Integrated Energy Efficiency and Demand Response Program Implementation:
Lessons from the Field

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Background – California

- Before 1990, utilities used an “integrated” approach to help customers manage load
- With deregulation, the focus changed as utilities became pipes and wires companies
- When deregulation was abandoned in 2002, utilities developed new, robust programs for EE and DR
  - Initially, there were separate teams and funding mechanisms
- Recently, field personnel began working with customers on EE *and* DR because ***need for integration is customer-driven***
- Thus, ***i***DSM is an old concept that is new again

Value of Integrating EE & DR

- For Customer:
  - Reduces confusion
  - Maximizes return on investment
  - Avoids missed opportunities

- For Utility:
  - Avoid duplication of efforts
  - Provide better customer service
  - Maximize EE and DR savings

Source: Learn to Invest by Greekshares.com

Barriers to Integrating EE & DR

Source: Trapac

- Separate funding sources
- Lack of integrated experience within the utilities and possibly among EE & DR program implementers
- Lack of trained professionals who can provide EE *and* DR technologies and services
- Perception that customers have limited budgets

GEP Program Implementation (2010-2012)

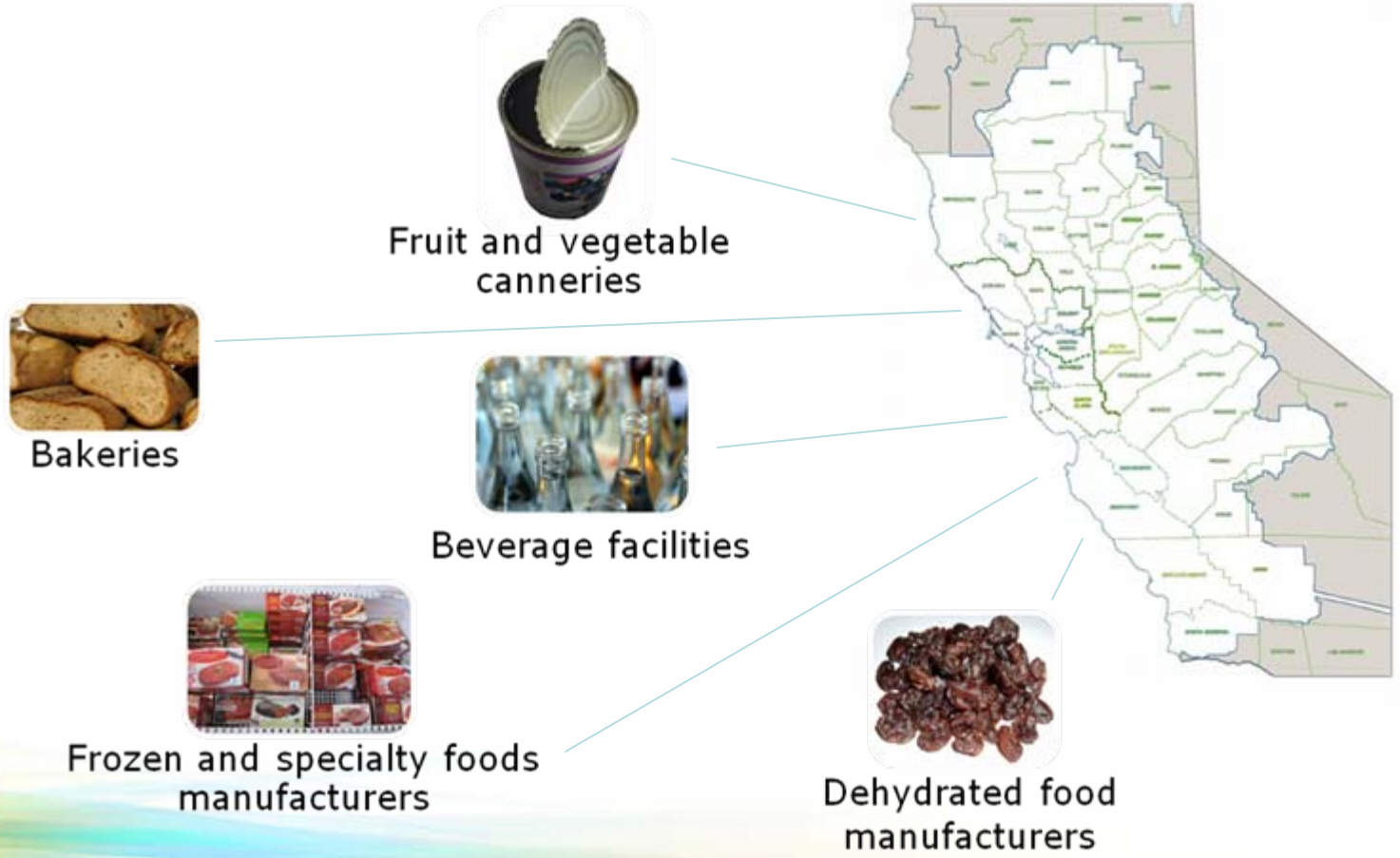
- EE Oil and Gas Production
- EE Comprehensive Food Processing
- DR Automated Demand Response

- EE Oil & Gas Production
- EE Comprehensive Petroleum Production
- Integrated EE/DR Comprehensive Chemical Products
- Integrated EE/DR Comprehensive Beverage Manufacturing
- DR Engineering Services

- EE Chemical Products
- EE Comprehensive Mixed Industrials

- DR Pilot Programs

Integrated Energy Efficiency and Automated Demand Response Pilot



Goals for PG&E Pilot

- Develop integrated sales approaches
- Conduct integrated technical site assessments
- Define funding allocations
- Assist customers in prioritizing recommended measures
- Implement projects

Source: The Lassnau Lounge

Case Study: Flour & Grain Mill

- Technologies:
  - Advanced automated control and monitoring platform
  - Real-time energy monitoring
- Measures Phase I:
  - Shut-down of Mills A & B
  - Lighting upgrade
- Measures Phase II:
  - Mill A expansion with upgrade of all motors to premium efficiency (Ph II)

- EE Savings: 330,000 kWh
- DR Reduction: 1.8 MW

Source: ConAgra Foods

Case Study: Peach Processor

- EE Savings: 994,000 kWh
- DR: 2.3 MW

- Technologies:
  - Centralized control platform
  - Ethernet Network (3 locations)

Source: Hitchhiking to Heaven

- Measures:
  - Fork lift charging will be automatically shut down
  - Shutting down engine rooms for refrigeration systems
  - Floating head pressure controls
  - Lighting upgrade

Case Study: Spice Mill

- EE Savings: 1,591,000 kWh
- DR: 6.8 MW
- Technologies:
  - Supervisory plant-wide controller
  - Advanced automation
  - Plant-wide network
  - Real-time energy monitoring
- Measures Ph I:
  - Curing Bays (4) - Full shutdown
  - Dryers (12) – Full shutdown
  - Garlic Dry Prep - Full shutdown
  - Onion Wet Prep - Full shutdown
  - Garlic Mill - Full Shutdown
  - Onion Mill - Full Shutdown
  - Well Pumps - Full Shutdown
  - VSD's added to curing bay fans
  - VSD's added to all pumps

Source: Just Food Now

- Phase II Measures:
  - Reduce compressed air set-points
  - Repair compressed air leaks
  - EE Savings: 269,000 kWh
- Phase III Measures: Lighting retrofit
  - EE Savings: 2,100,000 kWh
- Phase IV: Adv. process control - dryers
  - EE Savings: 500,000 kWh

How to Build Success

- Identify program champion at utility who is familiar with both EE and DR
- Work with a program implementer who has experience with EE and DR offerings
- Make sure program implementer is able to take a “deep-dive” into customer’s processes

Source: Yu & Associates

- Work with technology partners who understand energy consumption and load management

Key Outcomes and Lessons

- Customers respond to the integrated approach
- Advanced technologies and incentives help bridge the gap
- Industry-specific expertise is required
- New approach - ”Energy Performance”
- Provides customers an opportunity to lead organizational change; also provides stepping stone to continuous energy improvement (CEI)

Source: University of Notre Dame

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