

ISO 50001: Energy Management Systems in the Real World

Better Buildings Better Plants Summit
Arlington, Virginia
July 11, 2019

Today's Discussion Instigators

- Jim Henry – Iron Mountain Data Centers
- Paul Hartmeister – General Motors
- Pete Langlois – US Dept. of Energy

DOE's Spectrum Approach to ISO 50001 Adoption

DOE has developed an energy management continuum that begins with market-driven business culture and culminates in verified savings.

50001 Ready:

Recognition for ISO 50001 conformance using guidance in DOE's 50001 Ready Navigator tool



- Self attested
- Top down energy data results
- No cost and no audit required
- DOE recognition, not certification, for established 50001 EnMS in place

ISO 50001
Certification

Superior Energy Performance

50001™ (SEP 50001™):

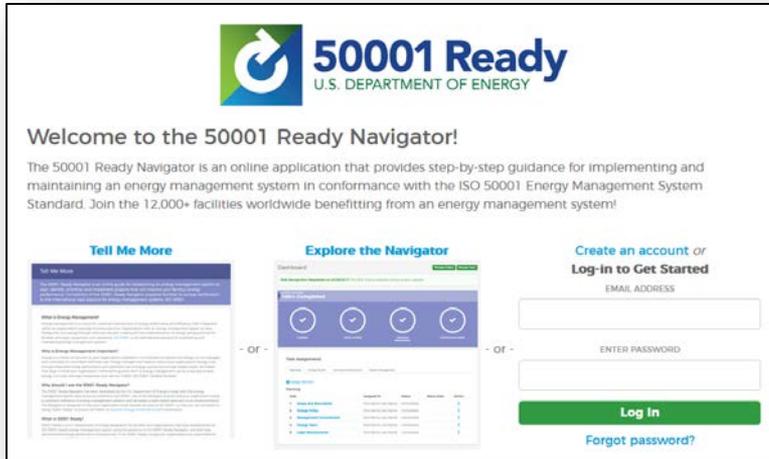
Recognition for ISO 50001 certification and 3rd party verification of energy performance improvements



- ISO 50001 certification required
- Top down and bottom up energy calculations
- Audit required at cost
- Provides 3rd party verification of savings from 50001

**Guidance / Training / Management Tools / Data Analysis / Business Case /
Success Stories / Recognition / Promotion**

Tools to Guide, Partners to Promote



50001 Ready Navigator

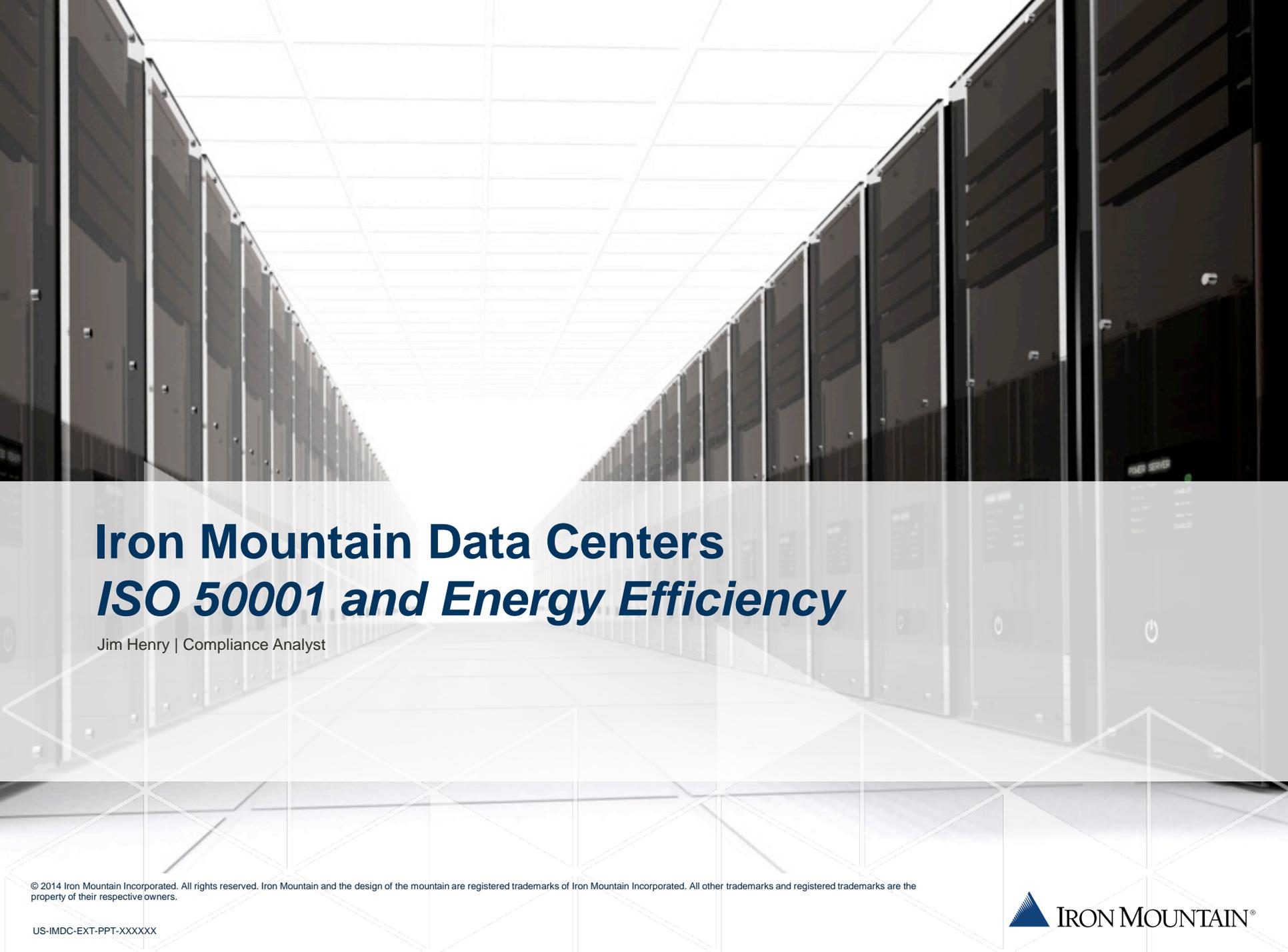
- Online tool, with simple, step-by-step approach to ISO 50001 implementation
- 25 tasks divided into 4 sections
- Ability to assign tasks to team members
- Extensive guidance available in each module
- Hosted and managed by LBNL team and subcontractors

Outreach and awareness: building constituencies

- Better Buildings / Better Plants partners, especially with other ISO experience
- Utilities with SEM programs that can be complemented
- Unaffiliated Navigator users
- Third-party promoters – NGOs, associations, municipalities, program implementers, ...

Key changes since last Summit

- Update to ISO 50001 standard, changes to SEP 50001 program
- Enhanced Navigator functionality, more changes planned to incorporate standard update



Iron Mountain Data Centers *ISO 50001 and Energy Efficiency*

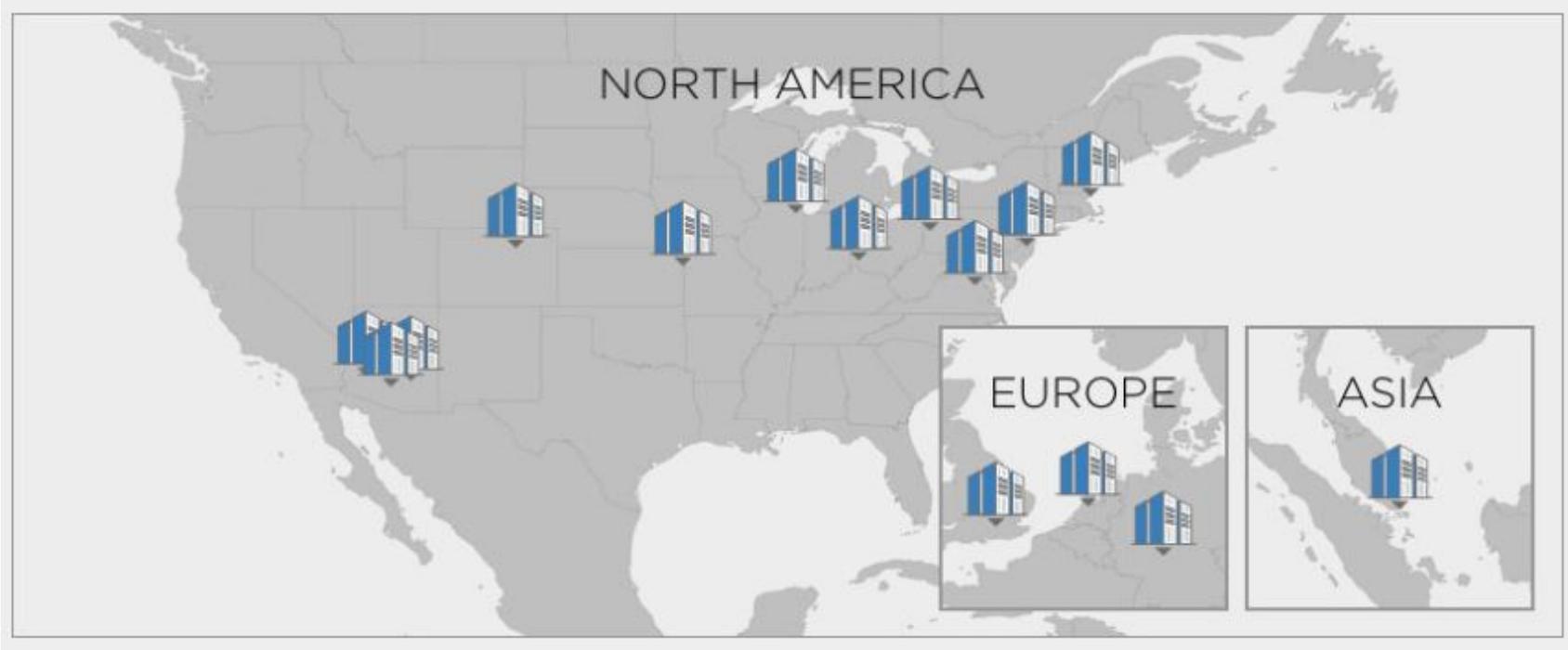
Jim Henry | Compliance Analyst

“Global data centers consumed 416 terawatts in 2017, nearly 40% more power than the entire United Kingdom. This consumption will double every four years.”

Forbes

“In response to vast increases in data storage and computational capacity in the last decade, the amount of energy used by data centers has doubled every four years ... data centers are set to soon have a bigger carbon footprint than the entire aviation industry ”

**The
Guardian**



- AMS-1*
- AZP-1
- AZP-2*
- AZS-1
- BOS-1
- DEN-1
- KCM-1
- LON-1



- NJE-1
- OHS-1
- SIN-1
- VA-1
- WPA-1

Challenges

Bandwidth!

Legal requirements

Continual improvement

Design elements

Data acquisition

What Is Green Power Pass?

GPP is the easiest, fastest, and lowest-cost way for data center users to reduce their reportable greenhouse gas emissions and meet their public green power and/or carbon reduction goals.

- ✓ GPP customers receive an annual certificate of attestation
- ✓ GPP certifies 100% of power consumed as usable in reporting
- ✓ GPP includes full documentation on the amount, source, and chain-of-custody of the green power sourced by IMDC
- ✓ Available to any IMDC customer, regardless of size, at any Iron Mountain data center across the globe
- ✓ Start claiming green power immediately upon executing the GPP agreement
- ✓ Tied to the rigor of the existing ISO50001 third party assessment, and certificate



Green Power Pass

Early Adopters



Goldman
Sachs

CREDIT SUISSE 

CENTER
BOSTON
MEDICAL

EXCEPTIONAL CARE. WITHOUT EXCEPTION.

GENERAL MOTORS

50001 READY AT GM

PAUL HARTMEISTER
ENERGY SUSTAINMENT MANAGER

AGENDA

TIMELINE AND GOALS

GM'S CURRENT ENERGY MANAGEMENT
PROCESS

GM'S 50001 READY APPROACH

LESSONS LEARNED/BEST PRACTICES

TIMELINE AND GOALS

- Held a DOE In-Plant Training on 50001 Ready in Lansing Delta Township Plant – April 2018
- Corporate energy team developed task sheets, GM-specific instructions – July 2018
- Tasks assigned to Energy Conservation Engineers (ECEs) and Site Utility Managers (SUMs) at 5 pilot sites – August 2018
- Lake Orion Assembly, our first site recognized by DoE – January 2019
- Rolled out to all ECE's and SUM's to get all 27 US manufacturing sites recognized in 2019 – January 2019
 - Internal goal to get 18 sites recognized by July 2019
 - Currently at 22 sites recognized
- Rolled out to Manufacturing Directors for top manufacturing support – March 2019
- Plan to roll out a Corporate 50001 Ready Manual – August 2019
- Move forward with implementation and execution - Ongoing

GM'S CURRENT ENERGY MANAGEMENT PROCESS

- Typical Energy Teams at each site
 - Site Utility Manager (SUM)
 - Energy Conservation Engineer (ECE)
 - Facility Area Manager (FAM)
 - Representatives from manufacturing departments as appropriate per site
- High data availability
 - Several systems utilized for monthly, hourly, and minute level data
 - Submetering capabilities vary by plant, but usually have departmental meters
- Rely on ECEs and SUMs to track energy metrics and help develop projects
- Corporate support and funding for larger energy efficiency projects
- Corporate tracking of metrics (MWh/unit) and bill data

GM'S 50001 READY APPROACH

- Corporate team developed common task sheets
 - Created standard manual that included each task
 - Used existing ISO 14001 documents for reference
 - Kept the manual generic, filled out by each site to be site specific
- Direction to integrate 50001 Ready into existing GM operating practices
- Ultimate goal is to drive 50001 Ready principles to all levels of the organization
- Plants completed their input to the manual and covered with plant leadership
- Obtained plant leadership support and self-attest
 - ECEs, SUMs, and corporate team review tasks with leadership throughout the process

LESSONS LEARNED

- The DOE In-Plant training was invaluable
- Include leadership from the beginning
 - Roll-out to manufacturing leadership sooner in the process
 - Engage ME directors and plant directors when starting the 25 tasks
- Do Q/A sessions to help individuals working on 50001 Ready with corporate staff
 - Document questions and answers
 - Work to keep process common while looking for Best Practices
- Use local Sharepoint for storage
 - Link back to corporate Sharepoint
 - Make sure everyone has appropriate access
- Encourage site to site sharing of ideas

Discussion

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