



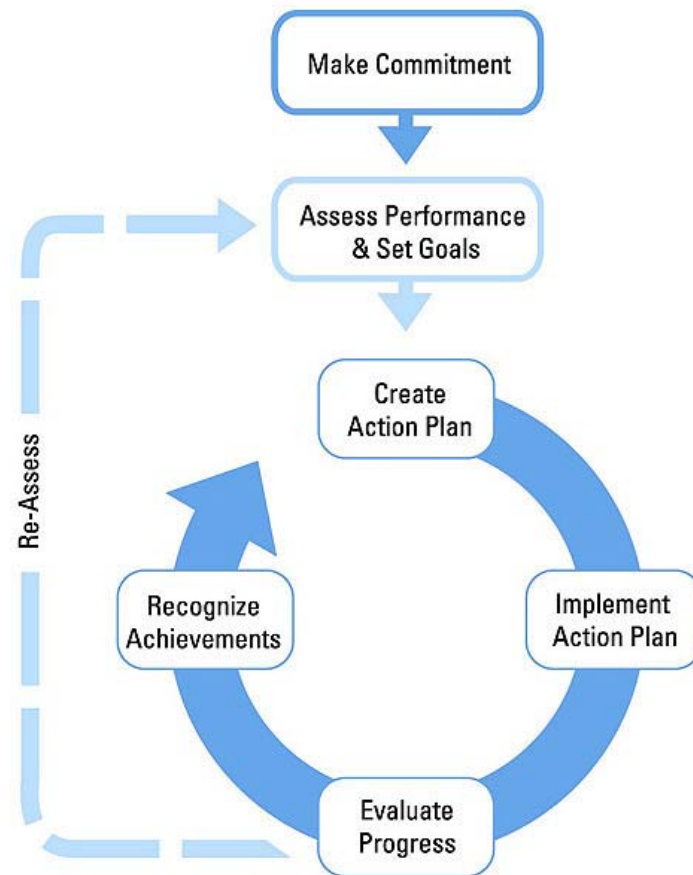
Audits and Technical Assessments

**ENERGY STAR Web Conference
June 15, 2005**

**Call-in Number: 1-800-914-3396
Access Code - 9307720**

About The Web Conferences

- **Monthly**
- **Topics are structured on a strategic approach to energy management**
- **Help you continually improve energy performance**
- **Opportunity to share ideas with others**
- **Slides are a starting point for discussion**
- **Open & interactive**



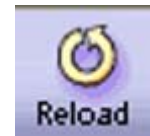
Web Conference Tips



- Mute phone when listening! Improves sound quality for everyone.

Use * 6 – to mute and * 7 to un-mute

- If slides are not advancing, hit reload button or close presentation window and press the launch button again.



Web Conference Tips

- Chat Feature



- Presentation slides will be sent by email to all participants following the web conference.
- Hold & Music – If your phone system has music-on-hold, please don't put the web conference on hold!



Today's Web Conference



Facility Audits & Technical Assessments

Different Strategies & Approaches For Evaluating Facilities:

- Paper & Field
- Practices & Processes
- Internal Teams & External Reviewers
- Combinations of all of the above...

Having a facility assessment policy / strategy in place is what is key!

Today's Web Conference



Speakers:

- Bob Accomando - Arden Reality & Duane Lappinga - Next>edge
- Jim Edwards - Subaru & Doug Woodward - Cinergy Solutions
- Jay Jackson - 3M & John Carlson - Sebesta Blomberg



next>edge



ENERGY STAR

Web Conference

June 15, 2005

next>edge

Agenda

- > Who is Arden Realty?
- > Who is next>edge?
- > Building Efficiency Issues
- > Energy Efficiency and Power Generation Solutions
- > Portfolio Results
- > Case Study

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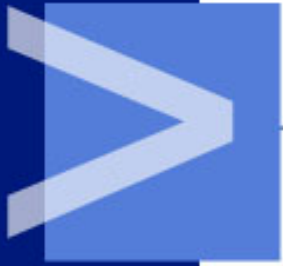
Arden Realty, Inc.



- > \$3 Billion REIT
- > Largest commercial landlord in Southern California
- > 20 million square feet; 218 buildings
- > Formed Energy “Swat Team” in 1996
- > EPA’s “Partner of the Year” 3 years in a row
- > 65 EPA Energy Star Labeled Buildings
- > Incorporated wholly owned subsidiary next>edge in March, 2001

next>edge

Who is next>edge?



- > next>edge is a turnkey provider of fully integrated energy efficiency and power generation solutions for commercial facilities.

next>edge

Building Efficiency Issues

- > Improper lighting and lack of occupancy sensors
- > Inefficient air distribution
- > Inefficient refrigeration plant
- > Lack of optimization and integration
- > Poor maintenance = excessive energy consumption
- > 65% of building operating costs are in the hands of the Chief Engineer

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Energy Efficiency and Power Generation Solutions

- > Energy Audits
- > Energy Star Benchmarking
- > Web-based utility tracking
- > Energy Management Systems
- > Advanced EMS Software
- > HVAC Retrofits
- > Lighting Retrofits
- > Commissioning/Best Practices
- > Onsite Power Generation:
 - > Cogeneration
 - > Solar

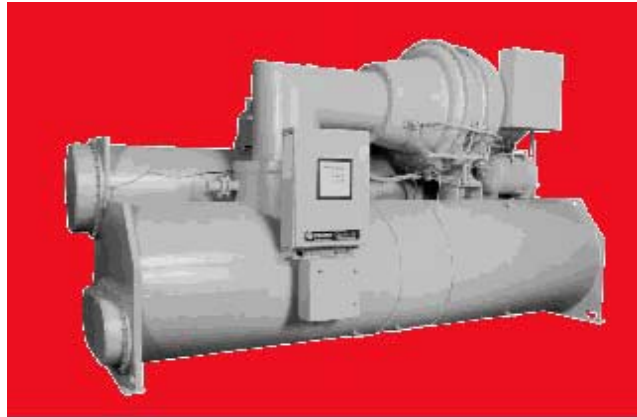
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Establish Portfolio Standards

- > Conduct life cycle analysis for all equipment
- > Set up energy accounting program
- > Repair and maintain systems versus replacement
- > Set operational standards for engineering staff
- > Air balancing
- > Water treatment
- > Filters

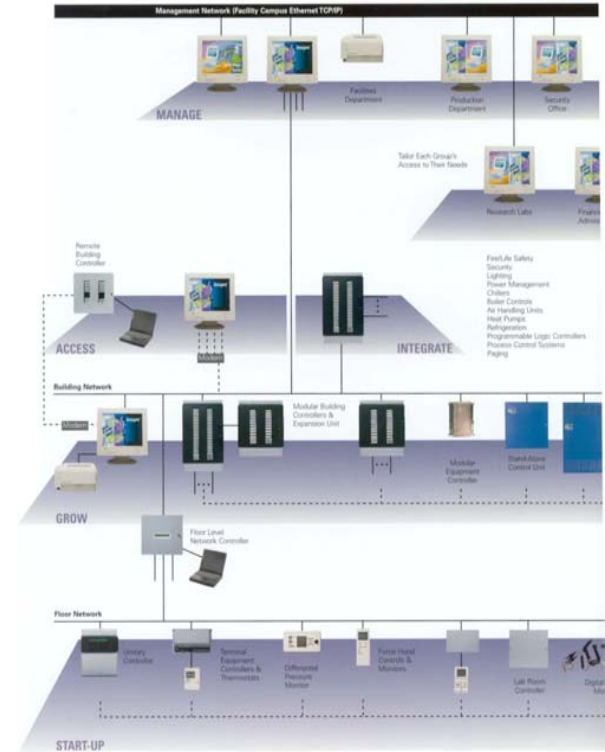
Demand Side Management Technologies



Energy Efficient Refrigeration Machines



Lighting and Occupancy Sensors



Energy Management Systems (EMS)

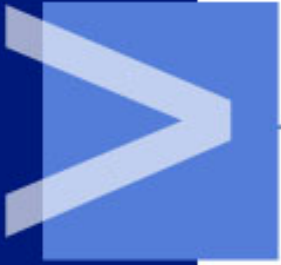
Cogeneration



600 kW Plant with Absorption Chiller

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Solar Photovoltaics



240 kW Array

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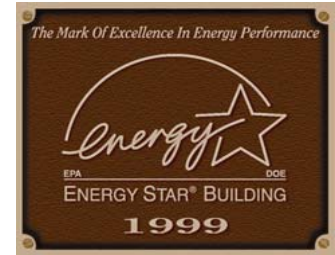
Portfolio Results

- > 113 Lighting Retrofits covering 12 million square feet
- > 67 EMS installations
- > 9 MW of demand reduction
- > 5 Cogeneration plants - 2.6 MW
- > Solar Photovoltaics - 240 kW
- > IRR's of 20% to 50%

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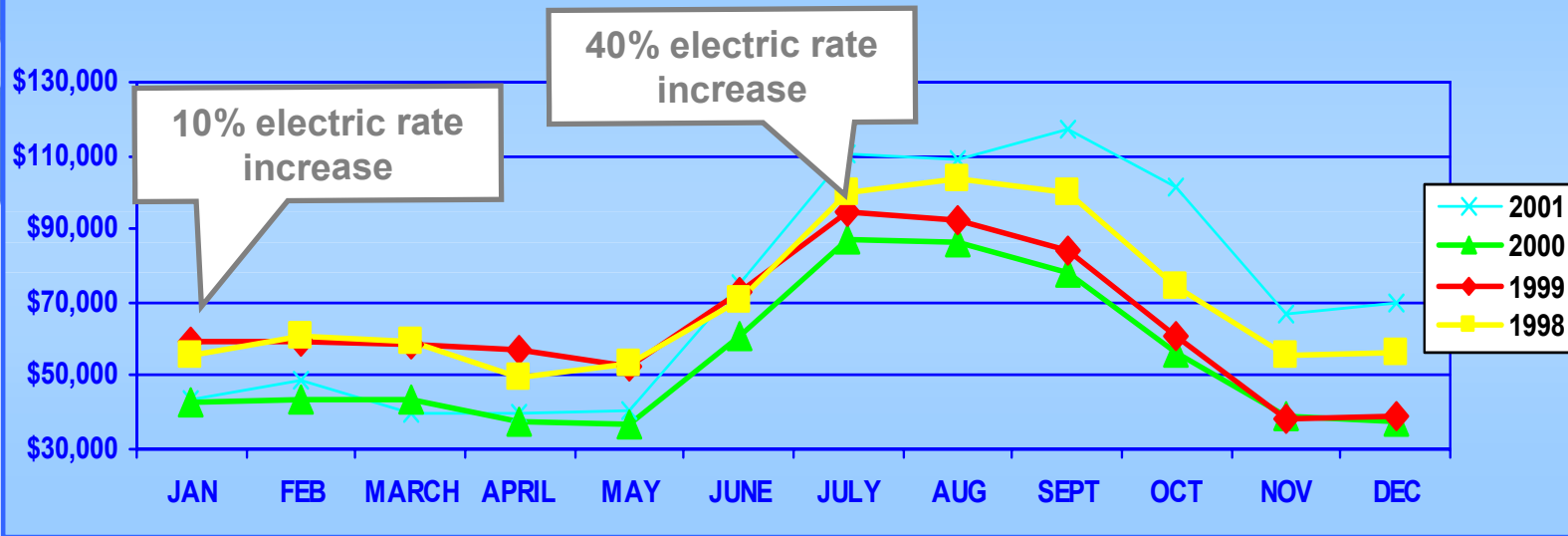
Case Study

- > 8383 Wilshire Boulevard
 - > 417,000 Square Feet
 - > Cogeneration
 - > Demand-side management

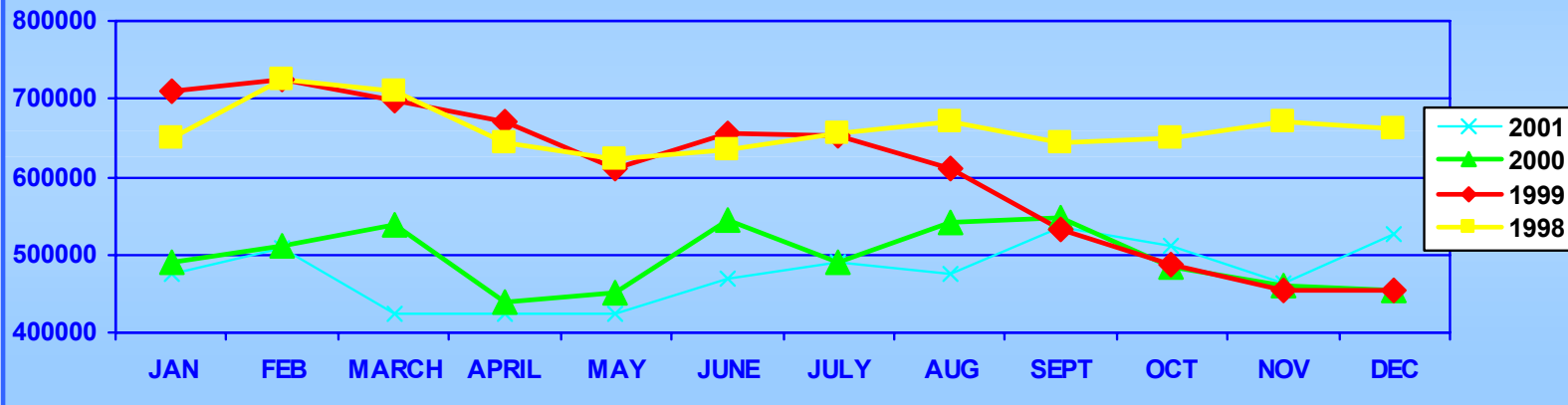


Energy Retrofit Project
of the Year, 2001
-Energy User News

Electricity Billing 1998-2001



Kilowatt Usage 1998-2001





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THANK YOU



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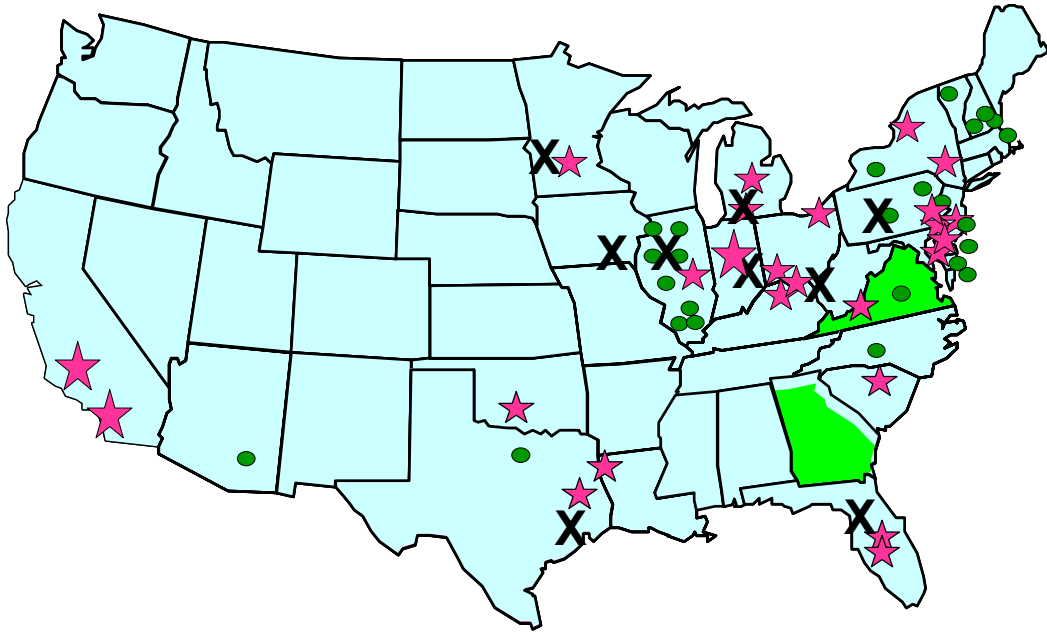
Questions & Comments

Cinergy Solutions

... providing *total* energy solutions ...



Utilizing a partnership approach with customers



- ★ Projects under contract
- X Projects under LOI/MOU
- ZAPCO Projects

Projects:

- | | |
|---------------------------------|---------------------------|
| Celanese Rock Hill, | Celanese Narrows |
| BP Texas City, | Equistar Tuscola, |
| P&G Cincinnati, | Kodak Rochester, |
| GM Shreveport, | Millennium Ashtabula, |
| Blue Lake, | GM Oklahoma City, |
| Lafarge, | St. Paul District Energy, |
| Cincinnati Cooling, | GM Lansing, |
| Orlando Cooling, | GM Delta Township, |
| Philadelphia Naval Base, | |
| US Energy Biogas (28 projects) | |



First steps in Energy Studies

- Organizational commitment to the initiative.
(Senior Management to plant operators)
- Pre-determined payback period / rate of return.
- Internal Funding or 3rd party funding.
- Understanding of utility costs and tariff structure.
- Internal or external implementation.

Determination of Resources

Option 1

Implement energy improvement internally

Advantages

- Utilization of internal resources
- Complete Control of Process

Disadvantages

- Distracts Focus from core business
- May lack total energy expertise
- Speed of implementation
- Assume full financial risk

Option 2

Hire an Engineer to design and a Contractor to implement

Advantages

- Control of Process
- Competitive bid situation
- Expertise at installation

Disadvantages

- Lack of ingenuity in solution development
- Still need to provide project management
- Assume full cost & savings risk

Option 3

Team with a 3rd party to develop and implement energy improvements

Advantages

- Allow focus on core business
- Access to all areas of energy expertise
- Greatest cost reduction
- Reduced implementation time
- Process consistency and standardization
- Outsource cost and savings risk

Disadvantages

- Some resource allocation is required to develop joint plan
- Small price premium
- Risk in selecting the right partner

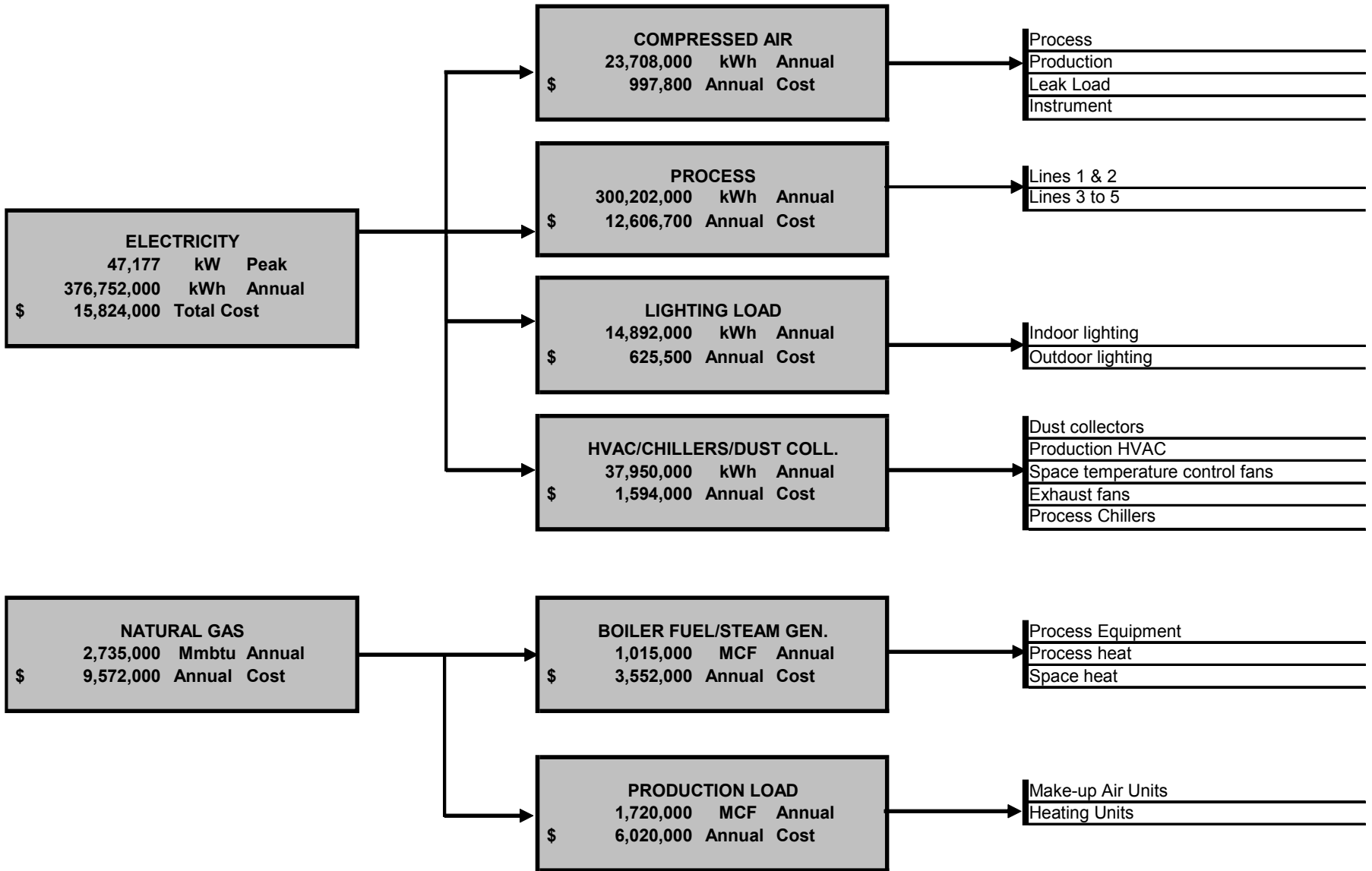
Feasibility Study Process

- 2 - 3 day analysis to review energy consumption.
- Areas of Focus:
 - Compressed Air
 - Steam
 - Waste Heat Sources
 - HVAC
 - Lighting
 - Alternate Fuel Capabilities
- Develop Site Energy Balance

Study Results

- Project list with calculated energy savings and IRR.
- Understanding of:
 - Overall Project
 - Cost & Savings Risk
 - Impact on Overall Utility System
 - Capital Requirement
 - Installation Cost
- Determination of implementation team.
- Breakdown of utility consumption of the primary and secondary utilities.

ANNUALIZED ENERGY UTILIZATION

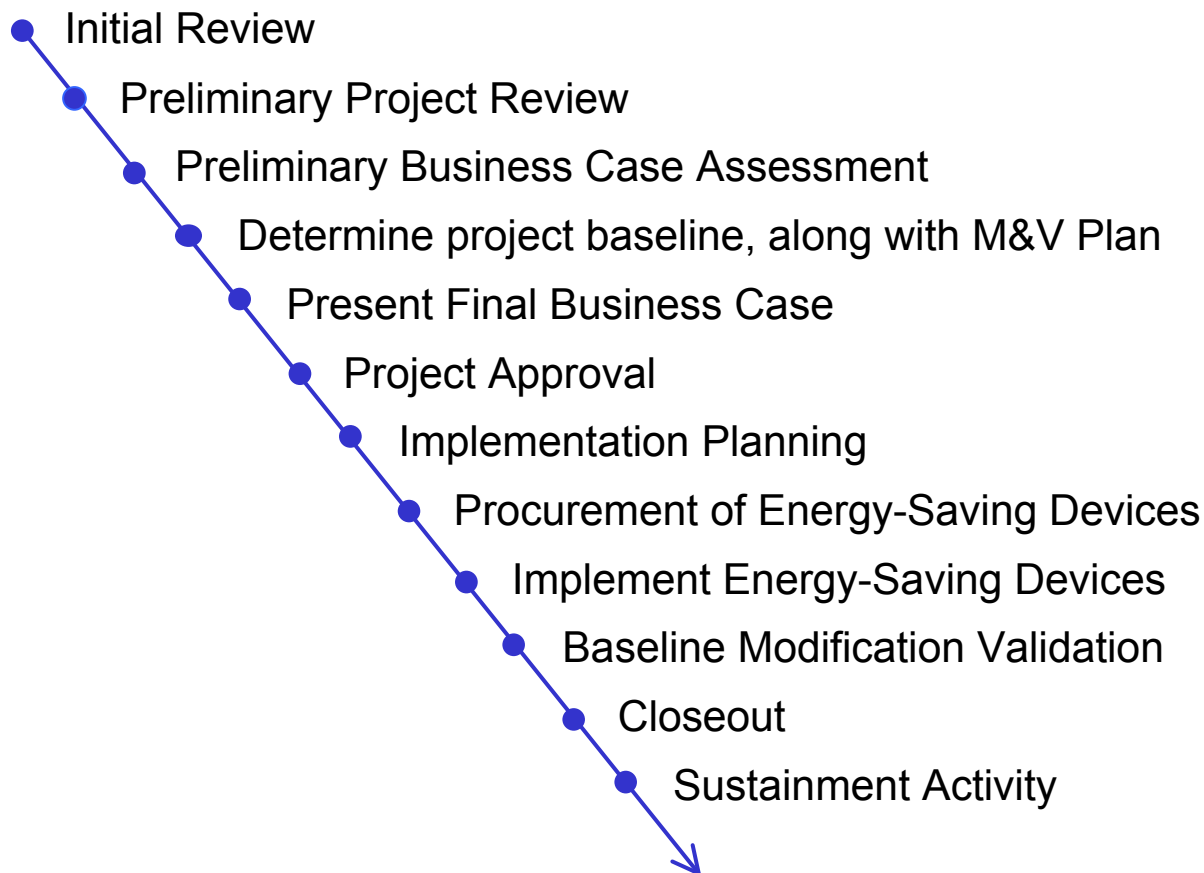


PROJECT LIST

ECM No.	Project Description	Savings Type	Potential Energy Savings	Estimated Project Cost	Potential Payback (Years)	Devel'mt Cost	Comments
Projects with 2.7 or Better Payback							
1.1	Install a new inlet filtration system on gas turbine.	Electricity	\$426,100	\$802,676	1.88	\$20,000	Utility Rate = .045/kwh
1.3	Turbine Inlet Fuel Preheating	Natural Gas	\$276,080	\$662,818	2.40	\$20,000	
2.4	Supervisory chilled water plant controls	Electricity	\$134,054	\$354,767	2.65	\$10,000	
3.1	Preheat boiler plant mill water with white water downstream of flotation unit	Fuel	\$92,944	\$225,575	2.43	\$11,500	
3.4	Compressed Air Retrofit	Electricity	\$320,150	\$890,000	2.78	\$27,500	Utility Rate = .045/kwh
5.6	Install a boiler blow down heat recovery makeup water heat exchanger.	Natural Gas	\$27,266	\$71,404	2.62	\$8,000	
5.8	Improvement in Wastewater System	Waste Removal	\$450,000	\$913,750	2.03	\$15,000	
5.10	Install a feed water economizer on boiler #4	Electricity	\$143,475	\$225,484	1.57	\$9,500	
7.1	Lighting Retrofit	Electricity	\$750,734	\$2,006,000	2.67	\$27,500	Utility Rate = .045/kwh
TOTALS:			\$2,620,803	\$6,152,474	2.35	\$149,000	

Project Implementation

Specific Project Opportunity





Compressed Air Project Objective

Objective

Reduce on-line compressed air horsepower by stabilizing the plant air at a lower pressure, configuring efficient compressed air arrangement and reducing demand-side usage via process retrofits to point of use.

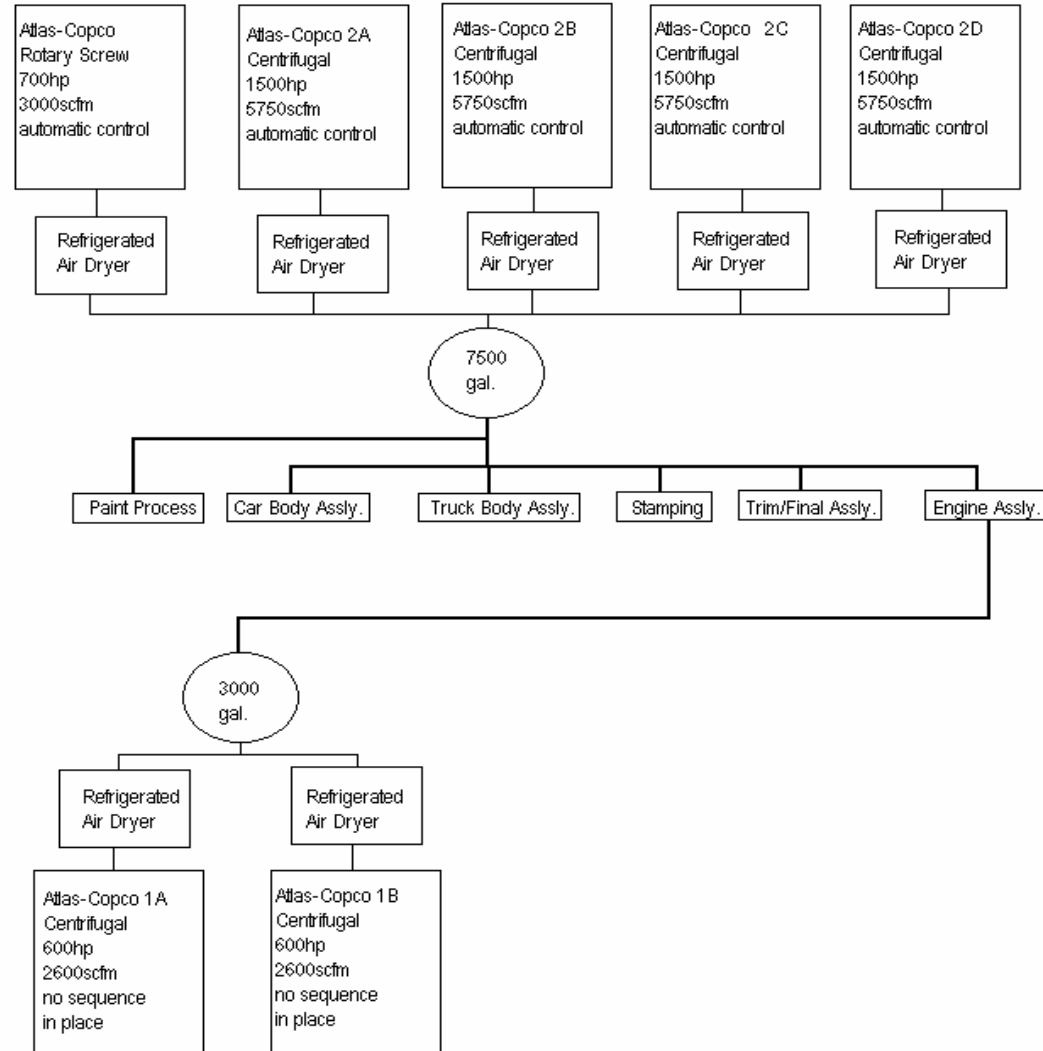
Rational

Current operating profile indicated that excess compressor horsepower was on-line to accommodate varying production requirements. The supply system had limited configuration capabilities preventing optimum economic arrangement. The plant consisted of demand side users that would be more efficient by utilizing other energy sources than compressed air. Modifications allowed reduced base demand offering increased reserve capacity and energy savings.



System prior to Retro-fit

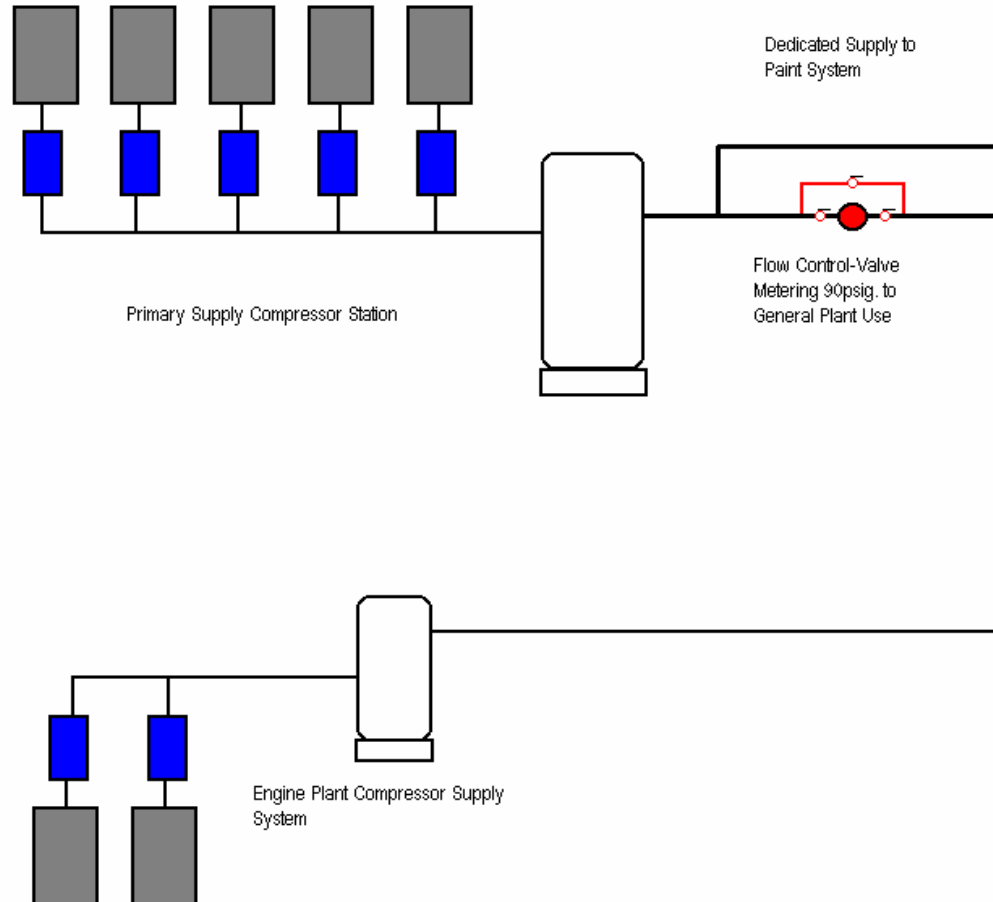
Subaru Compressed Air Supply Equipment Architecture





System after Retro-fit

Subaru Compressed Air Supply Layout With
Flow Control-Valve. no scale, flow only.





Project Financials

Energy Savings

\$88,965 or 2,120,625 kWh / year

11.6% reduction in the compressed air system

Investment

\$237,194

Financial Return

2.7-year simple payback

Other Benefits

Reduced maintenance due to reduced run time, increased compressor life, and improved reliability

Sample list of Clients

GOVERNMENT

- Cincinnati Water Works – Cincinnati, OH
- Cincinnati Metropolitan HA – Cincinnati, OH
- Crane Naval Base – Crane, IN
- Dayton Metropolitan HA – Dayton, OH
- Butler Metropolitan HA – Middletown, OH
- LaSalle Metropolitan HA – Ottawa, IL
- City of Niagara Falls – Niagara Falls, NY
- Terra Haute HA – Terra Haute, IN
- City of Terra Haute – Terra Haute, IN

HEALTHCARE

- Meadville Medical Center – Meadville, PA
- Greene County Memorial Hospital – Waynesburg, PA
- Clay County Hospital – Brazil, IN

EDUCATION

- Allegheny College – Meadville, PA
- Great Oaks Vocational Schools – Cincinnati, OH
- Ohio University – Athens, OH
- Glasgow Schools, Glasgow, KY
- New Albany Schools, New Albany, IN
- Rose Hulman Institute for Technology – Terre Haute, IN
- Hanover College - IN

INDUSTRIAL

- Coca Cola – Cincinnati, OH
- Duramed Pharmaceuticals – Pleasant Ridge, OH
- Eastman Kodak
- Equistar Chemicals
- Essex Group, Inc. – Sikeston, MO
- Fleetguard, Inc. (Cummins) – Cookeville, TN
- Formica – Cincinnati, OH
- General Motors – Bedford, IN
- General Motors Worldwide Facilities Group
- Heartland Steel – Terre Haute, IN
- Hopple Plastics – Cincinnati, OH
- Instat Precision – Rushville, IN
- Kobelco
- Lafarge – Silver Grove, KY
- Millennium Inorganic Chemicals – Ashtabula, OH
- Millennium Inorganic Chemicals – Hawkins Point, OH
- Miller Brewing Company – Trenton, OH
- Procter & Gamble – Cincinnati, OH
- Procter & Gamble – Cape Girardeau, MO
- Rae Magnet – Lafayette, IN
- Schwans Foods (SSE Manufacturing) – Florence, KY
- Subaru Automotive – Lafayette, IN
- Worthington Steel – Monroe, OH

CONTACT INFORMATION

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Engineered Savings Program (ESP)

Enhanced Opportunities for Energy Conservation Through Plant and System Assessments

Presented by: *Jay Jackson – 3M*
 John Carlson – Sebesta Blomberg



June 15, 2005





Sebesta Blomberg is a single source provider of services ranging from project evaluation through solution definition, design, construction, commissioning, start-up, training, and operation and maintenance.

We function as an extension of 3M's staff bringing experience, knowledge and passion to each opportunity. We take great pride in being a business partner with 3M.



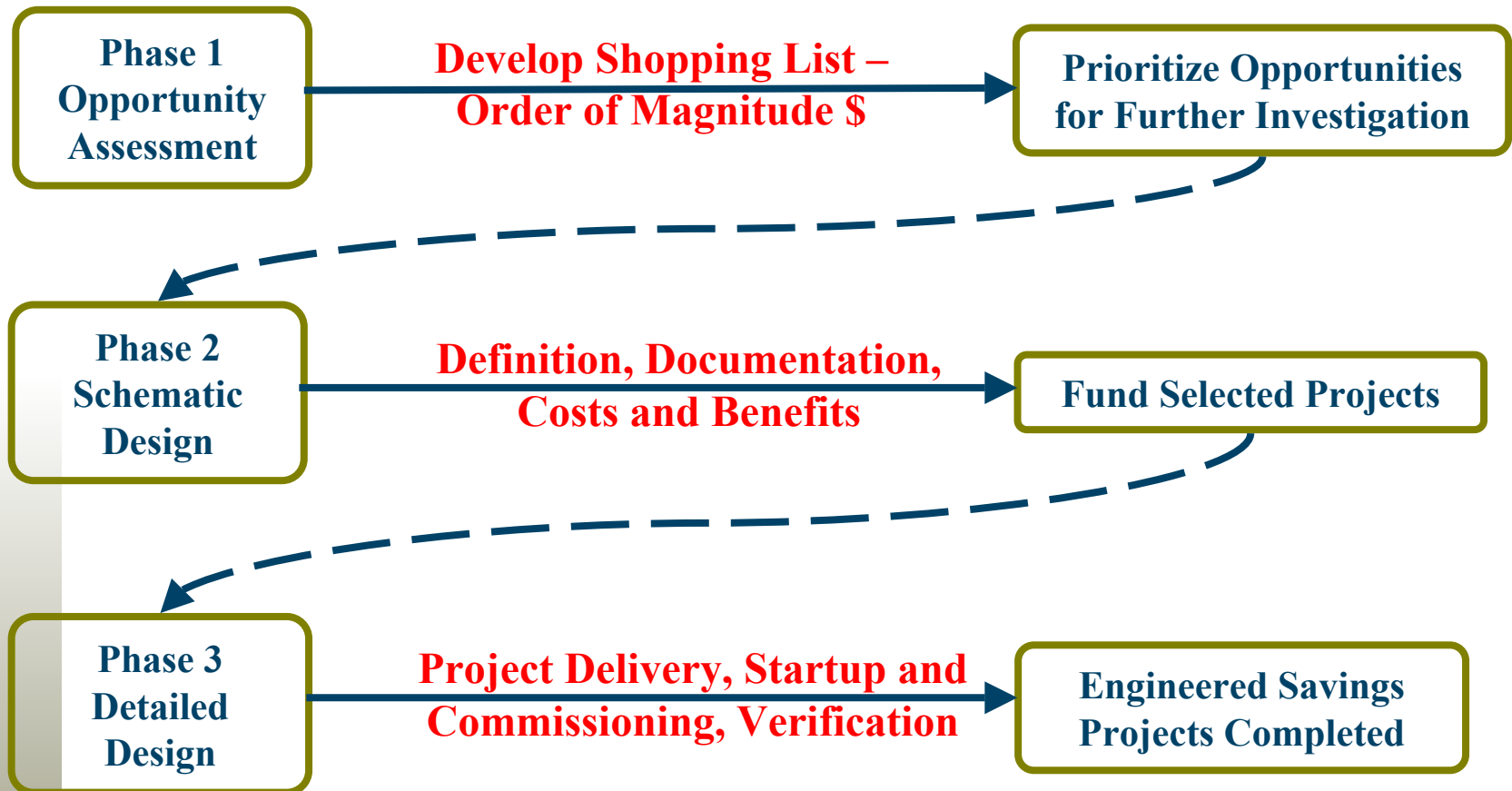
Engineered Savings Program

- An integrated program that includes energy cost reduction, value-added capital expenditures, process improvements
- An opportunity assessment process that stresses define, measure, analyze, improve and control
- Performed by independent professional that is familiar with 3M processes and procedures
- Program can be plant-wide in scope or targeted for specific utility, system or process



Plant-Wide Opportunity Assessment

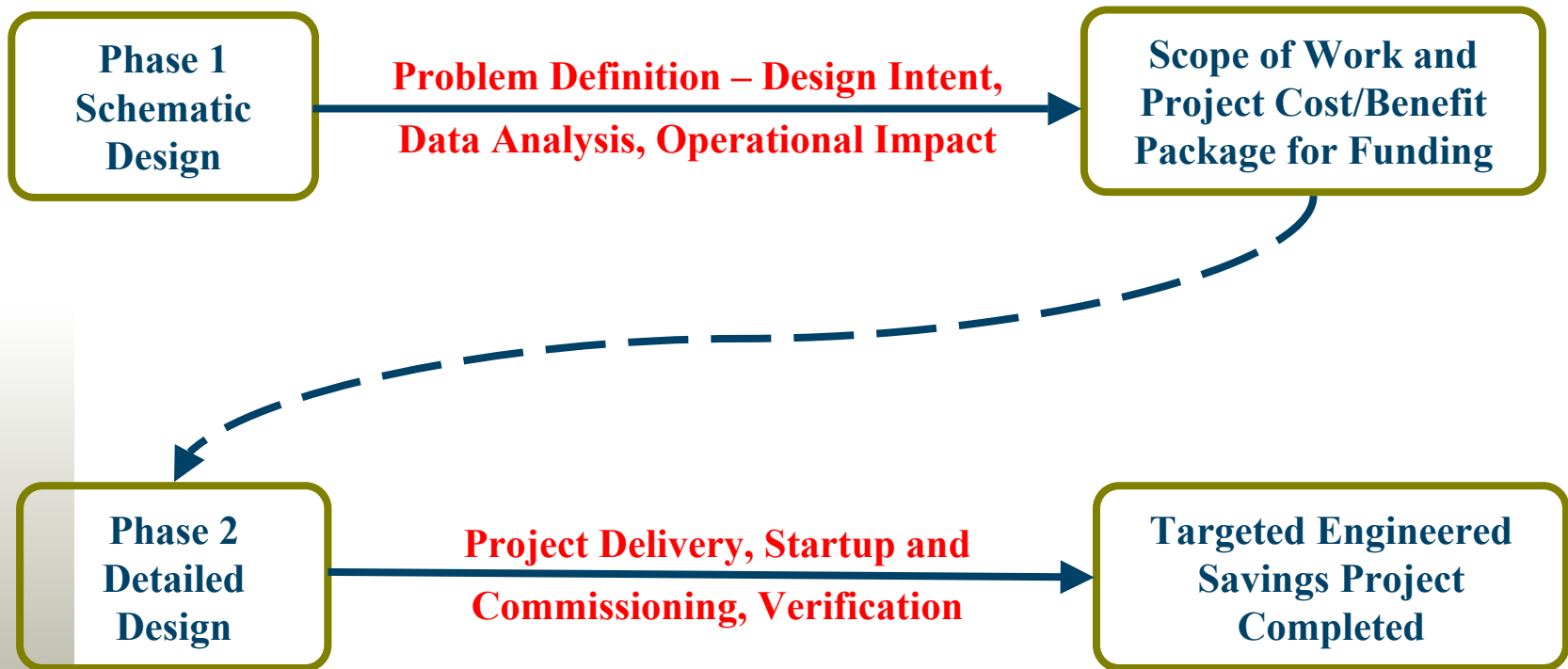
Open Season on Identifying Improvements





Targeted System Opportunity Assessment

Service Provider is Challenged to Provide
a Targeted Project Solution that is Fundable





Keys to Success:

- Commitment of plant and consultant resources
- Hands-on plant walk-through and interviews with appropriate staff
- “Shopping list” of valid potential projects for plant-wide assessments
- Solutions with costs, benefits and plant impact for targeted assessments
- Accurate project definition
- Secure funding for priority work



Challenges:

- 3M staff is very energy conscious and have harvested the “low hanging fruit”
- Don’t mess with the process culture
- Strict requirements for project execution
- Many levels of input, approval and review
- Short payback requirements



Northridge Chilled Water Targeted Assessment

- Challenge given to Sebesta Blomberg – develop a project that can be funded through energy savings that will also address chilled water system shortfalls
- Document how system is currently operated, develop energy usage profiles, establish verifiable cost reduction strategies, identify operational improvements, define project implementation plan.



Northridge Background

- Pharmaceutical plant w/critical utility
- Constant speed primary pumps, 50% 3-way control valves, 2 chillers
- Plant automation (chiller staging, tower and pump control) not performing – operator initiated
- System was never commissioned
- Chilled water - 26% of total plant electric usage
- Chilled water pumps - 23% of total chilled water system electric usage
- Site temperature difference (DT) was 3° - 5°



Northridge Modifications

- Installed VFD On Primary Chilled Water Pump
- Installed Site Instrumentation Required To Operate Variable Flow Primary Pumping
- Installed Metering To Control Chillers And Flows
- Converted 3-way Valves To 2-way Operation
- Revised Control Sequences To Provide Reliable Automation
- Lowered Tower Water Temperature Setpoints
- Commissioned System



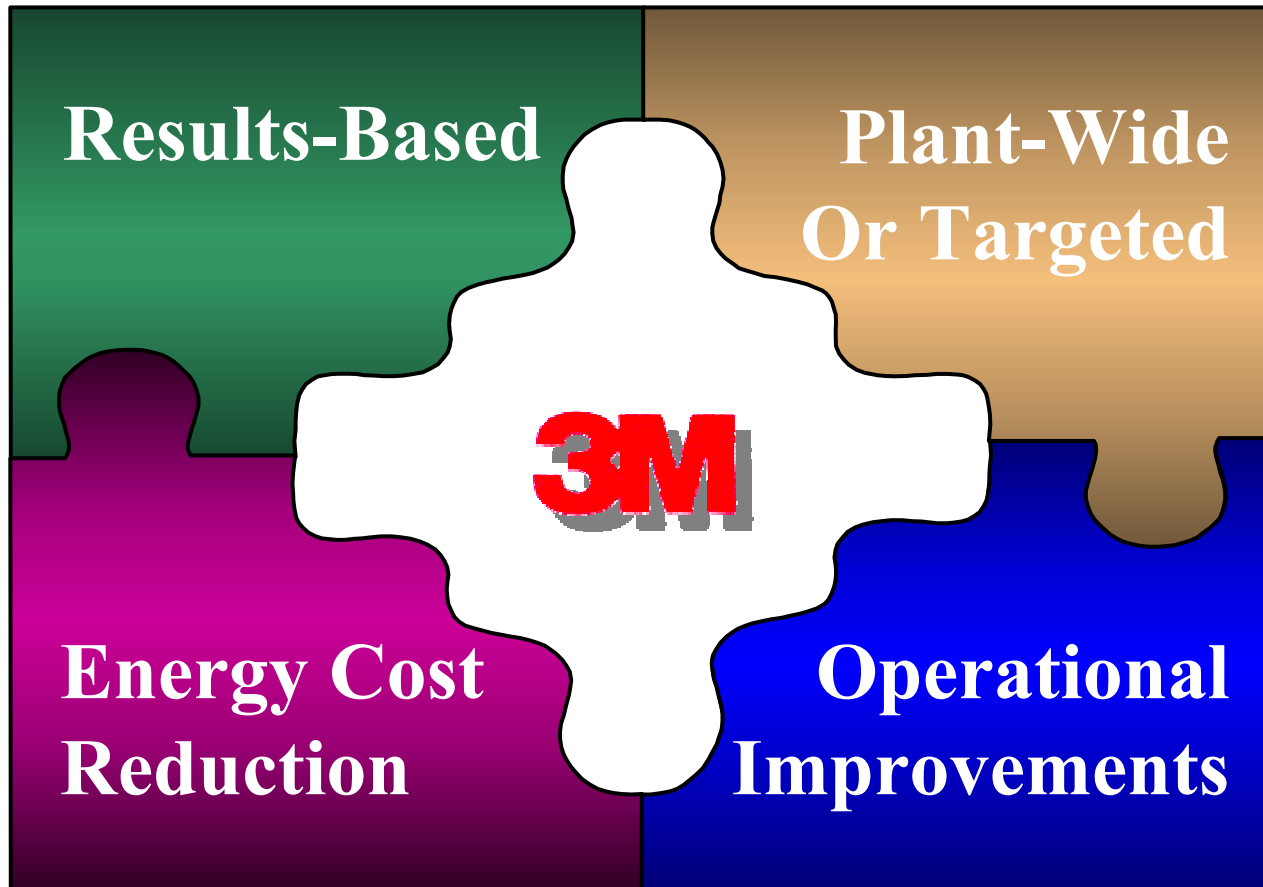
Northridge Outcome

- Reduced CHW system electrical consumption by 25% - overall plant energy by 6.3%
- System energy usage reduced from 0.88 kw/ton to 0.67 kw/ton (delivered to user)
- Reduced chilled water pumping energy by 71%
- Site DT doubled to 8° (in progress)
- Successfully implemented control sequences using detailed verification test procedures
- Met performance and financial goals



Teaming Relationship with 3M and Sebesta Blomberg for Engineered Savings Program Provides

- A method of initiating energy cost reduction projects as well as process improvements
- Plant-wide or targeted assessments
- A partner that successfully interfaces plant staff with corporate staff and contractors/vendors
- A process that 3M controls
- An independent resource that has A solution goal instead of A sales goal - build A long term relationship based on value



Sebesta Blomberg - www.sebesta.com

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Upcoming Web Conferences



July 20 – Green Power Primer

August 17 – About The ENERGY STAR Awards

September 21 – Carbon Risk, Carbon Trading
And Energy Management

October 26 – Networking Meeting in Washington
DC

www.energystar.gov/networking



ENERGY STAR

Thank you for participating!