

Supporting Manufacturing Leadership Through Sustainability

E3: Economy, Energy, and Environment



SBA
U.S. Small Business Administration

What is E3?



A model for collaboration among manufacturers, utilities, local government, and federal resources intended to:

- Invest in local communities
- Address energy and sustainability challenges
- Provide valuable technical training and assessments
- Enable economic growth



Benefits for Manufacturers



Cost Savings

- Significant cost savings result from increased process efficiencies and reduced waste
- Profitable sustainability practices



Increased Competitiveness

- State-of-the-art sustainable business practices
- Technical support to drive entry into new markets
- Job creation and retention



Access to Technical and Financial Resources

- Additional funding through federal and state programs
- Enhanced skills and capabilities for workers

Benefits for Communities



Economic Growth

- Improved competitiveness of existing manufacturers
- Enhanced ability to attract new business
- Increased manufacturing jobs and/or job retention
- Trained workforce with skills for a sustainable economy



Progress toward Environmental and Climate Change Goals

- Catalyze meeting local government's environmental and climate change goals

Benefits for Utilities



Increased Competitiveness

- Invest in local communities
- Strengthen and stabilize industrial rate-payers



Progress toward Environmental and Climate Change Goals

- Catalyze meeting environmental and climate change goals
- Achieve organizational carbon reduction goals

E3 – Federal Programs Working Together



**DOC NIST
Manufacturing
Extension
Partnership**

**DOE Industrial
Technologies
Programs and IAC**

**MEP and EPA Green
Suppliers Network**

**EPA Pollution
Prevention and
Climate Leaders
Programs**

**DOL Employment
and Training**

**SBA and its Small
Business
Development
Centers**



Technical Assessment



A **Lean Review** which leads to increased productivity and reduced costs

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

A **Clean Review** which results in water and energy conservation, reduced emissions, and additional cost savings

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



SBA and its **Small Business Development Centers (SBDCs)** provide business excellence counseling services and financing through guaranteed loan programs

DOL and its **Workforce Investment Boards** provide green job and skills training and apprenticeships supported by workforce development and training grants

Local and Regional E3 Team provides additional resources and support such as state recognition, internship programs and local funding and grant opportunities



E3 Metrics

Economic Metrics:

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

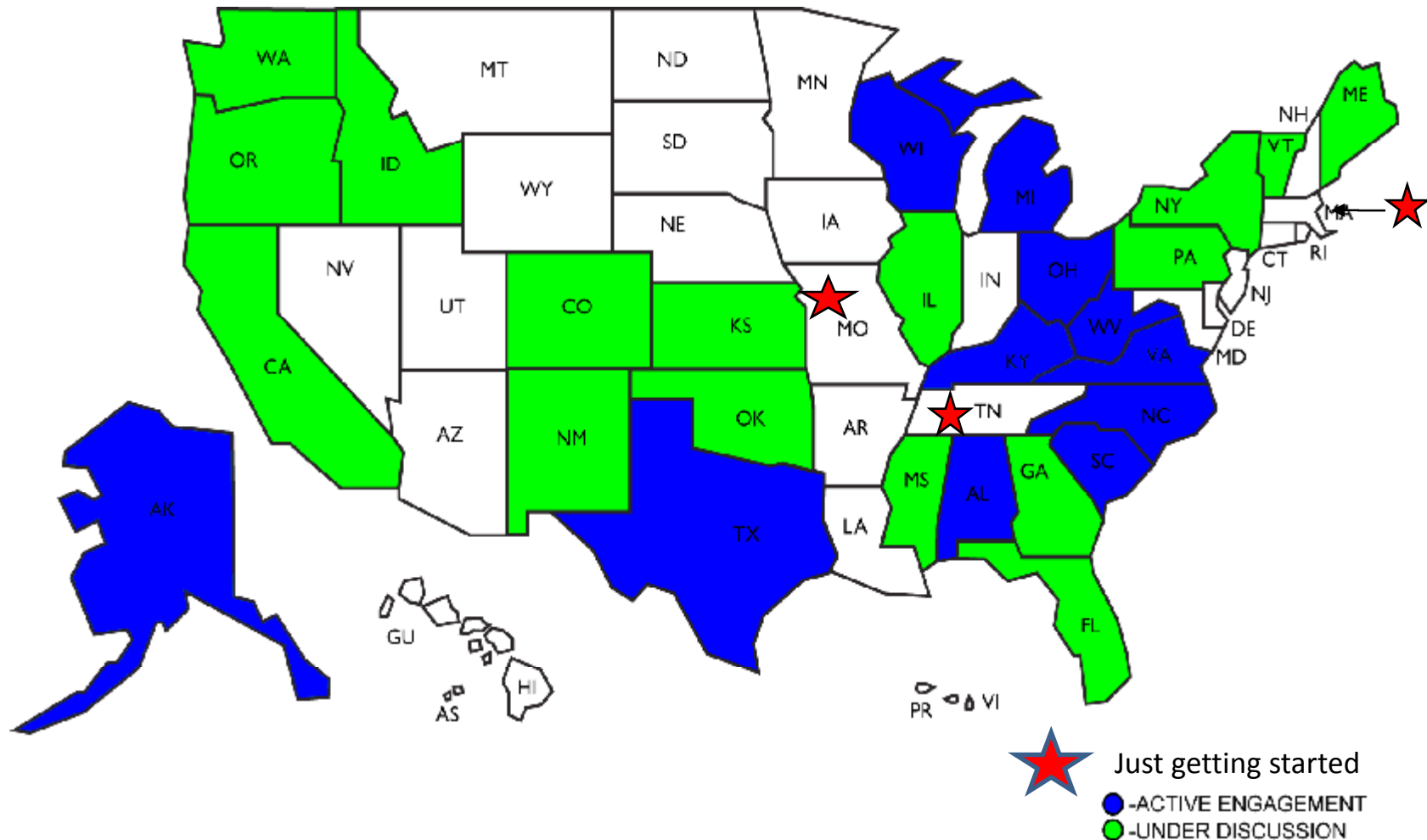
Energy Metrics:

- 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

Where we are TODAY



E3 North Carolina Adds State and Local Partners



**IES and NCDENR
GSN Lean and
Green Reviews**

**WRP and NCSU
Energy Systems
Assessments**

**NC OSH Worker
Safety Audits**



**NC Economic
Development Regional
Partners**

**NC Small Business and
Technology
Development Centers**

**NC Workforce
Development Boards
and Community Colleges**

***Community Business Partners
including Utilities and Manufacturers***

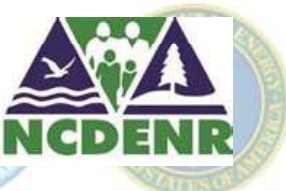


E3 North Carolina - Technical **Assess**ments

E3: Economy, Energy, and Environment







Manufacturers will have access to the following E3 technical assessments and training.

- **Business Excellence Assessment**
- **Lean and Green Review**
- **Energy Systems Assessment**
- **Greenhouse Gas Evaluation**
- **Worker Safety Review**



E3 Results: Columbus Ohio Pilot



PILOT COMPANIES	AGGREGATED RESULTS
	<p>Identified recurring savings - Annualized</p> <p>Energy Savings - \$1.7 MM</p> <p>Environmental Savings - \$2.6 MM</p> <p>Lean Savings - \$1.033 MM</p> <p>Water pollutants avoided – 257,000 pounds</p> <p>CO2 emissions avoided – 19,000 tonnes</p> <p>SOx Reduction – 215 tonnes</p> <p>Solid waste reduction – 24,000 pounds</p>
	
	
	
	
	<p>Realized savings – Annualized</p> <p>\$660,000 implemented or committed since project began</p> <p>\$50,000 increase in sales identified</p> <p>5 jobs identified as retained</p>



E3 Results: Implementation Status

Manufacture Type	Average Demand Reduction	Annual Energy Reduction	Annual CO2 Reduction**	Annual Cost Savings	Company Investment
	(kW)	(kWh)	(metric ton CO2)	(\$)	(\$)
HVAC	87	203,652	122	22,725	57,233
Commercial Bakery	30	241,154	145	34,947	51,562
Confections	41	122,471	74	9,472	51,118
Aerospace MRO	96	518,502	311	45,571	93,324
Apparel	96	337,862	203	26,548	33,950
Apparel	27	94,240	57	8,208	40,932
Metal Fabrication	48	159,935	96	85,061	47,794
Aerospace OEM/MRO	42	414,296	249	81,018	179,410
Injection Molded Plastics	39	538,364	323	30,255	43,034
Aerospace OEM	51	272,978	164	20,723	36,993
Automotive Supplier	71	771,152	463	45,347	105,580
Snack Foods	32	288,570	173	20,200	45,000
Plastic Extrusion	57	681,899	410	27,355	39,027
Grain Mill	195	1,334,536	802	82,612	275,690
Metal Stamping	190	1,177,218	707	76,320	259,649
Total	1102	7,156,829	4,299	616,362	1,360,296

100% Completion

Partial Completion – In Progress

New – In Progress

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