HPP: Goal is Energy Savings

- Retro-commissioning (RCx) based approach
- $2.2 M program funding
- Large facilities: 100,000 ft² or more
- Goal of approx. 4 M total square feet
- PG&E Service Territory Wide
HPP Program Goals

- Gross annual savings:
  - 7,360,000 kWh
  - 1,144 kW
  - 320,000 therms

- Approximately 8 to 12 facilities
Program Rationale

• Hospital characteristics
  ▪ Large base loads
  ▪ 24-hr operation
  ▪ Operational sensitivities
    • Contaminant control
  ▪ OSHPD requirements
    • confidence issue with outside HVAC professionals
Program Marketing Strategy

- Emphasis on organizations with multiple hospitals
  - Stretches marketing dollars
  - Successful implementation:
    - Increases “comfort level” of RCx
    - Reduces costs of other project implementation
- Early adopters
Program Status

• Current project pipeline:
  ▪ 1 major chain engaged
    • 3 of 12 facilities
  ▪ Opening discussions with another major chain
  ▪ Recruiting 3 county hospitals
Program Progress

- One Phase I investigation completed
  - For large chain, first of 3 sites (353,000 ft²)
  - Savings
    - 1,016,000 kWh (5%), 41 kW (1%), 28,500 therm (1%)
  - Savings rate higher than expected
    - % Goal: 14% kWh, 1% kW, 9% therms
- Assess progress before proceeding at same sites
HPP: Participant Benefits

- **Savings**: 5 to 15% of annual energy use and cost
- **Payback periods**: from 0 to 2 years
- **Measure implementation assistance**
- **Assistance with regulatory process (OSHPD)**

![Bar chart showing Pre-Retro Cx and Post Retro-Cx expenses over months.]
HPP Customer Assistance

• In-depth engineering analysis of targeted systems
• Detailed Engineering report quantifies savings and costs
• Technical Assistance from Program Engineers during implementation
• Rebates to offset the customer’s cost to implement measures
  ▪ $0.10/kWh for RCx measures
HPP: Identify Energy Savings

- Chiller Operation
- Controls Upgrades
- Boiler Efficiency
- Air Handling Units
- Lighting Occupancy sensors
- Analysis of measures includes energy savings and turnkey installed cost
HPP Program Process

• Phase I  (~ 2 months)
  ▪ Sign Access Agreement, provide data & access
  ▪ Brief Engineering Report ID’s RCx measures
  ▪ “Simple” Measure implementation and rebates

• Phase II  (~ 2 months)
  ▪ More Detailed Engineering Study Completed
  ▪ Comprehensive Engineering Report

• Implementation Phase (~ 6 months)
  ▪ Technical Assistance Available to Participants
  ▪ Owner installs measures, program pays rebates
Sample Facility

Sample Facility and Building Characteristics

- 250,000 s.f. (6 Floors of retail, 2 floors of offices)
- Open 7 days a week, 11 hours a day (8 hours on Sundays)
- 2 chillers (new 600 ton York, back-up 150 ton unit)
- Constant volume air-handling units

Savings Through Retro-commissioning – Sample Project

- Estimated savings: 350,000 kWh, 7% of Total energy usage
- Implementation Costs: $13,000
- Rebate: $4,000
- Payback: 2-3 months
- Non-energy benefits include improved IAQ and customer comfort
rCx Analysis – Performance Issues

Data from building

Cooling Tower Running at Night

VSD Not Working Properly

Cooling Tower
Chiller

Watts

Time

11:00 AM 4:00 PM 9:00 PM 2:05 AM 7:05 AM 12:05 PM 5:05 PM 10:05 PM 3:05 AM 8:05 AM 1:05 PM 6:05 PM 11:05 PM 4:10 AM 9:10 AM 2:10 PM 7:10 PM 12:15 AM 5:15 AM 10:15 AM 3:15 PM
rCx Analysis – Total Savings

Data from building

![Graph showing kW consumption over time for Sept 21-24 and Oct 19-22](image-url)
HPP: Next Steps

Contact QuEST: (510) 540-7200
Eric Eberhardt, Program Manager
Ignacio Robles, Senior Project Engineer

• Select sites and sign Access Agreement
• Collect data
  ▪ 12 Months of Utility Bills & 15-minute Electric Data (available online)
  ▪ Drawings, equipment schedules, etc.
• Schedule site visit

This program is funded by California utility ratepayers under the auspices of the California Public Utilities Commission. Funding is limited, and the program is available on a first-come, first served basis while funding lasts.