Dynamic Pricing – AgFIT Pilot

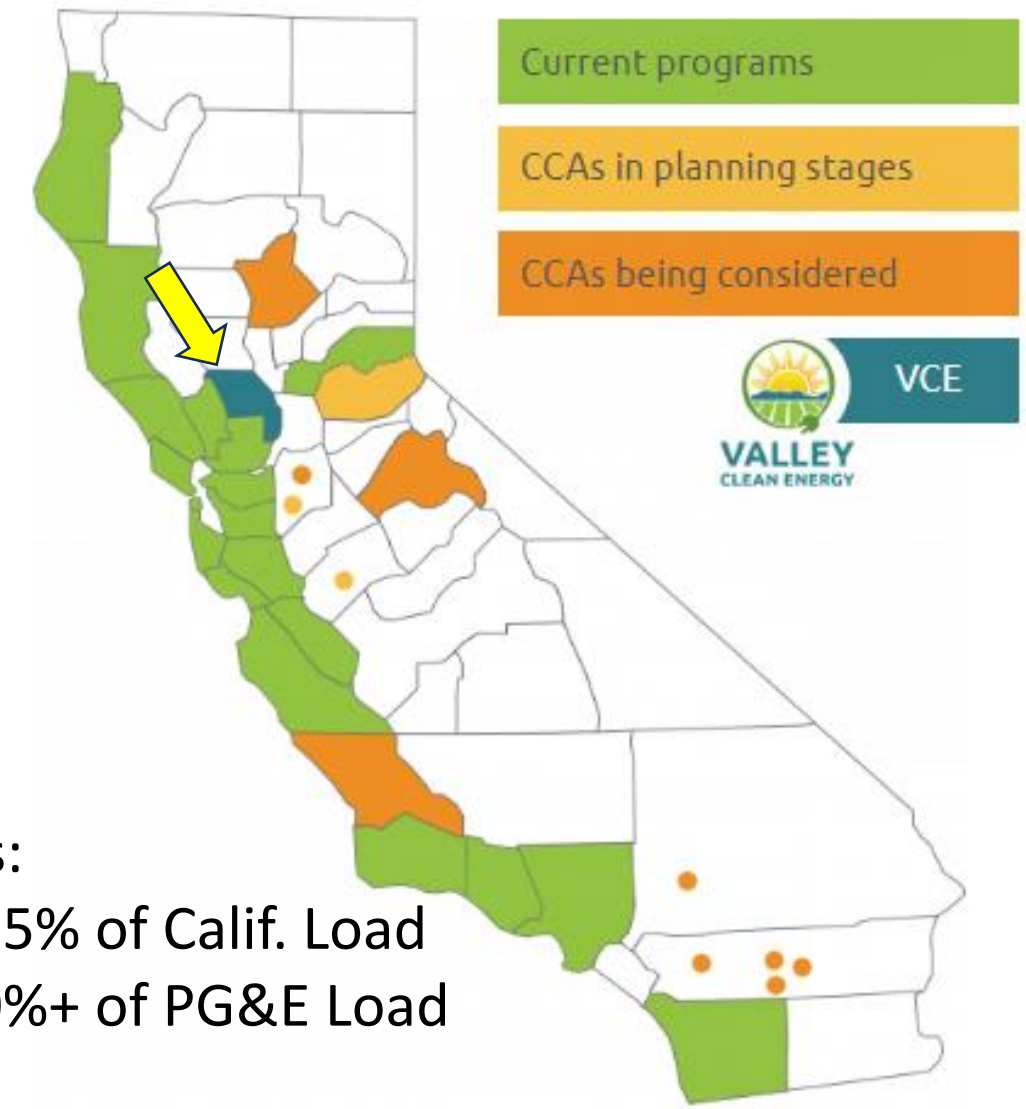
ESIG Spring Technical Workshop

Mitch Sears, Valley Clean Energy

March 27, 2024

Photography: *Yvonne Hunter*

Ag Sector Dynamic Pricing – CCA/VCE Overview



CCA's:

- ~35% of Calif. Load
- 50%+ of PG&E Load

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VCE Overview

- **61,000 Customer Accounts/ 125K Customers / 700 GWh annual load / 225MW Peak**
  - 2021 median household income: $78k; CA $84k (2021)
  - Poverty rate: 14.8%; 25% Customers Low Income Qualified (CARE/FERA)
  - 15% Agricultural (load)
  - 20% NEM (solar)
  - 90% Customer Participation
  - Yolo, Woodland, Davis each have roughly 1/3rd of load, Winters 5%

Ag Sector Dynamic Pricing – Ca Shiftable Load

Ag Pumping is the largest available resource, second only to Office HVAC*

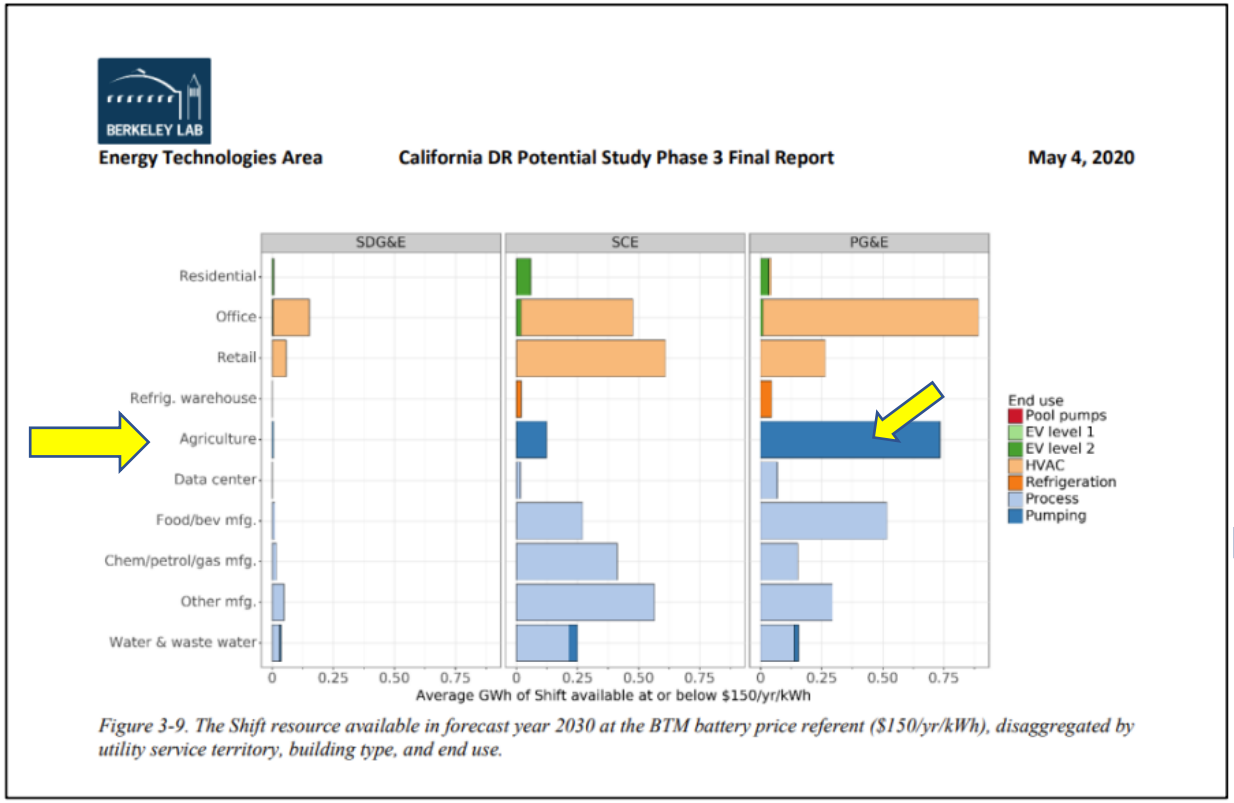

Figure 3-9. The Shift resource available in forecast year 2030 at the BTM battery price referent ($150/yr/kWh), disaggregated by utility service territory, building type, and end use.

Pumping is the least expensive shift resource

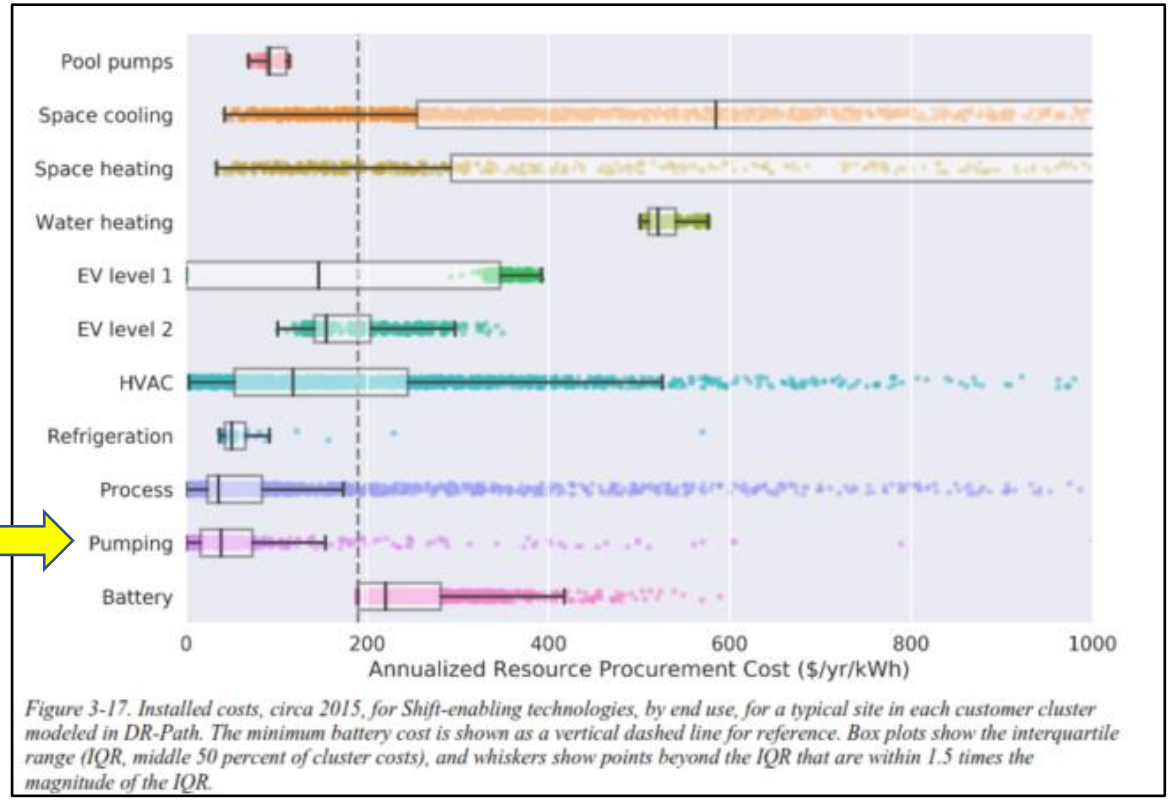

Figure 3-17. Installed costs, circa 2015, for Shift-enabling technologies, by end use, for a typical site in each customer cluster modeled in DR-Path. The minimum battery cost is shown as a vertical dashed line for reference. Box plots show the interquartile range (IQR, middle 50 percent of cluster costs), and whiskers show points beyond the IQR that are within 1.5 times the magnitude of the IQR.

*Heating, Ventilation, and Air-Conditioning

Source: https://emp.lbl.gov/publications/california-demand-response-potential

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Ag Sector Dynamic Pricing – Context/Opportunity

Ag Sector Dynamic Pricing Context/Background

- California faces grid reliability issues in the transition to low/no carbon future; water supply
- California farmers face a convergence of threats to their viability: water scarcity, rapidly rising electricity costs, and labor availability
- Irrigation automation can help with all three, but adoption is slow because of capital cost and the difficulty of realizing energy cost savings

Opportunity

- Irrigation pumping load is “flat” even though more than half could be shifted from critical ramp hrs
- The cost to enable that shift with automation and dynamic price signals is significantly less than that to deploy comparable battery storage

Scaling Proposal Overview

- Voluntary, incentives based program – meet farmers “where they’re at”; based on research/pilot results; CPUC R.24-01-017 (Demand Flex)
- Ratepayer and Non-ratepayer (e.g. IRA) funding would be used to:
  - Implement irrigation pump automation
  - Install water-saving, precision irrigation systems (e.g. drip)
  - Provide customer support so that farmers can automate irrigation systems to shift load out of peak hours and into non-peak hours

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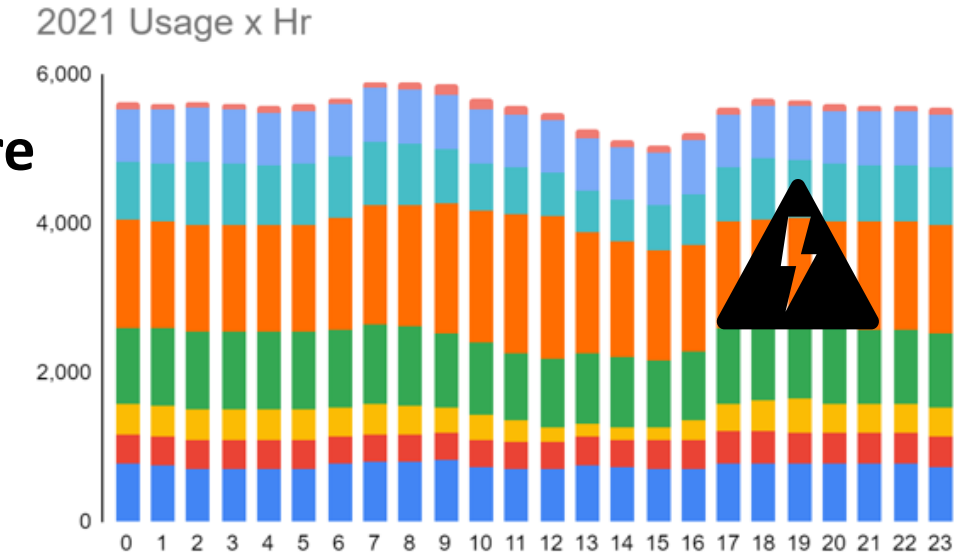
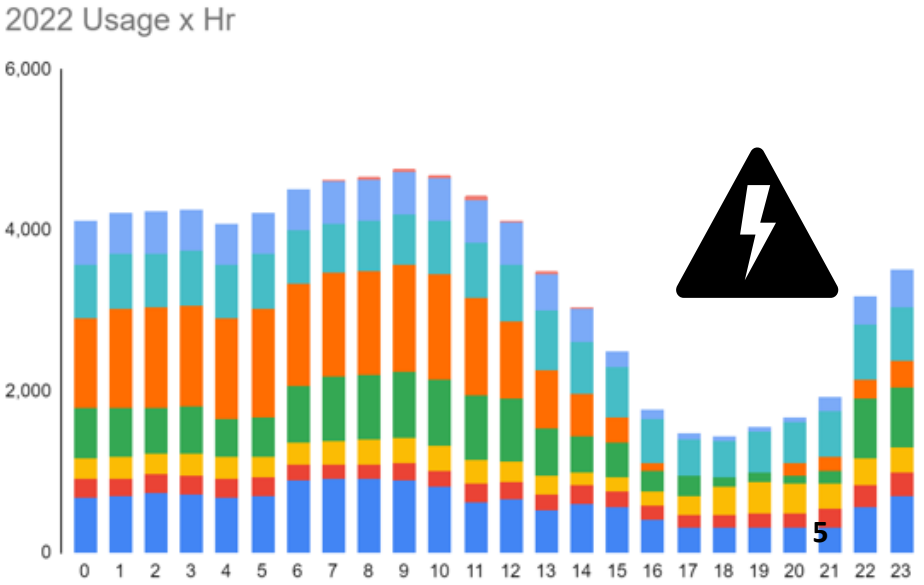
Ag Sector Dynamic Pricing – Three Legs of the Stool

An Approach with Demonstrable Results (EPIC + AgFIT)

- **Strong price signals that meet farmers where they are**
  - Weekly scheduling
  - Eliminate win/lose demand charges
  - Offer significant savings
- **Automation**
  - Enables flexible irrigation scheduling
  - Provides additional operational value
  - Provides decision support and visibility
- **Marketing, Education and Outreach**
  - If you build it, they will <u>not</u> come without ME&O
  - Clear demonstration of the opportunity and how to achieve it
  - Close-in support and coaching, especially at the beginning





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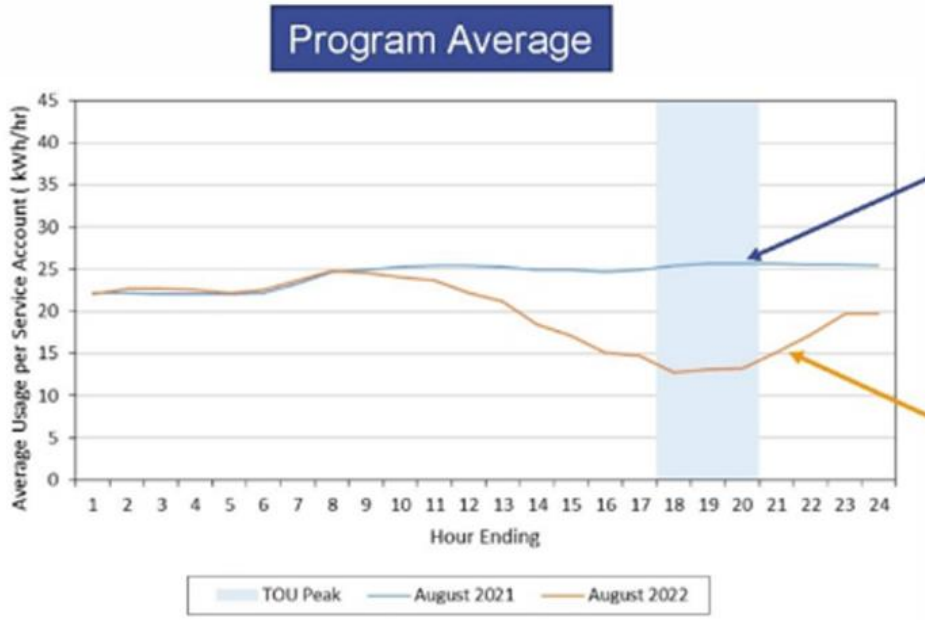
Ag Sector Dynamic Pricing – Mid-term Report

Dynamic pricing facilitates a load response outside of TOU peak period.



Before automation technology **and** dynamic pricing, August 2021,
usage shows *no reduction* in TOU peak period

After automation technology **and** dynamic pricing, August 2022,
usage shows *reduction* in TOU peak period and surrounding hours

Figure Note: The August 2022 loads illustrate a partial month after dynamic pricing was in place on August 15th.

Christensen Associates, "Preliminary Assessment of Valley Clean Energy's (VCE) Agricultural Pumping Dynamic Rate Pilot" Attachment B to August 15, 2023 Ruling, Slide 7

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Ag Sector Dynamic Pricing – Customer View – Week Ahead Hourly View

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