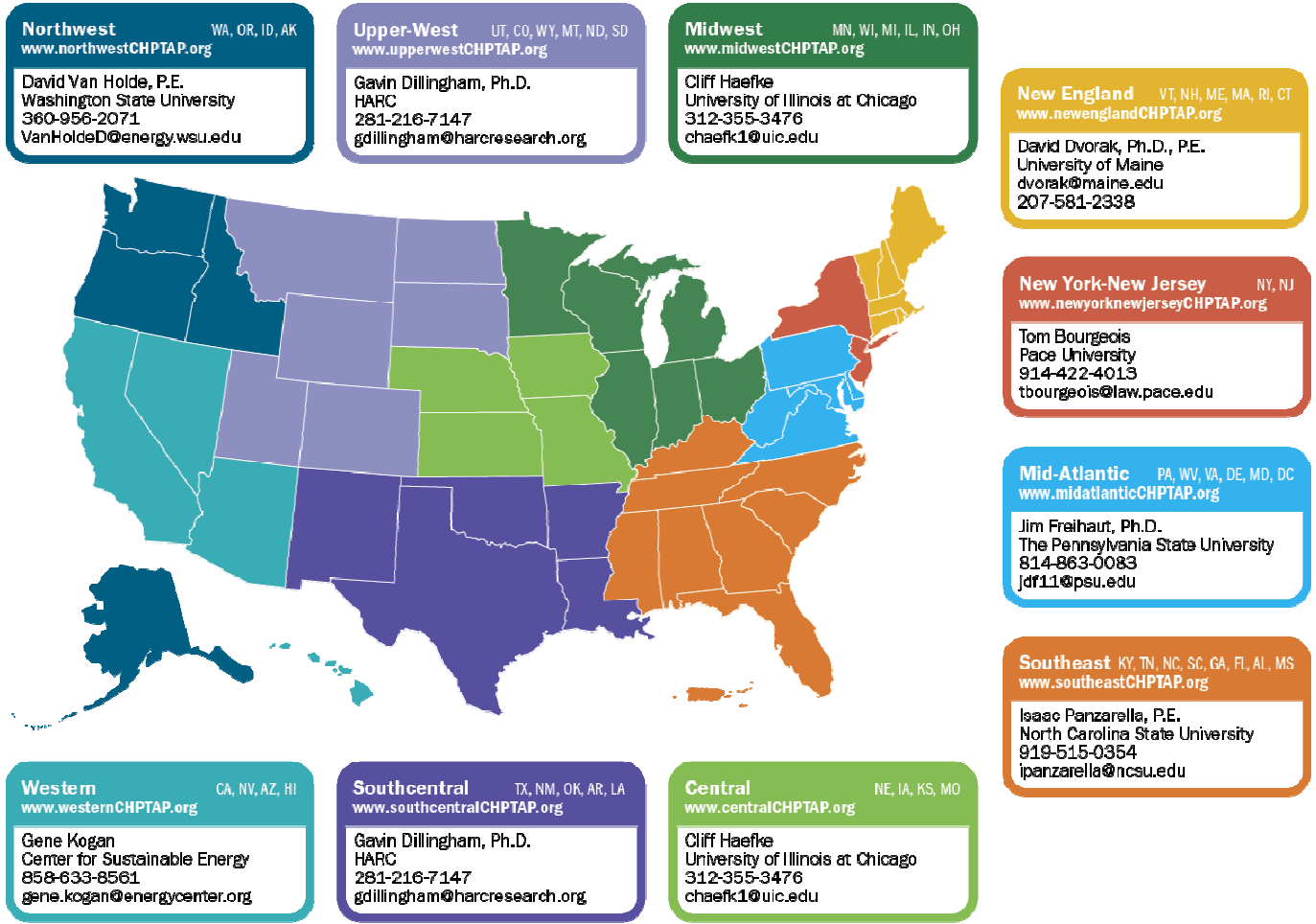# 50001 & AMO Update

Jay Wrobel, Program Manager
Technical Partnerships
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DOE Update

Agenda

1. CHP TAPs are Back!

2. 50001 Ready Update

3. North American 50001 Ready Supply Chain Challenge

4. SEP 2018 Update

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DOE CHP Technical Assistance Partnerships (CHP TAPs)

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DOE CHP Technical Assistance Partnerships

- ## End User Engagement
  Partner with strategic End Users to advance technical solutions using CHP as a cost effective and resilient way to ensure American competitiveness, utilize local fuels and enhance energy security. CHP TAPs offer fact-based, non-biased engineering support to manufacturing, commercial, institutional and federal facilities and campuses.
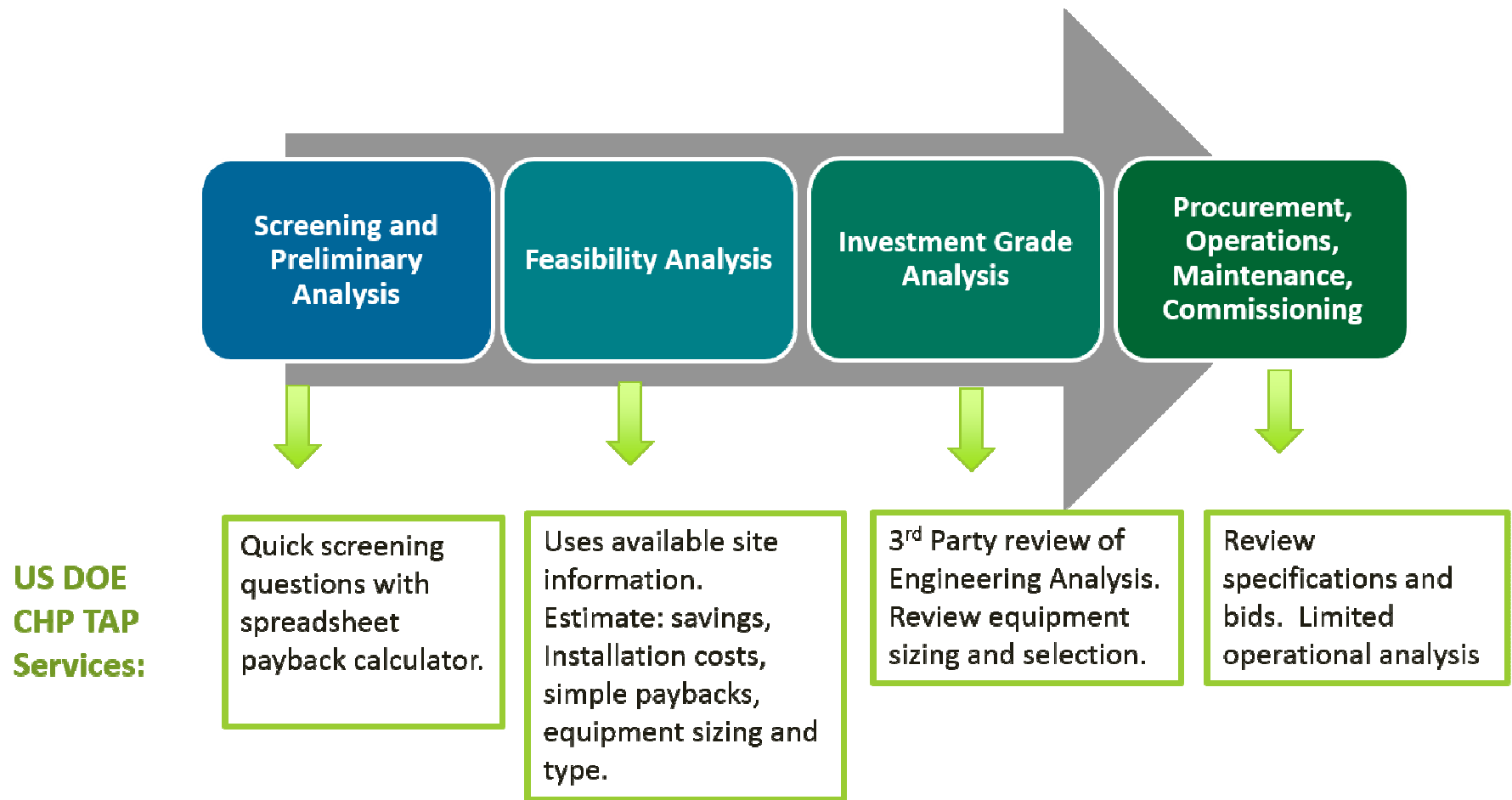
- ## Stakeholder Engagement
  Engage with strategic Stakeholders, including regulators, utilities, and policy makers, to identify and reduce the barriers to using CHP to advance regional efficiency, promote energy independence and enhance the nation's resilient grid. CHP TAPs provide fact-based, non-biased education to advance sound CHP programs and policies.

- ## Technical Services
  As leading experts in CHP (as well as microgrids, heat to power, and district energy) the CHP TAPs work with sites to screen for CHP opportunities as well as provide advanced services to maximize the economic impact and reduce the risk of CHP from initial CHP screening to installation.

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CHP TAP Technical Assistance

Screening and Preliminary Analysis	Feasibility Analysis	Investment Grade Analysis	Procurement, Operations, Maintenance, Commissioning

US DOE CHP TAP Services:

Quick screening questions with spreadsheet payback calculator.	Uses available site information. Estimate: savings, Installation costs, simple paybacks, equipment sizing and type.	3rd Party review of Engineering Analysis. Review equipment sizing and selection.	Review specifications and bids. Limited operational analysis

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U.S. DEPARTMENT OF ENERGY

COMBINED HEAT & POWER ECATALOG
RECOGNIZED PACKAGED CHP SYSTEMS

Contact of Get Help

Log In or Register

SEARCH eCATALOG ABOUT eCATALOG ABOUT CHP & PACKAGED SYSTEMS UPDATES FOR PACKAGERS & SOLUTION PROVIDERS MARKET ENGAGEMENT PROGRAMS

QUICK START

FIND CHP PACKAGES

PRIMARY SITE LOCATION ⓘ

Zip Code

☑ Installation and Assurance Plan offered in this location

POWER OUTPUT ⓘ

1,000 kW

Help Me Choose

PRIME MOVERS ⓘ
- ○ Reciprocating engines
- ○ Combustion turbines
- ○ Microturbine
- ○ Fuel Cell

THERMAL OUTPUT ⓘ
- ○ Steam Only
- ○ Hot Water Only
- ○ Chilled Water Only
- ○ Steam and Hot Water
- ○ Steam and Chilled Water
- ○ Steam, Hot Water, and Chilled Water
- ○ Hot Water, and Chilled Water

FUEL TYPE ⓘ
- ○ Natural Gas
- ○ Propane
- ○ Digester Gas
- ○ Landfill Gas

GRID CONNECTION TYPE ⓘ
- ○ Grid Parallel
- ○ Grid Island, Black Start, Manual Transfer

PACKAGED **CHP SYSTEMS.** **RIGOROUS RECOGNITION** PROCESS.

The Packaged Combined Heat and Power Catalog (eCatalog) is a voluntary public/private partnership designed to increase deployment of CHP in commercial, institutional and multi-family buildings and manufacturing plants. The core of the eCatalog are CHP Packagers who commit to provide pre-engineered and tested Packaged CHP systems that meet or exceed DOE performance requirements and CHP Solutions Providers who commit to provide responsible installation, commissioning, maintenance and service of recognized Packaged CHP systems and also provide a single point of responsibility.

MARKET ENGAGEMENT PROGRAMS: INCENTIVIZING CHP IN YOUR AREA
MAXIMIZE YOU CHP INVESTMENT WHEN YOU INSTALL QUALIFYING SYSTEMS

State, local and utility programs are designed to remove barriers and or incentivize technologies that improve energy efficiency, reduce electric demand, improve resiliency and/or reduce emissions. CHP systems often qualify for these programs. State and local agencies, as well as utilities with CHP programs that have selected to use the eCatalog an integral part of their program have entered their locations where their programs are in effect. When you search the eCatalog, using your site ZIP code, the equipment cards will show an icon indicating that the equipment is eligible for a program. Also the specific program entity will appear on the right margin of the equipment detail sheets.

SEARCH eCATALOG | ABOUT eCATALOG | ABOUT CHP & PACKAGED SYSTEMS | UPDATES | FOR PACKAGERS & SOLUTION PROVIDERS | MARKET ENGAGEMENT PROGRAMS

FOCUS YOUR RESULTS ⓘ

UPDATE RESULTS

reset | save search

PRIMARY SITE LOCATION

10005

Selected: **10005** | **New York , NY**
Matches Packages available in NY

ASSURANCE PLAN OFFERED

☑ Display only systems that offer an assurance plan.

MARKET ENGAGEMENT PROGRAM

☑ Display only Program-Eligible Packaged Systems

POWER OUTPUT (kW) ⓘ

1000 | Size

APPLY Help Me Choose

Target Range: **700** kw to **1,200** kw

*Default includes a max. of 120% of unit size and a Min. of 70% of unit size. Scales is set at plus/minus 50% of selected PM capacity.

THERMAL OUTPUTS ⓘ

☐ Steam Only
☑ Hot Water Only
☐ Chilled Water Only
☐ Steam and Hot Water
☐ Steam and Chilled Water
☐ Steam, Hot Water, and Chilled Water

FUEL TYPE ⓘ

☐ Natural Gas
☐ Propane
☐ Digester Gas
☐ Landfill Gas

DISPLAYING: 30 of 1,227 >

AP Assurance Plan   **SP** Solutions Provider   **ME** Program Eligible   🇺🇸 Packaged in U.S.A.   **#** Installed & Commissioned   ⭐ Favorite

ALIQUID-950-V4

✅ Power Output:	950 kW
✅ Thermal Output:	Hot Water
○ Fuel:	Propane
○ Prime Mover(s):	Fuel Cell
○ Grid Connection:	Grid Island, Black Sta...

AP **SP** **ME** 🇺🇸   9

FULL MATCH (100%)

DOLORUM-790-E18

✅ Power Output:	790 kW
✅ Thermal Output:	Hot Water
○ Fuel:	Landfill Gas
○ Prime Mover(s):	Microturbine
○ Grid Connection:	Grid Parallel

AP **SP** **ME**   22

FULL MATCH (100%)

LABORUM-540-Z4

○ Power Output:	540 kW
✅ Thermal Output:	Hot Water
○ Fuel:	Digester Gas
○ Prime Mover(s):	Fuel Cell
○ Grid Connection:	Grid Parallel

AP **SP** **ME**   8

HIGH MATCH (80%)

VEL-740-H10

✅ Power Output:	740 kW
○ Thermal Output:	Steam, Hot Water
○ Fuel:	Natural Gas
○ Prime Mover(s):	Combustion turbines
○ Grid Connection:	Grid Island, Black Sta...

AP **SP** **ME** 🇺🇸   39

HIGH MATCH (80%)

CONSECTETUR-700-G20

✅ Power Output:	700 kW
✅ Thermal Output:	Hot Water
○ Fuel:	Propane
○ Prime Mover(s):	Combustion turbines
○ Grid Connection:	Grid Island, Black Sta...

AP **SP** **ME**   37

HIGH MATCH (80%)

SAPIENTE-810-L7

✅ Power Output:	810 kW
○ Thermal Output:	Steam
○ Fuel:	Landfill Gas
○ Prime Mover(s):	Reciprocating engines
○ Grid Connection:	Grid Island, Black Sta...

AP **SP** **ME**   4

HIGH MATCH (80%)

AUT-710-Y24

✅ **Power Output:**		710 kW
✅ **Thermal Output:**		Steam
✅ **Fuel:**		Natural Gas
✅ **Prime Mover(s):**		Reciprocating engines
✅ **Grid Connection:**		Grid Island, Black Sta...

AP SP ME 🇺🇸 29

FULL MATCH (100%) ⭐

View Details

AUT-710-Y24

✅ **Power Output:**		710 kW
✅ **Thermal Output:**		Steam
✅ **Fuel:**		Natural Gas
✅ **Prime Mover(s):**		Reciprocating engines
✅ **Grid Connection:**		Grid Island, Black Sta...

AP SP ME 🇺🇸 29

FULL MATCH (100%) ⭐

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SEARCH eCATALOG   ABOUT eCATALOG   ABOUT CHP & PACKAGED SYSTEMS   UPDATES   FOR PACKAGERS & SOLUTION PROVIDERS   MARKET ENGAGEMENT PROGRAMS

GEM ENERGY MODEL:
ALIQUID-950-V4

AP SP ME 🇺🇸

⭐ ADD FAVORITE   🖨 Print Results as PDF

OVERVIEW ⊖

The major components of this system (shown below) and consists of: Microturbine- generator array, exhaust gas powered absorption chiller, cooling tower for the chiller and exhaust gas to how water heat exchanger.

PACKAGED SYSTEM HIGHLIGHTS

Packager/Solutions Provider	GEM Energy
Model	IPS-1000-CCHP
Thermal Outputs	ST, HW, CW
Recognition	Conditional
Assurance Plan	No
Grid Connection Type	Grid Island w Black Start and Manual Transfer

KEY PERFORMANCE DATA

Prime Mover	Capstone MT
Number of Prime Mover Units	5
Gross System Capacity (kW)$_1$	1,000
New System Capacity (kW)$_2$	950
Hot Water Thermal (MBtu/hr)$_3$	3,972
Chillded Water Thermal (tons)$_4$	287

1. Gross generator electrical output
2. Net system power delivered to site (gross less parasitic power)
3. At delivered supply and required return temperatures (see below)
4. Performance at 44 °F supply / 54 °F return temperatures; 95 °F dry bulb / 78 °F wet bulb ambient temperatures

AP — Assurance Plan

This Packaged System is offered with a market priced Bumper-to-Bumper Assurance Plan that provides service and maintenance covering planned and unplanned shutdowns (including all components) for a period of not less than five (5) years from the date of electric grid interconnection recognition.

SEE MORE

ME — Market Engagement Program

MARKET ENGAGEMENT PROGRAM QUALIFICATION

This Packaged CHP system qualifies for the following eCatalog Market Engagement Programs. Note it may also qualify for other programs not currently using the eCatalog.

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

MORE ABOUT PROGRAMS

Contact Information

GEM ENERGY RUDOLPH LIBBE GROUP

GEM ENERGY

432 Broadway
Suite 8

Get Recognized for Self-Attested Compliance to ISO 50001

energy.gov/50001Ready

ISO 50001 – Energy Management Systems Standard

- **ISO 50001 is an Energy Continuous Improvement platform (similar to Kaizen/6 Sigma)**

  - <u>Culture</u>. Change management process engaging facility/plant personnel with management/leadership

  - <u>Practice</u>. Based on the Plan-Do-Check-Act (PDCA) cycle promotes continuous improvement

- **Key Components**

  - <u>Commitment</u>. Leadership committed and empowering energy management

  - <u>Data</u>. Collection and analysis of energy performance in facility and large energy users

  - <u>Value</u>. Incorporating energy decisions into overall operations
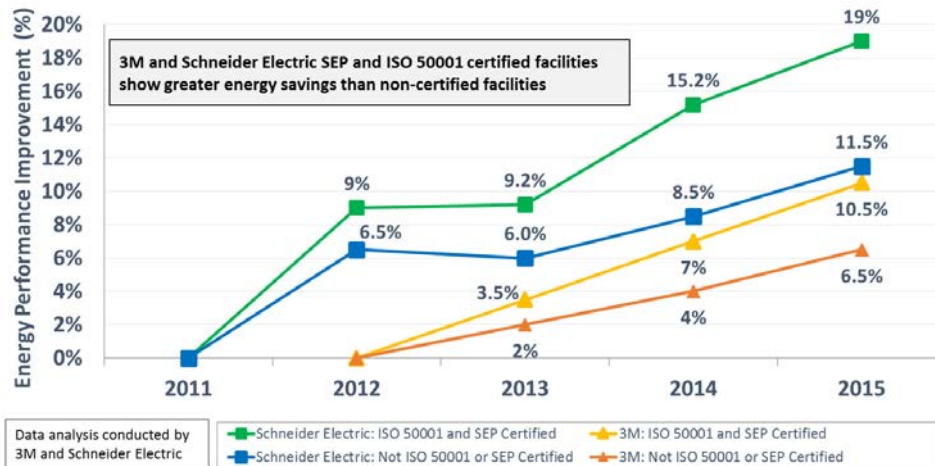
Companies adopting ISO 50001

- 3M
- Aflac
- American Axle & Manufacturing
- BAE Systems
- BMW
- Bosch Rexroth
- Bridgestone
- Cargill
- Chrysler
- Coca-Cola
- Cummins
- Curtiss-Wright EMD
- Detroit Diesel
- Google
- HARBEC Inc.
- Hilton Worldwide
- IBM
- Intertape Polymer Group
- Land O'Lakes
- Johnson Controls
- Mack Trucks
- Marriott International, Inc.
- MedImmune
- NewGold
- Nissan North America
- Samsung
- Schneider Electric
- Titan America
- Volkswagen
- Volvo

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50001 Ready as DOE Tool to Drive ISO 50001

50001 Ready is

1. Recognition for self-attesting to *conformance* with ISO 50001

2. Process with no certification requirement from third parties

3. Open source software tools, designed to be adopted by implementers

4. Suite of resources to support continuous improvement in institutional, commercial and industrial facilities

5. Ability to support 'enterprise' or multi-facility adoption

50001 Ready Recognition

Three Steps to Becoming 50001 Ready

STEP 1
Start Implementation of ISO 50001 principles

Use the 50001 Ready Navigator Online Tool

✓ The Navigator walks you through the process of implementing an energy management system and prepares you to be 50001 Ready.

STEP 2
Analysis of energy reductions

Adopt Valid Tool to Present Energy Performance

✓ DOE offers the EnPI Lite calculator for 50001 Ready.

✓ EPA's Portfolio Manager can also be used

✓ Other tools can be approved by DOE

STEP 3
File for 50001 Ready recognition

Submit information to DOE for Review

✓ Self-attestation of completion of Navigator, executed by team leader <u>and</u> executive

✓ Submit energy performance data

50001 Ready
U.S. DEPARTMENT OF ENERGY

DOE recognizes 50001 Ready achievement

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50001 Ready Navigator

- ✓ Online tool, with simple, step-by-step approach to ISO 50001 implementation

- ✓ 25 tasks divided into 4 sections

- ✓ Ability to assign tasks to team members

- ✓ Extensive guidance available in each module

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50001 Ready Navigator Steps (underway tasks)

- Having a **Continuous Energy Improvement** or **Energy Mgmt. System** means you are already at least HALF WAY DONE

Planning

1. Scope and Boundaries
2. Energy Policy
3. Management Commitment
4. Energy Team
5. Legal Requirements

Energy Review

6. Data Collection
7. Data Analysis
8. Performance Indicators (EnPIs)
9. Significant Energy Uses (SEUs)
10. Relevant Variables
11. Baselines, Objectives and Targets
12. Improvement Opportunities
13. Improvement Projects

Continual Improvement

14. Monitoring
15. Measurement
16. Operational Controls
17. Corrective Actions
18. Energy Consideration in Design

System Management

19. Documentation and Records
20. Communications
21. Training
22. Procurement
23. Internal Audit
24. Calculate Energy Savings
25. Management Review

Strongly prepared
Partially prepared

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CIBO Cross-branded Navigator

In Admin can track facility progress

How Do I Get Started?

50001 Ready
U.S. DEPARTMENT OF ENERGY

1. Go to *energy.gov/50001Ready* for more information (FAQs, etc)

2. If *Better Plants* Partner, speak to your TAM for additional support from DOE

3. Review the **50001 Ready Navigator** (with or without registering)

4. **Sign-up** in the 50001 Ready Navigator (DOE happy to assist)

5. Empower your Energy Team and **Watch Success Unfold**

Contact Pete.Langlois@ee.doe.gov or
Jay.Wrobel@ee.doe.gov
for more info or to get started

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NEW OPPORTUNITY!

North American Supply Chain
Energy Management Program

www.cec.org/energy-program

North American Supply Chain Energy Management Program Plan

The Ask:
1. Show your energy leadership by promoting supply chain
2. Ability to engage supply chain on ISO 50001 conformance (5-10 facilities)
3. Coordinate supplier (and own facilities) over 1 year commitment
4. Host 50001 related training (2.5 days at site & 1 day at supplier site)
5. Preference for suppliers across US, Mexico and Canada

Why You Should Join:
1. Show North American leadership around energy management
2. Increase familiarity and adoption of ISO 50001 conformance
3. Save energy (DOE stats show ~4.5% energy savings / year!)
4. Discounted training for supplier (and own) sites ($7500/facility discount from $20,000)
5. DOE and CEC technical support on key energy management issues provided
6. On-site energy assessment for each facility
7. Cohort model promotes greater networking and supplier relations
8. US, Canada, Mexico recognition for 50001 Ready acheivement
9. Opportunity to train new energy management personnel

19 CEC . CCA . CCE

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North American Supply Chain Energy Management Program Plan

CEC & National Agencies
- Coordinate program
- Cost-share trainers
- Give recognition for OEM's supply chain cohort

Program Resources

OEM Coordination Team

Strategic Coordinator

Technical Coordinator

OEM
- Recruits supplier and OEM facilities
- Gives feedback on progress and makes recommendations
- Gains and shares ISO 50001 expertise and results across OEM and supply chain

Facility Cohort

Facility/ Suppliers

OEM/Supplier Teams
- Training cohort is composed of OEM and supplier facilities
- Facility designates a multi-person energy team
- Time and resources made available for energy team training, including session at OEM
- 50001 Ready Recognition!

CEC . CCA . CCE

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North American Supply Chain Energy Management Program Overview

Goal: Demonstrating the Value of 50001 Ready in North American Industry & Suppliers

Duration: ~12 months
Total training hours: 60
Cost: US $7,500 per facility (plus travel)

Preparation
- Preparatory course
- In-person energy management gap assessment

ISO 50001 implementation
- 50001 Ready Navigator guidance
- In-person training session at OEM facility
- Monthly group webinars
- Individual coaching calls

Recognition of success
- Wrap-up webinar, 50001 Ready Recognition from National Agencies

Main tools:
- **50001 Ready Navigator**
- **EnPI Lite**
- **Energy Footprint**

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Join Now!
North American Supply Chain
Energy Management Program

Contact for more info:
Pete.Langlois@ee.doe.gov
paul.scheihing@ee.doe.gov

WE WANT YOU

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Get ISO 50001 Savings Verified through 50001 SEP

energy.gov/ISOSEP

SEP 2018 Enhancements: STREAMLINED

50001 SEP is designed to verify the value of ISO 50001 and encourage adoption across all types of manufacturing and commercial sectors to stimulate significant energy savings nationwide

- Achieve greater sector parity of 50001 SEP achievement

- Encourage energy management best practice (beyond ISO 50001) and advanced technologies through use of 50001 SEP Scorecard

- Continue to streamline and reduce the cost of the 50001 SEP process

- Decoupled 'recognition' and completion

- Enhance recognition from US DOE (or other actor) to reward achievement and success

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50001 SEP 2018 Certified & Performance Levels (DRAFT)

1. ANAB-Accredited ISO 50001 and 50001 SEP Certification

Organization meets requirements:

1. ISO 50001 EnMS
2. 50001 SEP Verification:
   a. MSE 50021-2018 requirements
   b. Energy Performance Improvement:
      - SEnPI > 0.0%

> 50001 SEP VB conducts **audit, issues certificate** and submits energy performance form to 50001 SEP Admininstrator

"50001 SEP" Certified

2. Additional DOE Recognition

> **"50001 SEP" Certified organization:**
> 1. Submits online form to claim 50001 SEP Scorecard credits, including
> 2. Attestation signature, by CP EnMS

"50001 SEP" Silver
- SEP Scorecard points > 25

"50001 SEP" Gold
- SEP Scorecard points > 50

"50001 SEP" Platinum
- SEP Scorecard points > 75

DOE will continue to recognize "50001 SEP" Certified and Silver, Gold, and Platinum

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Use 50001 SEP Scorecard to Earn Silver, Gold, and Platinum

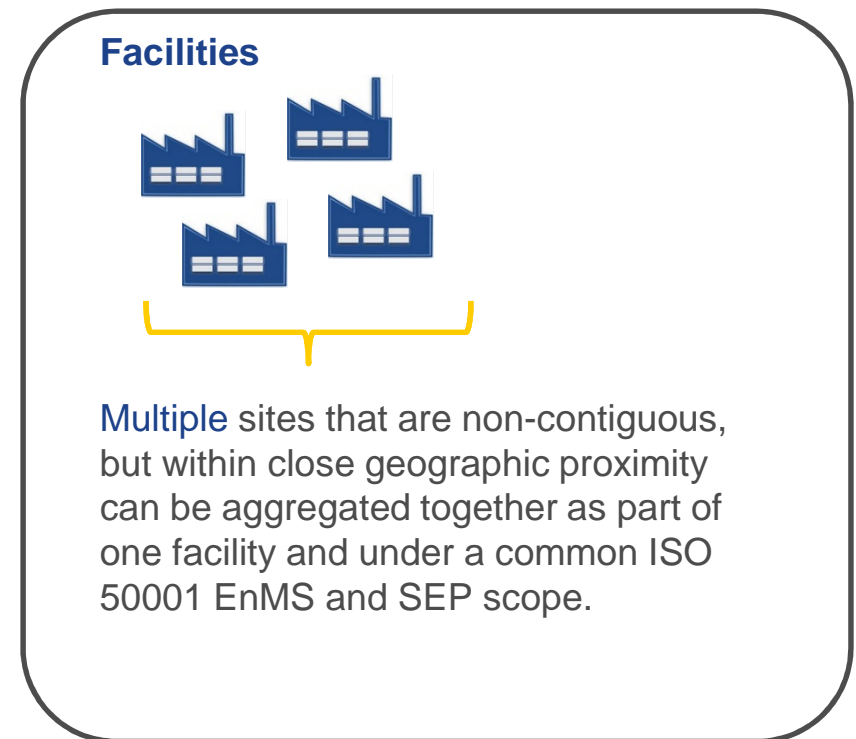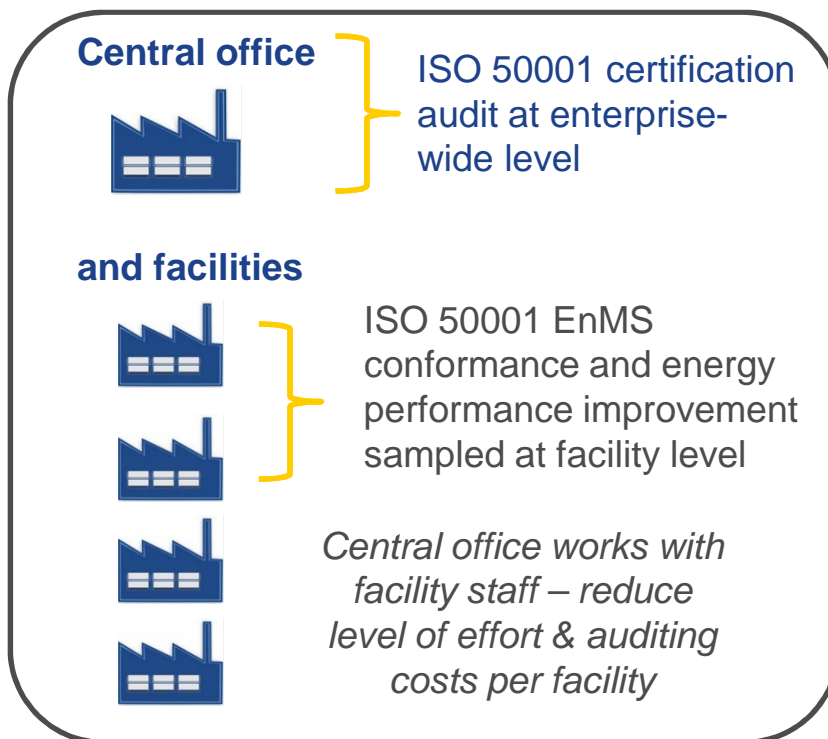**The 50001 SEP Scorecard encourages energy management best practices and advanced technologies.**

Scorecard Credits – 50001 SEP	Points
Energy Management System	**44**
• Energy data, monitoring, and measurement	6
• Significant energy uses	13
• Management of energy opportunities	11
• Organizational sustainability	14
Energy performance improvement	**33***
Certification, partnership, and reporting	**23**
Advanced energy technologies	**Bonus 8**
Advanced Energy Supply	**Bonus 20**

*The energy performance improvement verified during 50001 SEP certification audit is applied to scorecard for points.

- **Performance levels:**

  - Can be achieved in a flexible manner through energy performance or other credit categories; allows energy intensive facilities to achieve all SEP recognition levels.

  - Offer greater sector parity in energy performance:
    - For energy-intensive sectors, Larger facilities > 2 trillion Btu per year and ENERGY STAR certified facilities bonus multiplier

  - Allow for increasing scorecard credits claimed and moving to a higher level of achievement *mid-SEP certification cycle.*

- **CP EnMS will attest to the number of scorecard points achieved.**

  - Scorecard credit validation not included ANAB-accredited certification, not required to be audited by SEP Verification Bodies and no longer a normative reference.

- **DOE recognition to display scorecard points and performance level.**

  - Energy performance improvement public disclosure is optional and more flexible; can be stated as a percentage or source energy savings.

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Streamline Multiple-site Certification

- "SEP 50001" multi-site certification under one central office with EnMS and performance sampling

■ Single "SEP 50001" certification for multiple sites within close geographic proximity

Central office

ISO 50001 certification audit at enterprise-wide level

and facilities

ISO 50001 EnMS conformance and energy performance improvement sampled at facility level

Central office works with facility staff – reduce level of effort & auditing costs per facility

Facilities

Multiple sites that are non-contiguous, but within close geographic proximity can be aggregated together as part of one facility and under a common ISO 50001 EnMS and SEP scope.

Appendix
Back-Up Slides

-Overview of the
50001 Ready Navigator Steps
-Tools Modernization

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Alignment with Better Plants: Planning Tasks

Task	Progress	Next Steps to Achieve 50001 Ready
1. Scope and Boundaries	Strong	The Better Plants pledge includes all of the partner's manufacturing operations within the U.S. Consider if there are any non-manufacturing operations (e.g., office space, warehouses) that should be included in your 50001 Ready EnMS.
2. Energy Policy	Strong	Adopting the Better Plants pledge as part of your energy policy should satisfy most of this task. Review additional requirements around legal guidelines and energy efficiency in procurement and design.
3. Management Commitment	Strong	Participating in Better Plants and 50001 Ready represents management commitment, and should satisfy most of this task. Additional discussions with top management specific to the EnMS may be necessary.
4. Energy Team	Partial	The Management Representative can be the person at the facility reporting progress towards Better Plants to corporate leadership. To satisfy this task, remaining members of the Energy Team will still need to be identified.
5. Legal Requirements	Minimal	Though not a Better Plants requirement, most facilities are aware of legal requirements around their energy performance. Ensure that these are codified, reviewed and updated on an ongoing basis to satisfy this task.

Alignment with Better Plants: Energy Review

Task	Progress	Next Steps to Achieve 50001 Ready
6. Data Collection	Strong	Better Plants partners should have basic information collected to satisfy this task.
7. Data Analysis	Strong	Preparing a Better Plants annual report will likely satisfy most elements of this task. The facility may also need to list of energy-using equipment /systems.
8. Significant Energy Uses (SEUs)	Partial	Better Plants facilities will likely have strong understanding of their significant energy uses. To satisfy this task, codify this knowledge and create processes to quantify, review, track, and update this understanding.
9. Relevant Variables	Strong	Better Plants partners should have reviewed relevant variables with their TAM, and satisfied this task.
10. Performance Indicators (EnPIs)	Strong	Better Plants partners will have at least one facility-level relevant variable established. As needed, develop additional EnPIs at the sub-facility level.
11. Baselines, Objectives and Targets	Strong	The Better Plants pledge adopted at the facility-level will satisfy this task. Sub-facility level baselines, objectives or targets should also be reviewed.
12. Improvement Opportunities	Strong	Better Plants facilities have likely progressed in this task, possibly through In-Plant trainings and/or assessments from DOE's Industrial Assessment Centers. This tasks helps organize and prioritize these opportunities.
13. Improvement Projects	Partial	Its likely that improvement projects have been implemented, but these need to be completed under an Action Plan framework to satisfy this task.

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Alignment with Better Plants: Continual Improvement

Task	Progress	Next Steps to Achieve 50001 Ready
14. Monitoring	Strong	Better Plants partners will have satisfied most of this task. Review tracking and updating of SEUs and action plans.
15. Measurement	Strong	Better Plants partners will have satisfied this task
16. Operational Controls	Partial	While many partners are likely to be monitoring and tracking the energy use of certain systems, 50001 Ready introduces a more robust strategy to ensure SEUs are operating efficiently and improvement projects are delivering results.
17. Corrective Actions	Partial	Through annual reporting requirements, Better Plants facilities are aware if/when energy performance worsens. For this task, formalize a process to call attention to deviations in energy performance at the sub-facility level and establish protocols to correct and prevent these deviations.
18. Energy Consideration in Design	Partial	Many Better Plants partners already consider energy efficiency when designing new systems and facilities. Formalize this process within the continual improvement context to satisfy this task.

Alignment with Better Plants: System Management

Task	Progress	Next Steps to Achieve 50001 Ready
19. Documentation and Records	Minimal	New for facilities without a formal continual improvement-based EnMS.
20. Communications	Partial	Better Plants partners will have met requirements for external communications, but will need to review requirements and practices related to internal communication.
21. Training	Minimal	Better Plants facilities may require additional EnMS-specific training for their staff.
22. Procurement	Partial	Better Plants partners may have already satisfied this task as part of their approach to meeting their pledge goal.
23. Internal Audit	Minimal	New for facilities without a formal continual improvement-based EnMS.
24. Calculate Energy Savings	Strong	Better Plants partners will have satisfied this task through annual reporting.
25. Management Review	Minimal	New for facilities without a formal continual improvement-based EnMS.

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AMO Tool Modernization Overview

- Modernize to Open Source Software!
  - DOE will own and control code
  - Upgrade tool capabilities where feasible
  - Government-wide Open Source Software
  - MIT License – "Do whatever, but please provide attribution"
  - Desktop / Web / Mobile

- Update and Schedule
  - https://www.energy.gov/eere/amo/integrated-tool-suite
    - Process Heat (PHAST)
    - Pumps (PSAT)
  - Fans (FSAT)- 12/31/2017
  - Compressed Air (AirMaster+)   - 5/31/2018
  - **Steam (SSMT/SSAT)- 9/31/2018**

- All Beta tools can be accessed here:
  - https://ornl-amo.github.io/

- Ongoing Feedback link - https://www.surveymonkey.com/r/DOE-AMO-TOOLS

CIBO Engagement

Goal: We want to engage more end-users!

✓ **Several CIBO members have provided initial feedback**

✓ Specific Requests:

    1.   Test Beta Tools

       • Need more real-world test runs!

    2.   General Feedback on Tool Functionality

    3.   Review coding (for the advanced)

    4.   Feature feedback – are there additional features/calculators that could help you

✓ Revisiting corresponding training

   – Tool use tutorials will be developed for each system tool (online, video)

   – Expand deployment of In-Plant training curriculum (classroom/in-person)

   – **Explore 3rd party implementation of professional certifications in key systems**

       • Hydraulic Institute is completing a Pump System certification w/ associated curriculum

       • *Compressed Air Challenge* has Compressed Air System curriculum

       • CIBO – interested in Steam System expert/certification curriculum development???

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