Supporting Manufacturing Leadership Through Sustainability

E3: Economy, Energy, and Environment
E3 Initiatives Strengthen Manufacturers

E3: Economy, Energy, and the Environment

Strengthening “triple bottom line”

• Supporting economic growth through a local team approach
• Promoting environmental stewardship and energy efficiency
• Transforming facilities and their workforce toward sustainable work practices

E3 drives comprehensive evaluation and optimized solutions …

Federal, State and Local efforts working together
E3 Partners in Southern CA

- California Manufacturing Technology Consulting (CMTC)
- The Southern California Gas Company
- California Department of Toxic Substances Control (DTSC)
- City of Los Angeles
- County of San Bernardino Workforce Development Department
- Long Beach Water Department
- Los Angeles Department of Water and Power (LADWP)
- Los Angeles/ Orange County Environmental Training Center
- North Orange Co Community College District/Center for Applied Competitive Technologies (CACT)
- Pacific Gateway Workforce Investment Board (Pacific Gateway)
- San Diego State University’s Industrial Assessment Center
- Small Business Development Center (SBDC) – Santa Monica College
- South Bay Workforce Investment Board
E3: Economy, Energy, and Environment

E3—Economy, Energy, and Environment—is a coordinated federal, state and local technical assistance initiative that helps communities work with their manufacturers to adapt and thrive in a new business era focused on sustainability.

Leveraging its resources, the E3: Southern California team will:

1. Help small to mid-sized Southern California industries meet or exceed their environmental goals through energy, water, and waste efficiency projects.
2. Demonstrate energy savings in both operations and equipment.
3. Expand the vision of removing waste within manufacturing processes but also in other environmental sources, such as logistics (transportation).
4. Help small to mid-sized Southern California industries map out long-term energy efficiency improvements and waste reduction plans, and assist with initial implementation.
5. Work with a diverse group of experts.
6. Create a replicable, self-sustaining and funded local initiative to increase the sustainability and competitiveness of local and regional businesses, manufacturers and governments in Southern California.
7. Harness existing federal, state and local expertise and resources to enhance sustainability and competitiveness in local and regional economies through a comprehensive package of technical resources.
8. Spur technology transfer, job growth, innovation through sustainability, and bring together new sources of technical assistance, knowledge, technology, expertise and labor from federal, state and local resources.

In recognition of the important role that the E3 program can play in supporting sustainable manufacturing in Southern California, we the undersigned offer our support of the E3: Southern California initiative, this day, March 29, 2012.

Sonal Ji (Gary) Anaz, Manager, Pollution Prevention and Green Technology, California Department of Toxic Substances and Control
Robert T. Mejia, Employment Services Manager, South Bay Workforce Investment Board
Michelle Kang, Director, Small Business Development Center, Hosted by Santa Monica College

Ronni Pasmant, Deputy Mayor of Environment and Sustainability for the City of Los Angeles
Eric Snyder, Vice President of Customer Solutions, Southern California Gas Company
Christine Terry, Provost, North Orange County Community College District, Continuing School of Education

James Watson, President and CEO of California Manufacturing Technology Consulting
Updated 1/7/13

Tips for using this map

- Filter projects using the drop down menu in the upper right hand corner.
- Reset the map by refreshing/reloading the web page.
- Click and drag the mouse to move the map.
- Change the zoom level using the + and - buttons in the upper left hand corner.
- Click the marker to view information about each project in a pop-up.

Project Status Key

- Interested: Holding initial conversations
- Under Development: Building a team and working toward a charter
- Committed: Resources available and charter signed
- Active: Conducting assessments and/or supporting follow-up
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, pollution prevention, 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
Value Stream Map

Look for energy reduction opportunities here!

A30
Thermoforming Base
Operators 3
Cycle Time 1.8 Secs
Changeover Time 5 Min
Batch Size 400 Packets
Performance 80 %
Up-time (%) 23.9 %
Yield (%) 90 %
Rework (%) 5 %

A30
Thermoforming Lid
Operators 3
Cycle Time 1.8 Secs
Changeover Time 5 Min
Batch Size 400 Packets
Performance 80 %
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Yield (%) 90 %
Rework (%) 5 %

A40
Thermoforming Cap
Operators 42
Cycle Time 1.8 Secs
Changeover Time 0 Min
Batch Size 450 Packets
Performance 90 %
Up-time (%) 90 %
Yield (%) 90 %
Rework (%) 9 %

Contract Packaging
Operators 42
Cycle Time 1.8 Secs
Changeover Time 0 Min
Batch Size 450 Packets
Performance 90 %
Up-time (%) 90 %
Yield (%) 90 %
Rework (%) 9 %

WD Distribution
Operators 2
Cycle Time 1 Sec
Changeover Time 0 Min
Batch Size 4 Box
Performance 90 %
Up-time (%) 90 %
Yield (%) 90 %
Rework (%) 9 %

Total

Value Stream Map (Figure 4)

Example Value Stream Map

Value Stream Map

Looking for energy reduction opportunities here!

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Value Stream Map (Figure 4)
Lean addresses the Nine Areas of Waste

<table>
<thead>
<tr>
<th>Motion</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>Overproduction</td>
</tr>
<tr>
<td>Waiting Time</td>
<td>Processing</td>
</tr>
<tr>
<td>Transportation</td>
<td>Creativity</td>
</tr>
<tr>
<td>Information</td>
<td></td>
</tr>
</tbody>
</table>
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.
## Success Stories

<table>
<thead>
<tr>
<th>Facility</th>
<th>Strategy</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile dyeing &amp; finishing</td>
<td>Value Stream Map (VSM) + water survey</td>
<td>• $177k annual water savings identified</td>
</tr>
<tr>
<td>East Rancho Dominguez</td>
<td></td>
<td>• $34k annual sewer savings identified</td>
</tr>
<tr>
<td>Packaging facility</td>
<td>VSM + Kaizen events, energy</td>
<td>• $558k saved in labor costs</td>
</tr>
<tr>
<td>La Mirada</td>
<td></td>
<td>• 41% improved productivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $61k saved in electricity</td>
</tr>
<tr>
<td>Battery recycler</td>
<td>VSM + Kaizen events, energy</td>
<td>• Reduced energy intensity 33%</td>
</tr>
<tr>
<td>Santa Fe Springs</td>
<td></td>
<td>• Saved $100k in annual energy costs</td>
</tr>
<tr>
<td>Automated entrance systems</td>
<td>VSM, Energy, Safety</td>
<td>• 50% reduction manufacturing defects</td>
</tr>
<tr>
<td>North Carolina</td>
<td></td>
<td>• 50% faster lead time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $200k annual lean savings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $26k annual energy savings</td>
</tr>
</tbody>
</table>
## 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
The Business Case for Going Green

• Companies that are environmental leaders have outperformed the general stock market by 25% since August 2005.
Imagine the Results:

Bottom line benefits of sustainability

DJSI vs. MSCI December 1994–December 2007

Correlation: 0.9838
Tracking Error: 7.97%

DJSI World (USD)

MSCI World (USD)
# Southern California E3: Value of Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Value Estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced Value Stream w/ Current &amp; Future State Maps (Senior Consultant &amp; Senior Advisor &amp; detailed reports)</td>
<td>$12,500</td>
</tr>
<tr>
<td>Pollution Prevention Assessment (1 expert for 1-2 days on-site, &amp; detailed report)</td>
<td>$6,000</td>
</tr>
<tr>
<td>Energy Systems Assessment with Utilities (1 or 2 experts for 1-2 days on-site, additional time off-site)</td>
<td>$4,000 (depending on size of facility and operations)</td>
</tr>
<tr>
<td>Financial Benchmarking Analysis</td>
<td>$2,000</td>
</tr>
<tr>
<td>Worker Safety Review (1 expert for 1 day on-site approximately, additional time off-site)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Follow-up assistance to develop an action plan for implementation of recommendations resulting from assessments.</td>
<td>CMTC can provide ETP funding and consultants to implement process improvement or environmental projects</td>
</tr>
<tr>
<td>SBDC Assistance and training for facility fiscal health, access to loans etc.</td>
<td>TBD</td>
</tr>
<tr>
<td>Workforce Board – Workforce development and training for participating E3 facilities</td>
<td>TBD</td>
</tr>
<tr>
<td>Industrial Site Assessment</td>
<td>$10,000 based on availability by SDSU</td>
</tr>
<tr>
<td><strong>TOTAL PROGRAM VALUE</strong></td>
<td><strong>$25,500 to $35,500 PLUS THE LONG TERM SAVINGS</strong></td>
</tr>
</tbody>
</table>
Becoming an E3 Participant

- E3 manufacturing partner contributes *subsidized* cost share tailored for the respective E3 project.
- Partner makes necessary time commitment and contribution to E3 assessment activities.
- Partner collects and reports appropriate E3 metrics.
- Partner learns about sustainability, ISO 50001, GHG reduction, demand response, environmental footprint.
- Partner shares success story and lessons learned.
- Partner benefits from awareness of their environmental improvement efforts (Corporate Social Responsibility).
www.e3.gov

• Thank You!

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  – Michael Goblowsky, CMTC, Account Manager, mgoblowsky@cmtc.com