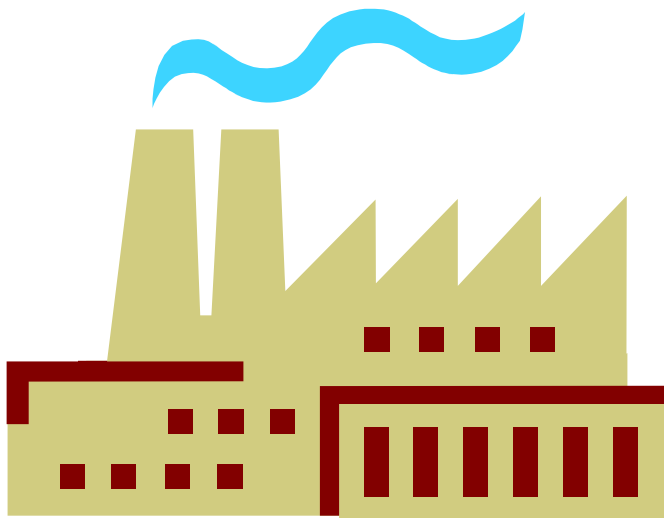




# Clean Air and Efficiency in the Industrial Market Place

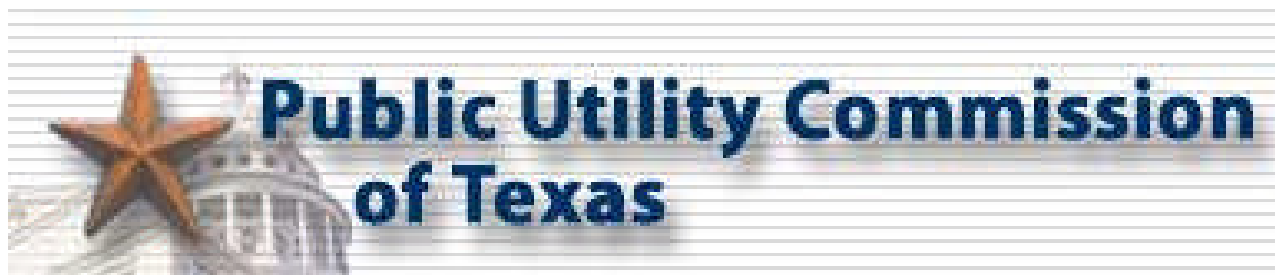


David Snyder  
CenterPoint Energy  
Program Manager  
CAT Pipeline/Ports



## Why do we have Energy Efficiency Programs:

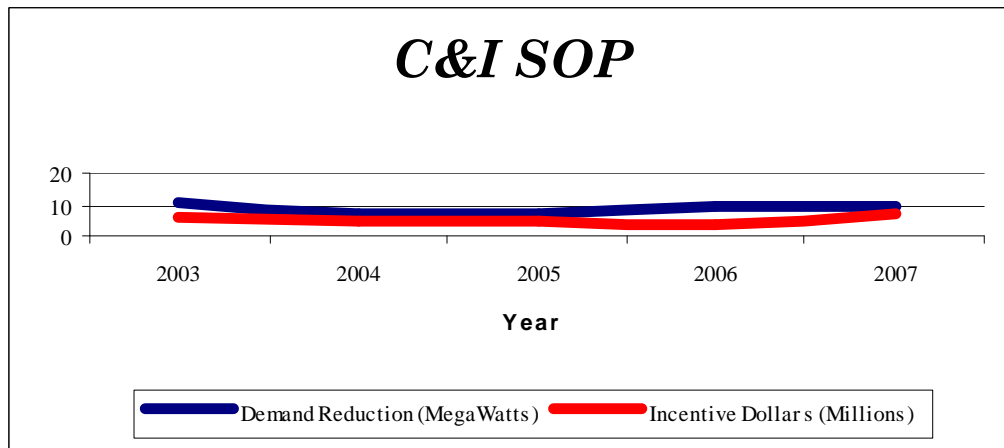
- ❖ Senate Bill 7 (SB7) passed in September of 1999
- ❖ Requires electric utilities to administer energy efficiency incentive programs
- ❖ Makes available energy efficiency programs to all customer classes
- ❖ Must acquire cost effective energy efficiency equivalent to at least 10% of annual utility's load growth in demand
- ❖ Energy efficiency programs can be either a market-based standard offer or limited, targeted market-transformation programs
- ❖ As of 2004 CenterPoint Energy will have both types of programs for the Commercial and Industrial customers





# Standard Offer Program History:

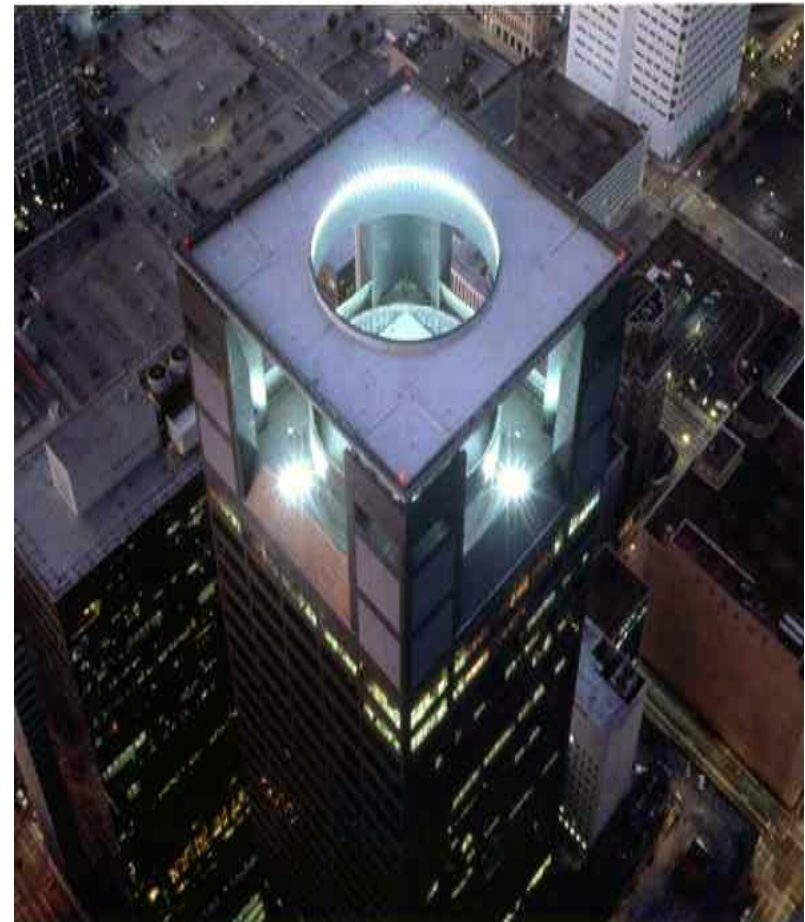
Commerical and Industrial Standard Offer Program		
Year	Demand Reduction (MegaWatts)	Incentive Dollars (Millions)
2003	10.2	6.3
2004	7	4.4
2005	6.9	4.3
2006	9	4.1
2007	9	7





# Industrial Market Place History:

- ❖ **Projects**
  - ❖ 2005 – 2
  - ❖ 2006 – 7
- ❖ **Energy Savings**
  - ❖ 2005 – 7.8 MWh
  - ❖ 2006 – 14.3 MWh
- ❖ **Estimated Savings**
  - ❖ 2005 - \$470,000
  - ❖ 2006 - \$959,000





# Compressed Air Tools for Reducing Cost:

- ❖ **Compressor Room Operation**
  - ❖ Compressor Evaluation
  - ❖ Operation, Controlling and Monitoring
  - ❖ Installation Evaluation
- ❖ **Systems Operation**
  - ❖ Leak Detection and Management
  - ❖ Air Quality (Filtration and Moisture removal)
  - ❖ Sequence of Operations
- ❖ **Systems Optimization**
- ❖ **Training**
- ❖ **Measurement and Verification**



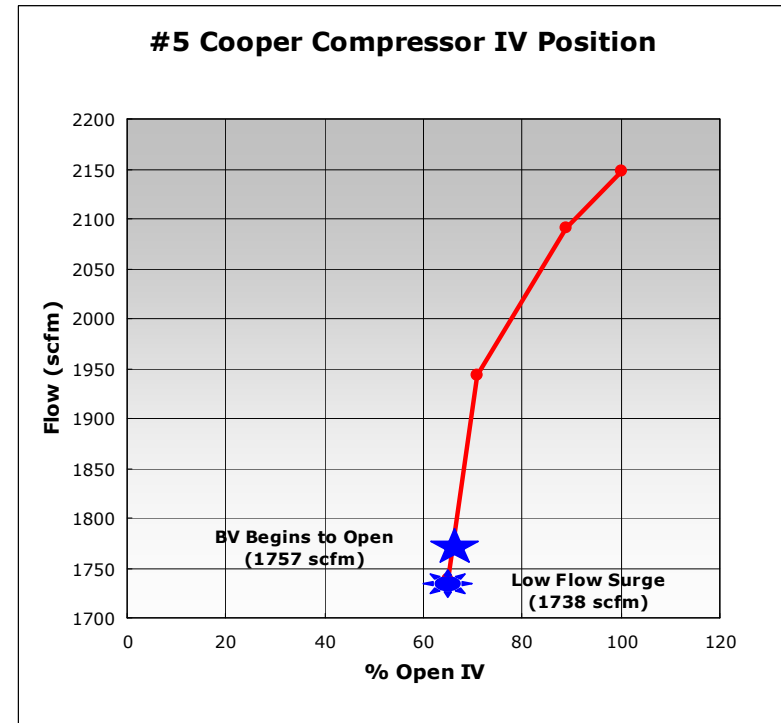
# Compressed Air Operation :

- ❖ **Compressor Evaluation**
  - ❖ Perform in-field load testing
  - ❖ Record and chart power consumption
  - ❖ Record compressor flow as FAD (volumetric) and SCFM (mass flow)
  - ❖ Evaluate power and flow efficiency and actual throttling capabilities
- ❖ **Operation, Controlling and Monitoring**
  - ❖ Evaluate compressor controls operation and valve calibration
  - ❖ Evaluate load limits and unload low limit of inlet valve (throttling and unload)
  - ❖ Review method of control for facility operation
- ❖ **Air System Consumption Plus Leaks and Leak Test**
  - ❖ As system allows, testing to quantify consumption, purge volume and leaks



# Compressed Air Operation Continue:

- ❖ **Installation Evaluation**
  - ❖ Inlet air filtering quality and sizing.
  - ❖ Inlet and discharge piping quality and sizing.
  - ❖ Cooling water piping quality and sizing. (If applicable)
  - ❖ Instrument air piping and filtration quality and sizing. (If applicable)
  - ❖ Base plate level, grout, housekeeping and lighting.





# Systems Operation:

- ❖ **Leak Detection and Management**
  - ❖ In-field detection techniques, leak tagging and plant survey.
  - ❖ Sources and cost of leaks.
- ❖ **Air Quality (Filtration and Moisture removal)**
  - ❖ Aftercooler and dryer operations and maintenance.
  - ❖ Drain traps and moisture removal techniques.
  - ❖ System filtration issues.
- ❖ **Sequence of Operations and Other System Issues**
  - ❖ Effects of undersized piping, high air velocities and pressure drop.
  - ❖ Determining proper air pressure setpoint.
  - ❖ Cost of generating compressed air.
  - ❖ Multi-compressor sequencing and control.





# Systems Optimization:

- ❖ **Air Generation and Quality**
  - ❖ Alternative equipment and approaches to generating air.
  - ❖ Evaluate appropriate compressor control and management.
  - ❖ Use of desiccant dryers on a year-round basis.
  - ❖ Air receiver (Appropriate placement and sizing).
- ❖ **End Use Applications**
  - ❖ Alternatives to common air applications.
  - ❖ Electro-Mechanical, hydraulic and low pressure blowers.
  - ❖ Open blowing and air amplification.
  - ❖ Methods of evaluation for end uses.
  - ❖ Low pressure applications.
  - ❖ Piping layout and design objectives.
  - ❖ Parts and equipment procurement issues.



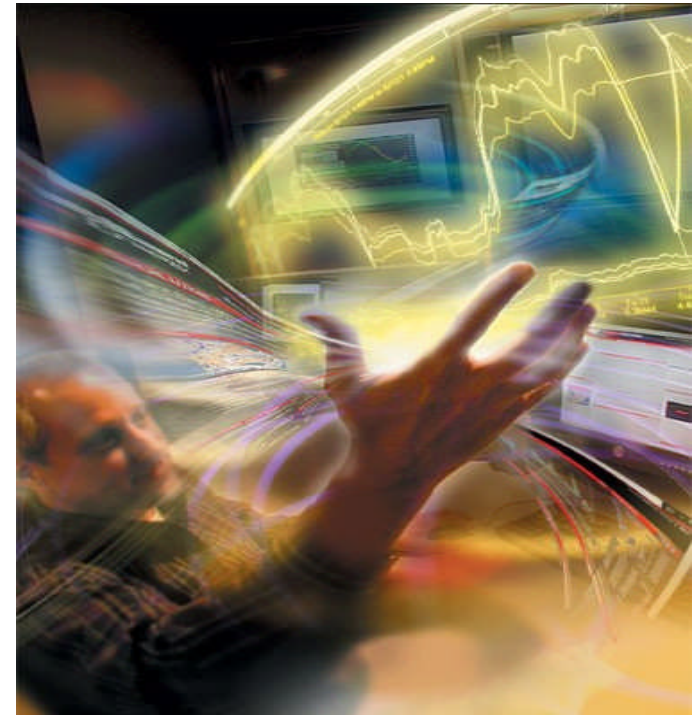
# Training:

- ❖ **In-house classes**
  - ❖ Review proper maintenance and operation procedures for compressors and dryers
  - ❖ Leak detection and mitigation
  - ❖ Appropriate and alternatives use of compressed air
  - ❖ Compressed air system testing techniques
  - ❖ Rating methods of air compressors and pitfalls of improper applications
  - ❖ Calculate compressor energy usage and resulting power cost.
  - ❖ List primary types of compressor controls
  - ❖ Benefits of a compressed air audit
  - ❖ Methods of marketing efficiency project within an organization.



## Measurement and Verification:

- ❖ When improvements have been made to the air system, the required metering and verification services to document savings and improvements achieved through the program should be done.
- ❖ Baseline analysis of operations documented at the beginning of the program.





## Clean Air Technologies:

- ❖ Work with customer in the CNP service area to aid in the reduction of environmental pollution.
- ❖ Monitor state and federal agencies on environmental policies
- ❖ Three target areas
  - ❖ Pipeline/Industrial
  - ❖ Ports
  - ❖ Off-road vehicles





# Clean Air Technology Pipeline/Industrial:

## ❖ Five year Goal

- ❖ To install 42,00 Horsepower of compression which will remove approximately 300 tons of NO<sub>x</sub>.
- ❖ To increase overall efficiency in the compression market place.
- ❖ To increase availability while reducing installation time and expense.

## ❖ 2006 Highlights

- ❖ 7,000 Horsepower of compression that will remove approximately 50 tons of annual NO<sub>x</sub> reduction.
- ❖ 1,250 Horsepower of compressor motor that will remove approximately 9 tons of annual NO<sub>x</sub> reduction.
- ❖ 500 Horsepower of industrial process motor that will remove approximately 3 tons of annual NO<sub>x</sub> reduction.



# Clean Air Technology Ports:

- ❖ **Five year Goals**
  - ❖ Reduce the amount of NO<sub>x</sub> at Ports through cold ironing and cargo handling equipment.
- ❖ **2006 Highlights**
  - ❖ Working with the Port of Galveston on baggage handling system.
  - ❖ Working with EPRI on the development of a plug-in hybrid yard truck.





# Clean Air Technology Off-Road Vehicles:

- ❖ **Five year Goals**
  - ❖ Increase the use of electric vehicle by 15% which will allow the removal of an estimated 200 tons of NO<sub>x</sub>.
  - ❖ Increase the number of TERP grant submitted to TECQ for electric forklifts.
  - ❖ Develop new technology that will aid in the pollution reduction for off-road vehicles
- ❖ **2006 Highlights**
  - ❖ Over 100 electric vehicle at the airport systems which allow them to reduce NO<sub>x</sub> by 9 tons annually.
  - ❖ Received the first TERP grant for electric forklifts and a total of \$140,000 in funding.
  - ❖ Installed over sixty rapid charging forklifts at a major manufacturing facility allowing them to reduce their NO<sub>x</sub> emission by 5 tons annually.



- ❖ Visit the website for more information:  
[www.CenterPointEfficiency.com](http://www.CenterPointEfficiency.com)

Standard Offer Program:

**David Dzierski**

(713) 207-3341

[David.Dzierski@CenterPointEnergy.com](mailto:David.Dzierski@CenterPointEnergy.com)

Retro-Commissioning Program:

**Karen Gregory**

(713) 207-3516

[Karen.Gregory@CenterPointEnergy.com](mailto:Karen.Gregory@CenterPointEnergy.com)

Clean Air Technology Program:

**David Snyder**

(713) 207-5588

[David.Snyder@CenterPointEnergy.com](mailto:David.Snyder@CenterPointEnergy.com)

