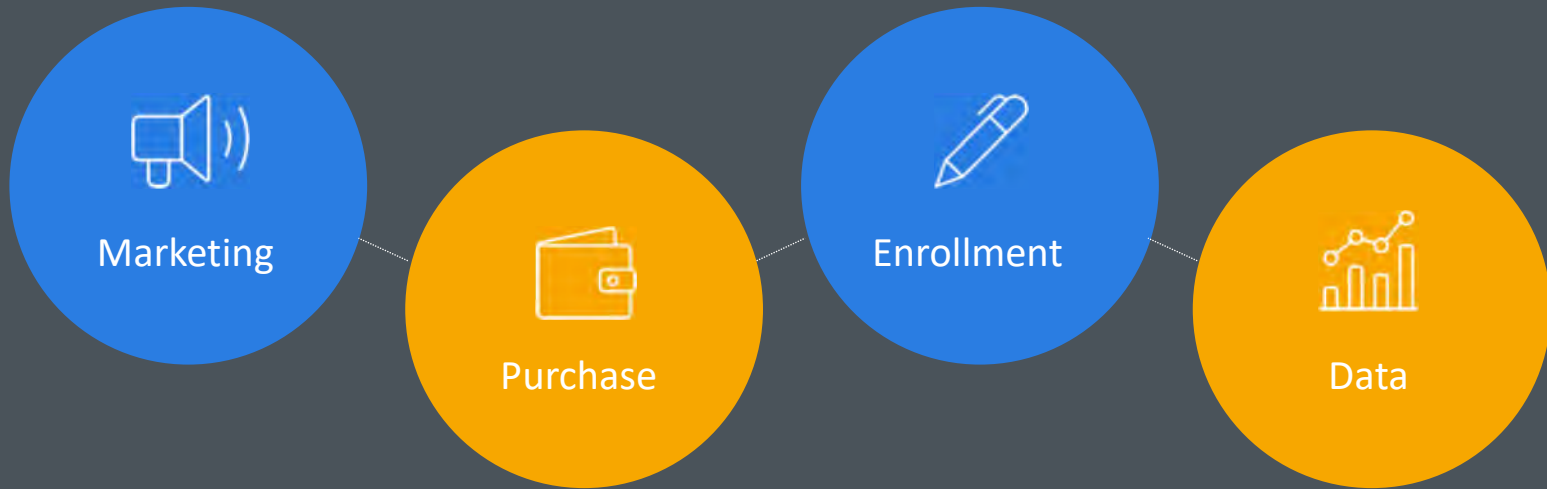
Marketing

Microsite & FAQ

- EnergyHub hosted

- Provides pathway for customers to purchase a new battery and apply to program via battery partners

- Host key program details in FAQ

Marketing channel tactics

Battery Partners	Installers & Developers
• Email • Social media • Landing pages & FAQs	• Email • Social media • Local advertising (print, radio, etc.)
Utility	**EnergyHub**
• Email • Social media • Landing page & FAQ	• EnergyHub will coordinate marketing with battery partners, installers & developers • No active role in outbound marketing
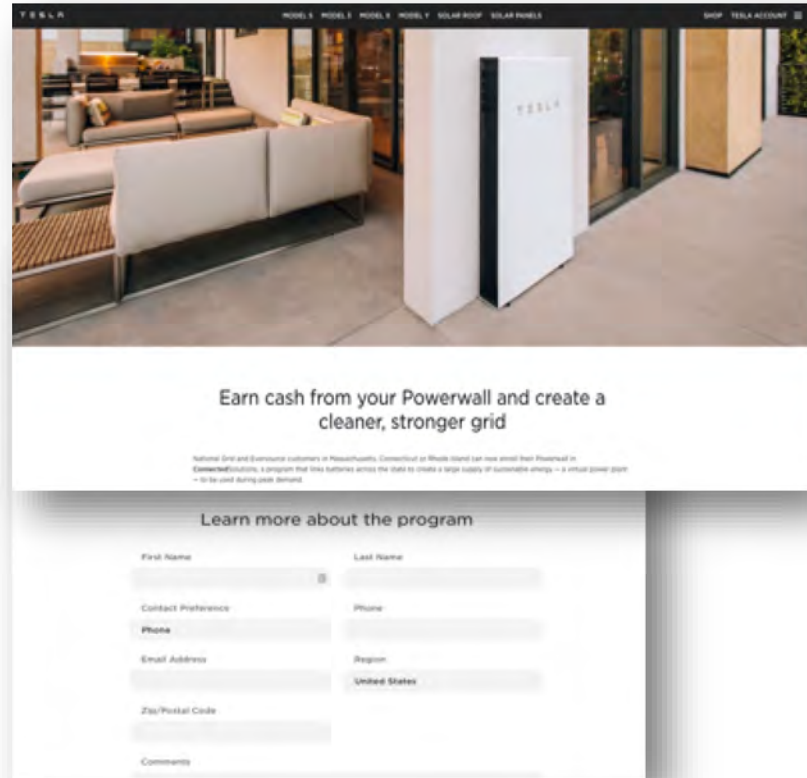
Tesla landing page for Connected Solutions Program
Source: https://www.tesla.com/connectedsolutions

Purchase

Battery sales model

Sales Model

- Customers purchase batteries from battery partners and installers/developers who leverage incentive during sales process

- Sales are usually made via consultation

- Program applications happen at the point of sale/installation

- Key to successful program design:

  1. Battery partners and installer/developers should both be able to receive the incentive and pass it along to customers

  2. Remain partner agnostic in program materials

Battery Partners

Enrollment

Enrollment process

1. Apply

- Customer completes application and signs T&Cs during sales process
- Digital documents and e-signatures preferred, but some partners use physical documentation

2. Upload

- Applications, T&Cs, and enrollment file uploaded to SFTP by battery partner
- Enrollment file read into EnergyHub portal
- Applications and T&Cs stored on SFTP

3. Review

- Utility reviews pending enrollments in EnergyHub portal

4. Decision

- Battery partner or installer/developer informs customer of decision
- Battery partner responsible for obtaining missing information for soft rejections

Data

EnergyHub

Integrations: lite vs. API

- Today: lite integration framework
  - Battery partners share interval data on pre-defined cadence (see next slide)

- H1 2021: Telsa API integration
  - Real time performance data available via EnergyHub portal

- H2 2021: API integration framework
  - Allows for faster addition of new partners

Data transfer process (lite version)

- Battery partner shares data via file transfer on pre-defined cadence (TBD)

- EnergyHub provides sample data file to battery partners to ensure consistency

- Example data points (15 minute interval):

  - Battery UUID   - Battery stored energy   - Solar power production

  - Timestamp   - Battery mode   - Grid connected

  - Battery energy   - Site energy demand   - Connectivity status

  - Battery power   - Site power demand

  - Battery SOC   - Solar energy production