



*Pacific Gas and  
Electric Company*<sup>®</sup>

ecova™

# Compressed Air Solutions

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This program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utilities Commission.



# Pacific Gas and Electric Company

- Energy services to 15 MM people
  - 395,000 Small Business, Commercial and Industrial Customers
- 70,000 square miles with diverse topography and climate zones
- 20,000 employees
- A regulated investor-owned utility



# Statewide CORE Incentives

Utility offer incentives & rebates for measure-level investments (e.g., lighting, motors), and equipment vendors and customers drive the execution of the program

## *Advantages:*

- Open to all Utility Customers
- Standard statewide approach as opposed to unique Third Party Delivery
- Program savings generate over 50% of Business Portfolio goals
- Back bone of Energy Efficiency program offerings

## *Disadvantages:*

- Vendor/Contractor may not understand utility program process
- Program policies are becoming very complex (think IRS)
- Customers are too busy to self help
- Typical project savings is small resulting in large volume
- Not comprehensive, single measure focus typically on lighting

# Third Party Programs (PFP)

Utilities offer Pay for Performance programs designed to drive deep energy efficiency projects throughout customer segments such as Industrial.

## *Advantages:*

- Provide wide range of expertise in EE focused on industrial processes and systems
- Provide the necessary guidance from discovery to installation.
- Present business cases to customers and help facilitate interaction between customers and vendors
- Manage project external processes for utilities by taking on administrative functions such as program reporting, program design, etc.
- Support utility account managers to market to customers and vendors, maximize corporate participation, and identify projects

## *Disadvantages:*

- Less control over program delivery and savings achievement
- Different marketing approaches by implementers
- Outsourcing program delivery can lead to risk in customer satisfaction

## Continued Improvements:

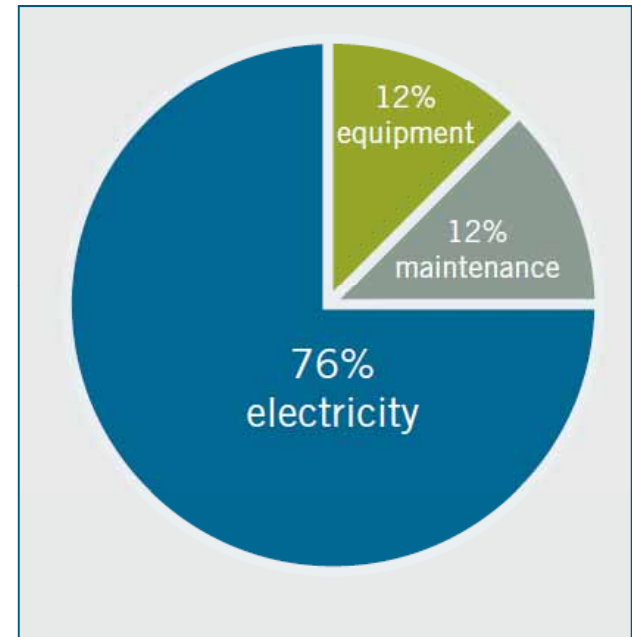
- Move to performance only contracts, no T&M
  - Reduces invoicing turnaround and administrative costs
- Consolidated reporting tools
- Consistency across contracts
- Better coordination with Standard Offerings
  - Targeted segmentation
  - Reduced overlap
  - Standardized incentives

# Program History

- 2007 – Ecova’s compressed air efficiency program began with PG&E
- In the beginning, focused on typical compressed air efficiency measures:
  - Horsepower reduction
  - Compressor swaps (to VFD)
  - Storage
  - Clean up equipment (dryers, drains, filters, etc.)

# Compressed Air Cost More Than You Think

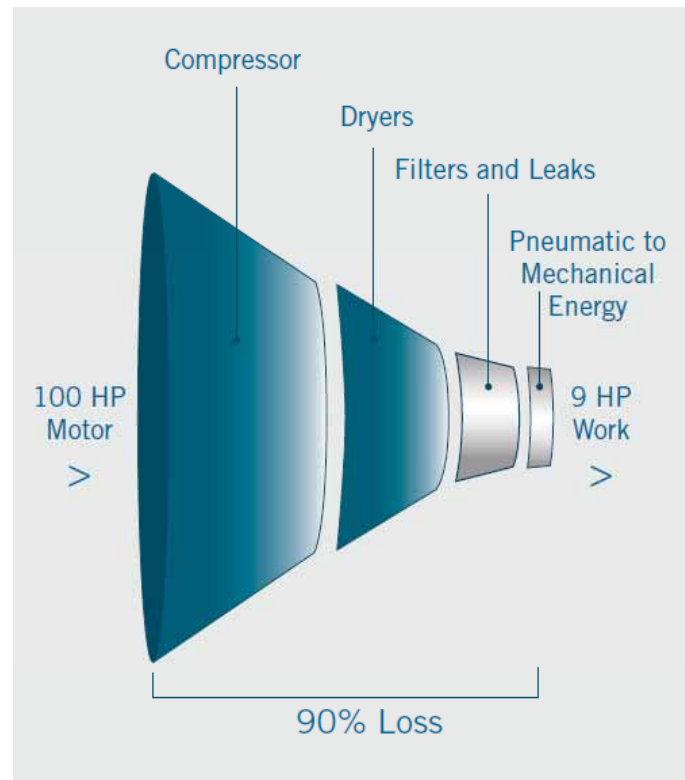
- After electricity, gas, and water, compressed air is the forgotten “fourth” utility
- Compressed air comes with three price tags
- Compressed air systems can account for up to 10% of your electrical use



**Over 75% of the lifetime cost of compressed air systems is the cost of electricity**

# Where Loss Occurs

- Up to 90% of the energy used to create compressed air is lost in the process





# Target Facilities – Industrial and Manufacturing

- Steel
- High Tech
- Food and Beverage processing
- Plastics
- Metals
- Paper & Printing
- Glass
- Cement
- Gases & Chemicals
- Wastewater



# Lessons Learned From Year One

- No standards for reports or calculations
- Limited access to technical, compressed air experts within the utility to review engineering
- Projects were often at the mercy of the vendor (with lots of free riders)
- Existing programs weren't reaching the market with enough volume to make a difference
- Compressor manufactures often prefer service accounts on inefficient equipment rather than equipment upgrade



# New Approach

Ecova instituted changes in three areas:

- Integrate energy efficiency measures
- Vendor management
- Incentive process



# Measure Integration

As the program grew, we found that we were overlooking savings opportunities on the demand side of systems



# EEM Integration

We started focusing on anything that reduced CFM

- Heatless regenerative dryers (common in hi-tech)
- Venturi to dedicated vacuum systems
- Splitting systems (high pressure/low pressure)
- HVLP
- Flow control
- Air knives/cannons
- Manufactured nozzles
- Fire riser stations



# Project Examples

## Packaged Goods Company

### Existing System

#### Main inefficiency

- Venturi vacuum generated by compressed air uses up to 38% of total system demand
- Inefficient use of compressed air, excess use of energy

### The Solution

#### Replaced Piab Venturi system with central vacuum system

- Reduced system demand
- Variable Speed Drive compressor that responded well to lower demand

# More Examples

## Foodservice Company

- Reduced CFM demand over 30% by installing several measures including a low pressure blower air knife packages
- Maximized savings with sequencer, new piping, and flow controller

## Dairy Company

- A public, private partnership
- Received about \$110,000 incentive from PG&E, and additional incentive from the City using funds from the American Recovery and Reinvestment Act

## City Waste Water

- Replaced 3 compressors with 3 variable speed centrifugal high-volume, low pressure (HVLP) blowers to maintain 9 psi at all times
- Reduced energy usage by 50%

# Foodservice Company- Incentive

961,080 annual kWh savings, PG&E incentive \$65,591





# Dairy Company– Two Incentives

\$109,759 incentive from the Utility  
Additional incentive from the City



# Opportunities To Revisit Completed Projects

For VFD replacements that have already been made...

Take advantage of it!

Minimizing inappropriate uses and lower demand to  
maximize energy savings!

# How We Reach The Market

## Trade Ally Network

- All major systems and most minor systems need professional level system service; thus a service provider
- The greatest market penetration is available to those service providers
- We engage these service providers and establish a compressed air trade ally network
- We train and insist that our allies write reports and audit facilities in a “vendor and solution neutral fashion” to assure that our auditors are not using the program simply to sell their products
- Increases customer’s confidence of energy savings legitimacy

# Incentive Approach

## Incentive assurance

- Project and Operations Managers have a major hurdle in initiating large capital investment projects without the assurance of a static incentive amount
- Their experiences with custom incentives that are based on M&V results have often left them disappointed with incentive amounts and the process as a whole
- With this guarantee in place, decision makers can be assured of the project ROI

## Program Benefits

- No cost engineering evaluation to customer
- Three-tiered engineering review
- Pay for performance program
- Expanded market reach
- Guaranteed incentives
- Turn key to utility
- Administered by Ecova
  - Application process, M&V, Incentive agreements, etc...
- Increased vendor participation

# Program Successes

## Since 2010:

- Completed 71 projects
- 21.4M annual kWh reduction
- 2,930 peak kW reduction
- Developed a trade ally network consisting of all major compressor manufacturers

## 2010 - 2012

- Complete 44 projects on audits started after Jan. 2010

# Program Contacts

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## Save the Dates

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AESP's Fall Conference  
Seattle, WA

Jan. 27-30, 2014

AESP's National Conference  
San Diego, CA

May 12-14, 2014

AESP's Spring Conference  
Baltimore, MD

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