2019 Better Buildings Summit
Better Practice – Toyota ESCO Process
Toyota North America Operations

29 Million Sq.Ft.
How? Innovative Technology, Renewable Energy and *Kaizen Activity

*ESCO supports the Kaizen Activity
What is the Energy Savings Collaboration (ESCO)?

Internal energy savings and minimization process

- Identify/implement CO$_2$ reduction opportunities in manufacturing
- Support Toyota’s 2050 Challenge
- No impact to – Safety, Quality and Production
- Team Member Development (management, production, maintenance, engineers, group leaders, contractors and students)
- Promote reduction activities in daily work
What’s the difference?

ESCO

- Focus is on plant operations during “all times”
- One-to-two week, deep dive
- Walk throughs focus on:
  - High level and detailed inspection; processes, set points, startup/shutdown, human behaviors, ability to ask questions while plant is running, etc.

Treasure Hunt

- Focus is on plant operations when “sleeping”
- One-to-three day, quick fixes
- Walk throughs focus on:
  - High level inspection; equipment running, leaks, lights on, etc.
How does the ESCO Process work?

2 months (Pre-ESCO)

A PREPARATION

Study where to look:
- Data Analysis
- Evaluate KPIs
- Determine gaps
- Identify initial kaizens
- Create team

0 months

B SITE INVESTIGATION

Genchi Genbutsu (go & see):
- Onsite 1-2 weeks
- Audit SEUs and processes
- Perform energy calculations
- Report findings to Plant Executives

+12 months (Post-ESCO)

C IMPLEMENT

Kaizens discussed:
- Low/no cost
- Confirm R&R
- Secure project funding
- Expect one year to implement
- Measure & verify
- Follow-up
Let’s Talk Numbers

ESCO Process Annual CO₂ Savings

To date 8 ESCO activities (2016-2019) have been completed in which:

1. 155 low/no cost, low payback kaizens discovered & implemented by end of 2019
2. 186 kaizens w/ longer payback (> 2 yrs.) being reviewed to implement
What are some examples of kaizens discovered?

- **Compressed air to electric blowers in washers**
  - Nozzle: 18
  - Pressure at nozzle: 5kPa
  - Distance between parts and nozzle: 30mm

  **CO₂ Savings:** 100 MT/washer

- **High Speed Valve**
  - 500psi
  - 90psi

  **CO₂ Savings:** 2,600 MT

- **New oven burners allow set back during non-production times**

  **CO₂ Savings:** 300 MT

- **Utilize waste heat from heat treatment**

  **CO₂ Savings:** 360 MT
What are the challenges?

- Time
- Payback length
- Project Funding
- Manpower
Summary

• New opportunities added to master list
• Kaizens kept in database for sharing
• Educate Team Members
• ESCO ongoing process
• Toyota effectively growing energy team with every ESCO