

## Supporting Sustainable Manufacturing in South Carolina

# E3: Economy, Energy, and Environment



Helping South Carolina  
Companies Grow



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Your business. Better.



# Agenda

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-  What is E3?
-  Benefits for manufacturers, communities, utilities and local, state and federal government
-  Who is involved in E3?
-  The SC Spartanburg E3 Team

## Appendix

-  E3 case studies: Columbus, Ohio and San Antonio, Texas

# What is E3?

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## A comprehensive approach for establishing sustainable practices for manufacturers

-  Coordinates local, state, and federal assistance to work with manufacturing base in local communities to enhance sustainability and competitiveness and to spur job growth and innovation.
-  Provides manufacturers with customized, hands-on lean, energy and pollution prevention assessments, specific project implementation recommendations and customized workforce training in applicable “green” skill sets.
-  Promotes sustainable manufacturing and growth through innovative technology and access to affordable capital to support needed new systems/equipment.
-  Improves the regional economy by retaining jobs in companies that are better positioned for global competition.
-  Reduces environmental impacts while regaining a competitive advantage.

# Benefits for Manufacturers, Communities, Utilities



## Cost Savings and Energy and Environmental Wastes Reductions

- Significant cost savings from increased process efficiencies and reduced waste
  - E3 Program Lean and Clean assessments in Columbus, Ohio would save nearly \$300k/year in energy costs, over \$300k/year in environmental waste reductions and create 6 “green” jobs for capital projects. The average payback for projects was under 1 ½ years!
  - E3 Program energy assessments on the same facilities recommended measures that would reduce electric usage by 25%!
- Catalyze local government’s energy, environmental and climate change goals



## Increased Competitiveness

- Technical support to drive entry into new markets
- Trained workforce with skills for a sustainable economy
- Invest in local communities



## Access to Technical, Training and Financial Resources

- Additional funding through federal and state programs
- State-of-the-art and profitable sustainable business practices
- Strengthen and stabilize industrial customers

# Bringing E3 to Spartanburg County

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-  Establish replicable, self-sustaining initiatives to increase the sustainability and profitability of local and regional manufacturers
-  The E3 Spartanburg Program will focus initially on up to 2-5 small and medium manufacturers in the Spartanburg area.
-  Harness *existing* federal, state and local expertise and resources
-  Develop *new* sources of technical assistance, technology, expertise, and workforce development from federal, state and local resources to provide:
  1. Technical Assessments
  2. Project and New System Implementation Support
  3. Workforce Development and Support

# Technical Assessments

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A **Lean and Green Review** which leads to increased productivity and reduced costs, reductions in water use, materials and energy.

An **Energy Assessment** which provides tools and insight to reduce energy demand and costs.

A **Greenhouse Gas (GHG) Evaluation** that teaches manufacturers how to calculate GHG emissions and evaluate reduction strategies.

**Post-Assessment Recommendations** that guide each facility toward improvements in overall efficiency, reduced waste, more efficient use of resources including energy and water, and cost savings.

# Implementation Support

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E3 Spartanburg will include specific client project implementations based on results of plant assessments as well as identify funding/resources to support new systems/equipment to ensure results and sustainability.

## Leveraged Funding/Resources

- Project Implementation funds through grants awarded by Dept. of Energy to South Carolina MEP, Duke Energy, SC Energy Office, SC Dept. of Health and Environmental Control, and U.S. EPA Region 4
- SBA/SBDC Counseling and Assistance
- Working on Workforce Development Funding for Employee Training

## Loan Guarantee Programs

- Small business loans provide general equipment and working capital loans up to \$2 million and manufacturers' equipment financing up to \$10 million

# Workforce Development and Support

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The development of the individual company training programs will begin with a process to determine the most effective workforce training strategy for each company in order to affect sustainability and spur job retention and growth.

SC Spartanburg E3 representatives review the results of the E3 plant technical assessments and conduct interviews to customize each company's E3 Workforce Training and Support Program.

Workforce training provides targeted and certified skills in sustainable technologies and methods that will increase manufacturing competitiveness and enhance employee retention.

# E3 Metrics

## Economic Metrics:

- Environmental savings identified
- Lean savings identified
- Other cost savings
- One time potential cost savings identified
- Individuals trained
- Jobs created
- Jobs retained
- Total annual potential impact identified
- Number of small businesses engaged
- Percentage of small businesses engaged
- Number and value of SBA loans granted
- Capital infusion dollars invested
- Hours of consulting provided

## Energy Metrics:

- Energy conserved (MM BTU/kWh)
- Energy intensity per unit of production
- Carbon reductions (tons)
- Carbon intensity per unit of production

## Environment Metrics:

- Air emissions reduced (lbs)
- Solid waste reduced (lbs)
- Material intensity per unit of production
- Hazardous waste reduced (lbs)
- Hazardous materials reduced (lbs)
- Water pollution reduced (lbs)
- Water used/conserved (gal)
- Water intensity per unit of production

# E3 Model: Programs working together

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## ECONOMY

SC Manufacturing  
Extension Partnership,  
Small Business  
Administration, Duke  
Power, Workforce  
Investment Board

## ENERGY

Duke Power, SC MEP, SC  
Energy Office, U.S. EPA-  
Energy Star

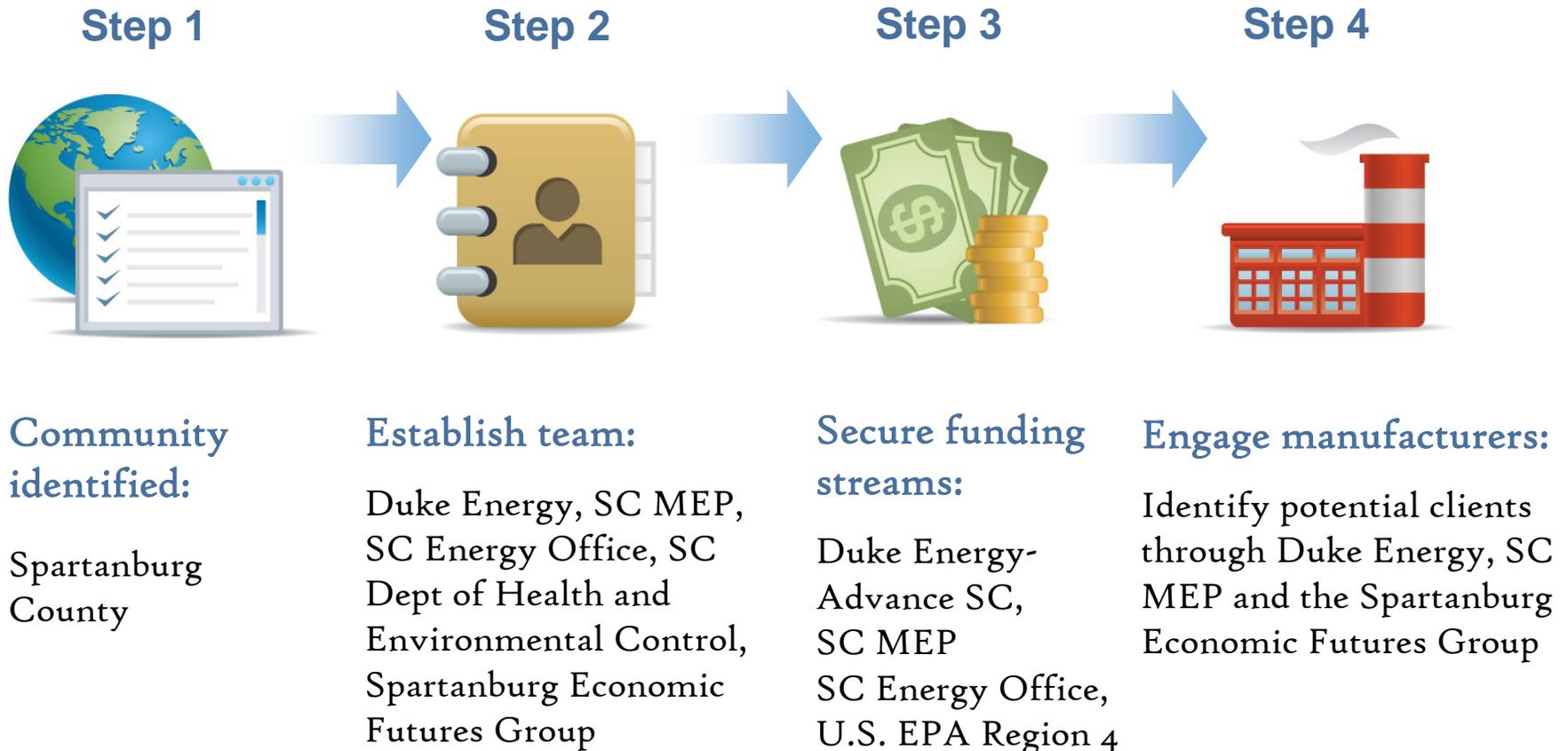
## ENVIRONMENT

SC MEP, SC Dept of  
Health and  
Environmental Control,  
U.S. EPA, Duke Power

## COMMUNITY

The Spartanburg Economic Futures Group

# E3 Spartanburg Progress



# Contacts for SC UpstateE3

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# Appendix

# E3: Columbus, Ohio

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## Pilot Update:

- 6 pilot facilities:
  - Central Ohio Welding
  - G and J bottling Co ( A Pepsico company)
  - Hirschvogel
  - Crane Plastics
  - Archmittaler
  - Timber Tech
- Technical assessments completed by August 2009
- Each assessment spans 3 to 4 days
- Facilities invited to join pilot program based upon utility review of rate-payers
- Several assessment recommendations expected to be low outlay or fast payback



# Preliminary improvements quantified

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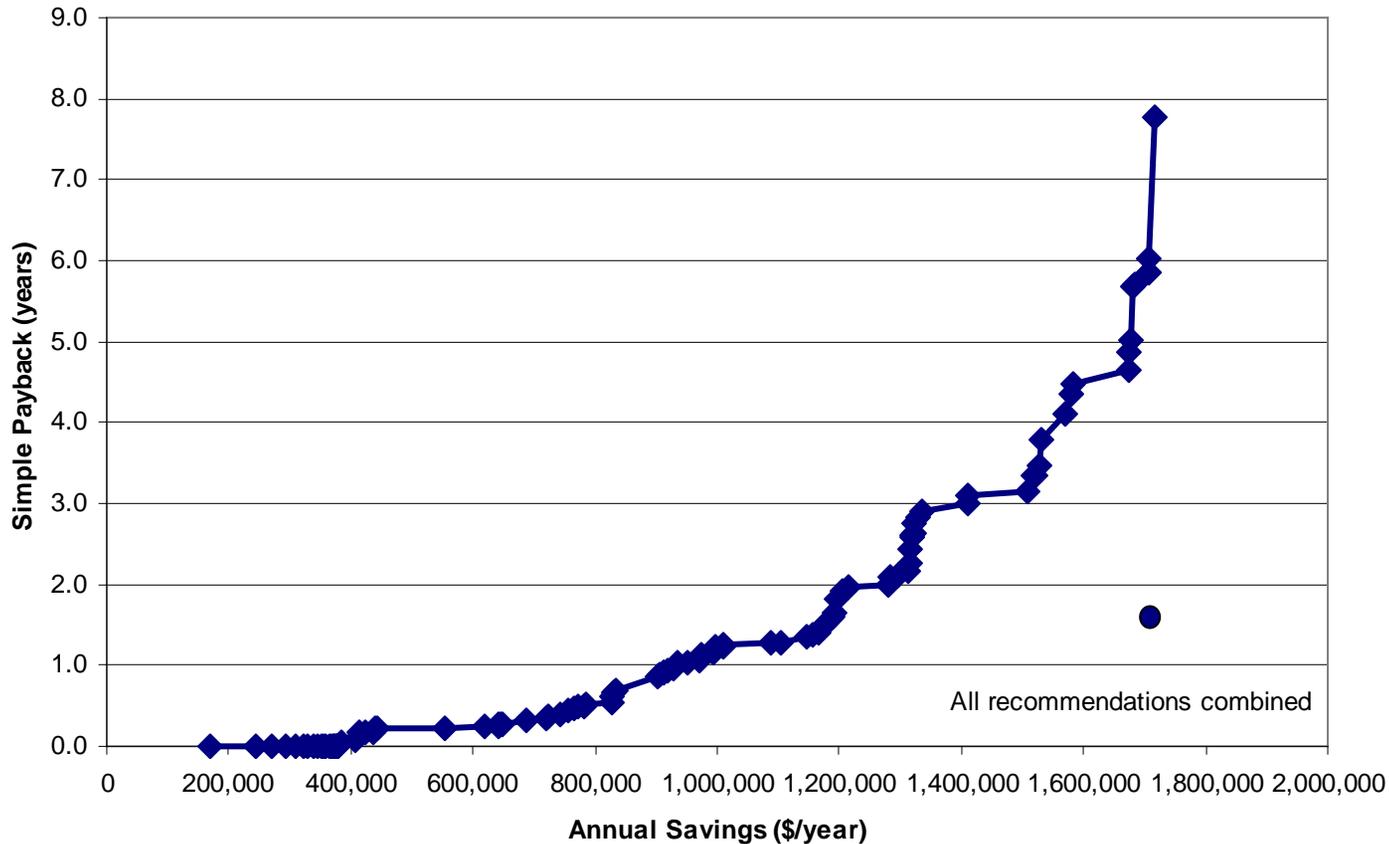
Energy cost savings:	\$1,716,288
Environmental savings	\$1,909,538
Economy savings (lean)	\$496,378
Capital Jobs	35
Water pollutants avoided	257,000 pounds
CO <sub>2</sub> emissions avoided	23,161 tonnes
SO <sub>x</sub> Reduction	207 tonnes
Solid waste reduction	24,000 pounds
Improvements implemented	\$237,873

# Energy Savings System Analysis

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- Electrical
- Lighting
- Motor Drive
- Fluid Flow
- Compressed Air
- Steam
- Process Heating
- Process Cooling
- Heating, Ventilating and Air Conditioning

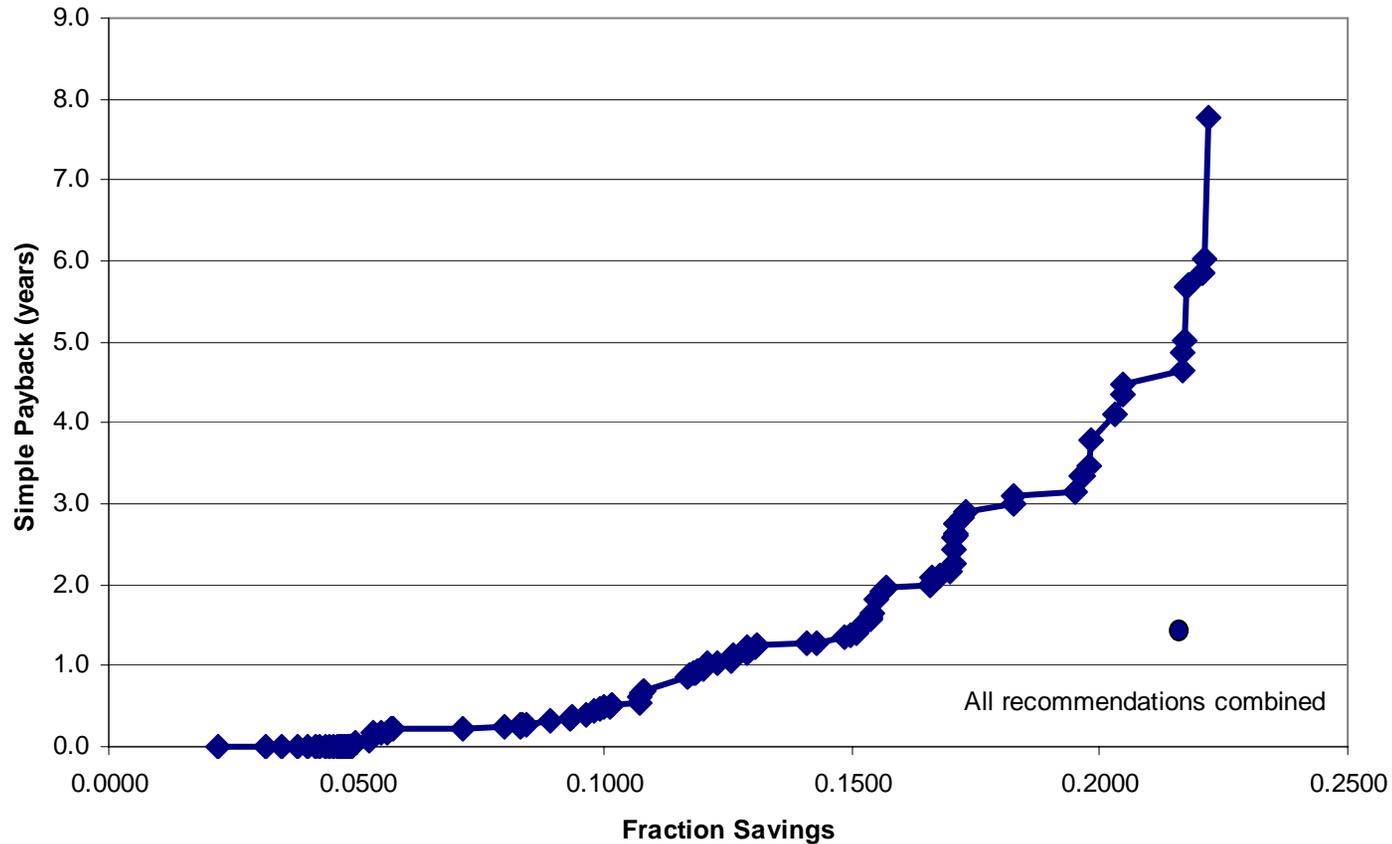
# Annual Energy Savings from Six Plants



\$1.7 M/yr

1.4 years

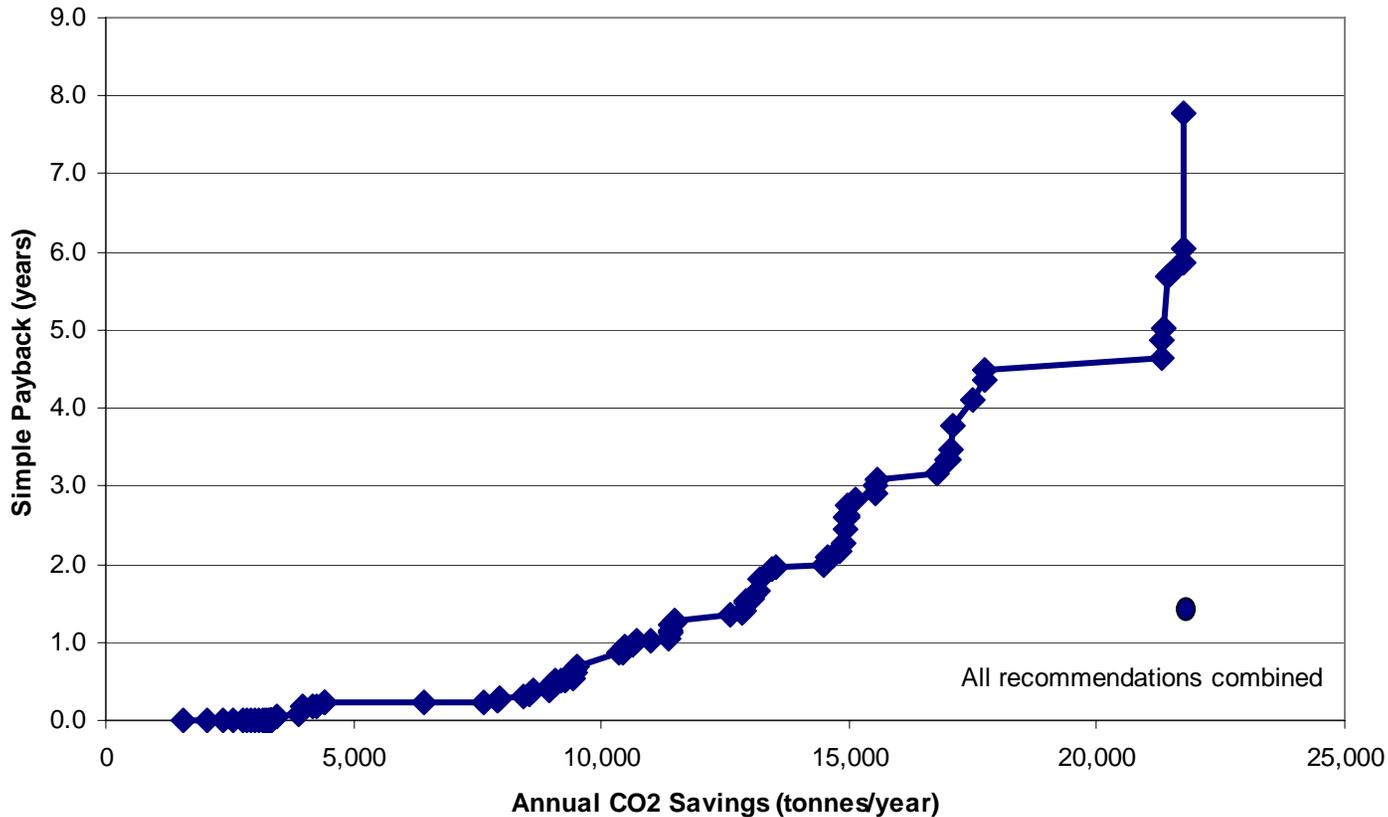
# Fraction Energy Savings from Six Plants



22%

1.4 years

# Annual CO<sub>2</sub> Savings from Six Plants



21.8 kT/yr

1.4 years

# E3 Case Study: San Antonio, Texas



## Six Pilot Facilities:

- Southern Folger
- Munters
- Danbury (AirCool Motors)
- San Antonio Aerospace
- UEMC
- Pratt & Whitney

## At Southern Folger—a detention equipment manufacturer—E3 Program results included:

- \$85,000 in potential energy savings
- 1-yr reduced electric consumption of 159,000 kWh
- Reduced monthly electric demand of 48 kW
- Reduced annual natural gas usage of 36,000 CCF

- 🌈 CPS Energy funding available to support energy efficiency measures
- 🌈 For capital outlays, engaging local SBA
- 🌈 City is seeking future funding from the Energy Efficiency and Conservation Block Grants (EECBG) [www.eecbg.energy.gov](http://www.eecbg.energy.gov)