Better Plants
Program Overview
Better Buildings, Better Plants

- **Better Plants** is a voluntary, public-private partnership program for manufacturers and industrial organizations.

- Through Better Plants:
  - Partners set **long-term efficiency goals**
  - Receive **technical assistance, networking platforms** and **national recognitions**

- Manufacturers have two opportunities to engage in Better Plants:
  1. Broader-based **Program** level
  2. Higher-level **Challenge**

## Better Plants Overview

**Energy savings and program footprint continue to grow**

### Better Plants Snapshot

<table>
<thead>
<tr>
<th>Accomplishments</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Partners</td>
<td>204</td>
</tr>
<tr>
<td>Approximate Number of Plants</td>
<td>3,000</td>
</tr>
<tr>
<td>Percent of U.S. Manufacturing Energy Footprint</td>
<td>12%</td>
</tr>
</tbody>
</table>

### Reported Savings

<table>
<thead>
<tr>
<th>Reported Savings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Energy Savings (TBtu)</td>
<td>1,059</td>
</tr>
<tr>
<td>Cumulative Cost Savings (Billions)</td>
<td>$5.3</td>
</tr>
<tr>
<td>Cumulative Avoided CO₂ Emissions (Million Metric Ton)</td>
<td>61.5</td>
</tr>
<tr>
<td>Average Annual Energy Intensity Improvement Rate</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

53 goal achievers total, 10 in 2018!
Supply Chain Initiative

- **4 Better Plants partners** are working with suppliers to set energy-savings goals and track progress
- Suppliers receive DOE **technical support, including priority access to no cost energy audits**

<table>
<thead>
<tr>
<th>Legrand</th>
<th>UTC</th>
<th>Lockheed Martin</th>
<th>Honda NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapco</td>
<td>GKN Aerospace</td>
<td>Cascade Engineering Technologies, Inc.</td>
<td>KYB Americas</td>
</tr>
<tr>
<td>Coilplus</td>
<td>Hitchiner</td>
<td>Clearwater Engineering, Inc.</td>
<td>Newman Technologies</td>
</tr>
<tr>
<td>Complete Design &amp; Packaging</td>
<td>MB Aerospace</td>
<td>Cooperative Industries Aerospace &amp; Defense</td>
<td>Asama Coldwater Manufacturing</td>
</tr>
<tr>
<td>Durex</td>
<td>RTI International Metals, Inc.</td>
<td>The Harva Company, Inc.</td>
<td>American Mitsuba</td>
</tr>
<tr>
<td>Lynam</td>
<td>Selmet, Inc.</td>
<td>Research Electro-Optics</td>
<td>MAHLE</td>
</tr>
<tr>
<td>Magnetic Metals</td>
<td>Weber Metals, Inc.</td>
<td>Savage Precision Fabrication</td>
<td>NSK</td>
</tr>
<tr>
<td>Rowley Spring &amp; Stamping</td>
<td>Jedco, Inc.</td>
<td>Vanguard Space Technologies</td>
<td>Cardington Yutaka</td>
</tr>
<tr>
<td>Stanley Spring &amp; Stamping</td>
<td></td>
<td>Tri-State Plastics, Inc.</td>
<td>Cooper Standard</td>
</tr>
</tbody>
</table>
Technical Account Manager

Goal
Help partner companies achieve their energy performance goal

Primary Role
- Help establish or improve data collection and analysis methods; assist in annual reporting
- Provide assistance on software tools
- Help leverage to additional resources (INPLT, IAC, CHP, etc.)
- Relay information regarding program developments, upcoming events, new resources, and other announcements
- Connect partners to one another for peer-to-peer learning
- Other technical assistance
TAM Support for Baseline/Data Analysis

- Help with energy baselines and data tracking/reporting
  - Regression-Based Approach
  - Facility-Level Approach
  - Corporate-Level Approach
- DOE’s EnPI tool includes GHG and cost savings calculations
- Free guidance document available
AMO suite of industrial system software platforms:

- Measure energy losses
- Quantify savings opportunities
- Developed by national experts
- NEW: MEASUR Tool

Steam System Modeler
Pump System Assessment Tool (PSAT)
Fan System Assessment Tool (FSAT)
MotorMaster+
AIRMaster+
Process Heating Assessment & Survey Tool (PHAST)
In-Plant Trainings

**Purpose:** Learn how to conduct assessments, use DOE tools, and implement projects

**Existing Training Topics**
- Compressed Air
- Pumping
- Steam
- Process heating
- Fans
- Energy Treasure Hunt Exchanges
- Water/Wastewater Treatment
- Industrial Refrigeration
- 50001 Ready

- Open to employees from host plant, peer companies, suppliers
- ~85 INPLTs, 1500 participants since 2011
- Identified > 5 TBTU and $34 million in energy savings between 2011 and 2017
- Pre-INPLT webinars available on program website
# In-Plant Trainings – 1st Half of 2019

<table>
<thead>
<tr>
<th>Host Plant Name</th>
<th>Location</th>
<th>Energy System Type</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raytheon, Dallas Defense Products</td>
<td>Dallas, TX</td>
<td>Treasure Hunt Exchange</td>
<td>Mar 31, May 26</td>
</tr>
<tr>
<td>FCA, Sterling Heights</td>
<td>Auburn Hills, MI</td>
<td>Compressed Air</td>
<td>Jun 25 - 27</td>
</tr>
<tr>
<td>Eastman Chemical Company</td>
<td>Kingsport, TN</td>
<td>Pumping</td>
<td>TBD</td>
</tr>
<tr>
<td>Celanese</td>
<td>Narrows, VA</td>
<td>Compressed Air</td>
<td>TBD</td>
</tr>
<tr>
<td>AztraZenica, Medimmune</td>
<td>Gaithersburg, MD</td>
<td>Treasure Hunt Exchange</td>
<td>Late Sep</td>
</tr>
<tr>
<td>Electrolux</td>
<td>Springfield, TN</td>
<td>Compressed Air</td>
<td>Apr 23 - 25</td>
</tr>
<tr>
<td>CMC Steel Arizona</td>
<td>Mesa, AZ</td>
<td>Compressed Air</td>
<td>Mar 5 - 7</td>
</tr>
</tbody>
</table>

*Carryovers from Previous Round*

<table>
<thead>
<tr>
<th>Host Plant Name</th>
<th>Location</th>
<th>Energy System Type</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper Standard</td>
<td>Bowling Green, OH</td>
<td>Compressed Air</td>
<td>Jan 22 - 24</td>
</tr>
<tr>
<td>Saint-Gobain</td>
<td>Norwood, MA / Hagerstown, MD</td>
<td>Treasure Hunt Exchange</td>
<td>Nov 11 - 13 / Feb 18-20</td>
</tr>
<tr>
<td>City of Grand Rapids</td>
<td>Grand Rapids, MI</td>
<td>Pumps</td>
<td>Jan 15 - 17</td>
</tr>
<tr>
<td>3M Corporation</td>
<td>Maplewood, MN</td>
<td>50001 Ready</td>
<td>Jan 22 - 23</td>
</tr>
<tr>
<td>Ingevity Corporation</td>
<td>DeRidder, LA</td>
<td>Multi-system</td>
<td>January 8 - 11</td>
</tr>
</tbody>
</table>

[https://betterbuildingssolutioncenter.energy.gov/better-plants/plant-trainings-calendar](https://betterbuildingssolutioncenter.energy.gov/better-plants/plant-trainings-calendar)
Diagnostic Equipment Program

“You can’t manage what you can’t measure.”

- Free of charge, including shipping
- Use equipment for one day, or up to four weeks
- Some technical assistance with selection and usage
- First come, first serve application
Better Plants hosts Technology Days at National Laboratories to:

**Tour** World-Class Facilities

**View** Demonstrations of innovative technologies

**Hear** from experts and Industry peers

**Learn** about research partnerships

**Network** with BP partners and researchers

NREL in 2018

LLNL and LBNL in 2019
IAC Energy Assessments and CHP Technical Support

**Industrial Assessment Centers:**

- No-cost energy assessments
- IACs have provided more than 134,000 recommendations for ~18,000 manufacturers.
- Average IAC assessment yields 5-7% implemented energy savings.

**Combined Heat and Power Technical Assistance Partnerships**

- Identify CHP opportunities
- Vendor, fuel, and technology neutral assessments.
- Additional technical assistance for end-users considering CHP
50001 Ready

**DOE’s Energy Management Program**

**Step One:** Self-declared implementation of ISO 50001

**Step Two:** Analysis of energy and emissions reductions

**Step Three:** Submit to DOE for 50001 Ready recognition

**OPTIONAL:**
- Pursue an ISO 50001 Certification
- Achieve Superior Energy Performance Certification

DOE or Utility recognized success for implementing 25 steps
50001 Ready Navigator Online Tool

- Self-paced “Turbo Tax” approach to 50001
- Developed & Maintained by DOE
- Guidance: “Getting it done” “Transition tips”
- Track Progress
- Collaborate with Team Members

www.navigator.industrialenergytools.com
50001 Ready and Better Plants

ISO 50001 Pathway toward Better Plants

**Program Name**

- **50001 Ready**
  - Establish Energy Management System (EnMS) using structure of ISO 50001
  - TAM support amplify EnMS & develop roadmap to achieve 25% in 10 years

- **Better Plants**
  - EnPI Lite – preliminary energy baseline
  - EnPI Tool – robust energy model, validation of energy savings & GHG reductions

**Energy Management Support**

**Energy Savings Validation**

**Recognition**

- Plant-level performance recognized by DOE
- Annual and program goal recognition by DOE
Better Buildings Solution Center

- More than 200 industrial solutions tested and proven by Partners
- Find solutions by topic, building type, solution type, building size, sector, technology, location, and more.
- Technology Focus area: https://betterbuildingssolutioncenter.energy.gov/better-plants/technology-focus-areas

energy.gov/bbsc
National Recognition: Examples

Better Project/Practice Awards

Blog Articles

DOE Better Buildings Recognizes Loews Vanderbilt Hotel for Energy Efficiency Improvements

This summer, representatives from the City of Nashville and the Department of Energy traveled to Nashville, Tennessee to honor Loews Hotels & Co. for its energy-efficient upgrades and retrofits at the Loews Vanderbilt Hotel.

Since 2015, the Vanderbilt hotel has improved its energy efficiency by 22 percent and achieved a total energy cost savings of $228,230 through upgrades to lighting, HVAC systems, guestrooms, and building envelope.

Loews Hotels & Co. showcased its building upgrades and retrofits to an audience of media members, city officials and experts from the Department of Energy. The tour included a stop on the roof to highlight the new building façade. The original roof system prior to the hotel’s suite replacement had an insulation effectiveness below 9 percent. Today, Loews Vanderbilt Hotel’s roof performs at 21 percent insulation effectiveness, which exceeds energy code by 15 percent.

Social Media

Goal Achievers
Events & Networking Opportunities

- **Annual Events**
  - Better Buildings Summit
  - Industrial Energy Technologies Conference
  - World Energy Engineering Congress
  - Regional Events & Focused Workshops

- **Networking**
  - Forums where partners learn from each other
  - Regional events
  - Technology-based working groups
Partner Road Map – What is Next?

- Add partner profile to Better Plants web page
- Set up Regular Standing Conference Calls
- Establish **Energy Baseline**
- Select **Energy Tracking Methodology**
- Identify/Access **Resources**, e.g., In-Plant Trainings, IACs, CHP TAPs, Tools, etc.
- Generate **Annual Report**
- Identify **Recognition Opportunities**
For More Information

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Robert.Lung@ee.doe.gov

**Better Buildings, Better Plants:**
http://betterbuildingssolutionscenter.energy.gov/better-plants
Questions?