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U.S. DEPARTMENT OF ENERGY

Building on Success to Introduce Scalable SEM to New Markets

Part 1: Insights from California's ongoing process to develop SEM programs

Part 2: How to leverage DOE's latest SEM tool: 50001 Ready program

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November 08, 2017

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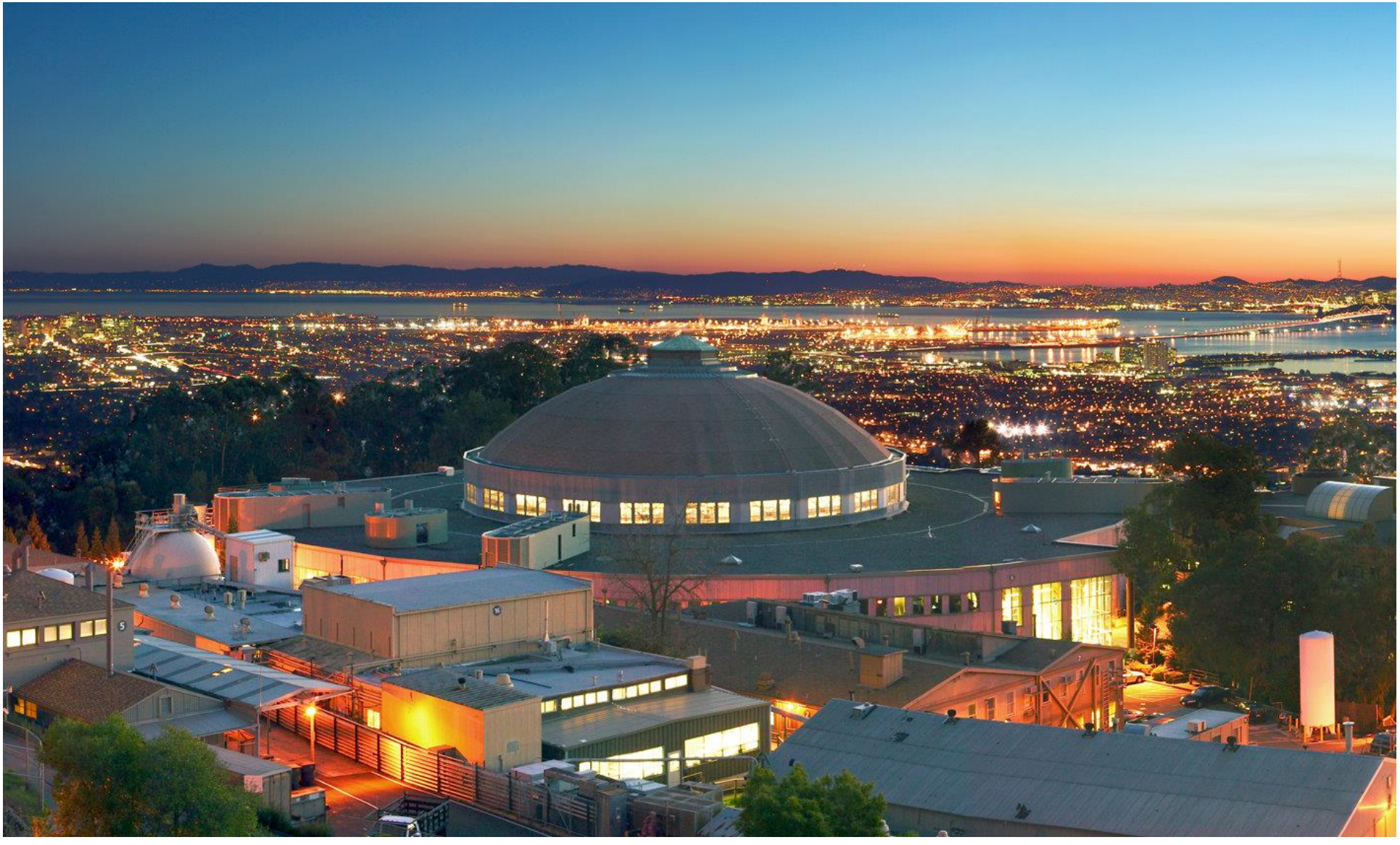


Part 2: How to leverage DOE's latest SEM tool: 50001 Ready program

Wild Turkeys 1 - LBNL 0

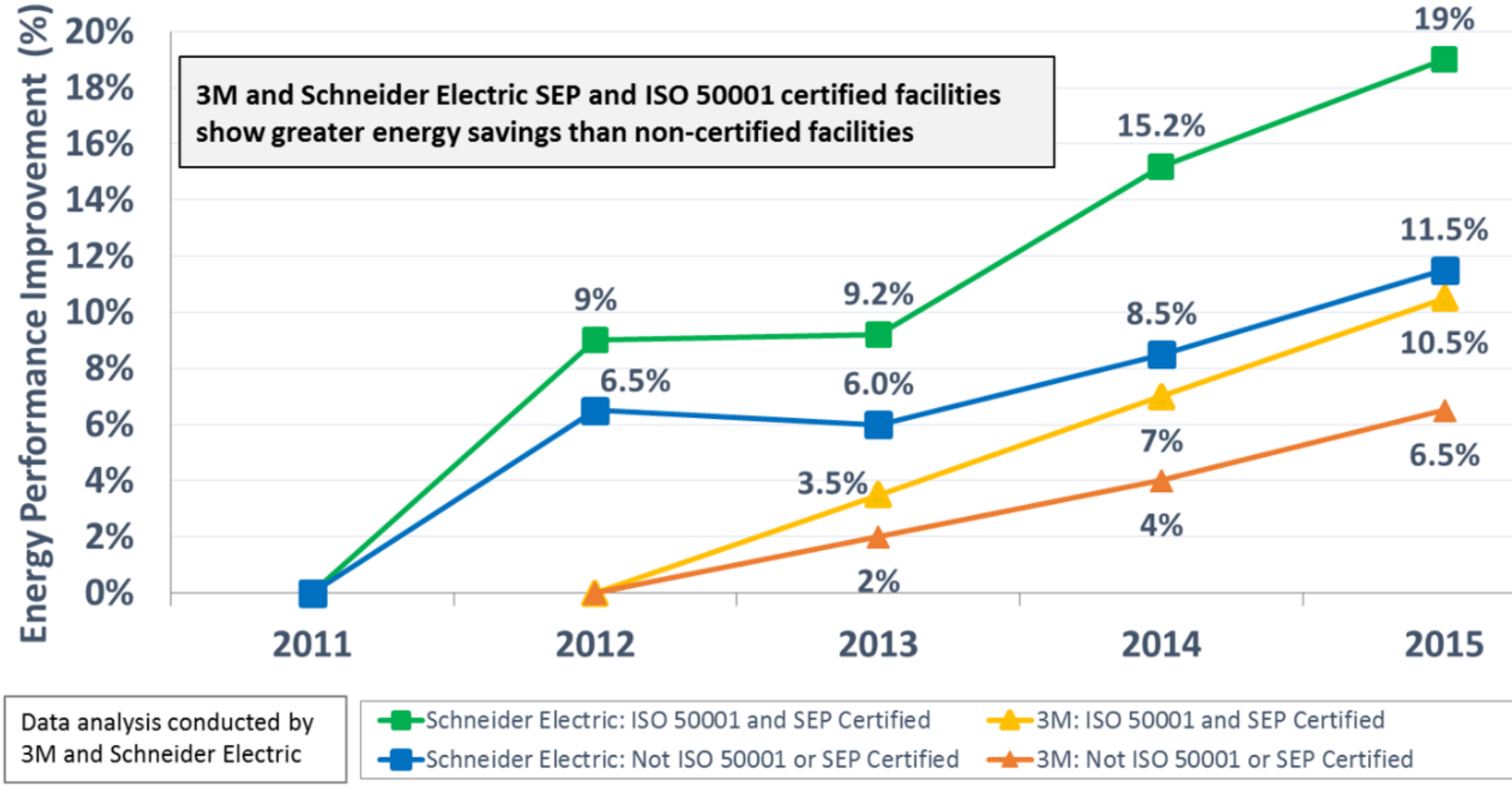
ISO 50001 and SEM

- What it is:
  - — Flexible framework for managing energy
  - — Management model for continual improvement of energy performance
  - — Set of requirements allowing for third party verification of conformance

- What it does:
  - — Builds institutional knowledge
  - — Engages all staff (executive, facility, procurement, communications…)
  - — Reduces business risk associated with energy cost and supply
  - — Establishes culture around energy performance improvement
  - — Enables cost-effective and rapid investment in advanced energy efficient technologies

ISO 50001
ENERGY MANAGEMENT

ISO 50001: Initial performance data



US DOE ISO 50001 based offerings

50001 Ready recognition: Self-attestation prepares organizations for certification options—*recommended but not required!*

ISO 50001 certification:

1. Confirm completeness of system management and review cycles
2. Third-party audit to verify conformance to ISO 50001 standard

ISO 50001 and SEP certification: ISO 50001 certification, plus demonstrate energy performance improvement:

1. Top-down regression analysis
2. Bottom-up sanity check
3. Third-party audit to verify energy performance improvement

50001 Ready
U.S. DEPARTMENT OF ENERGY

Energy.gov/50001Ready

50001Ready Home | About | Partners | Tools & Resources | Get Involved

50001 Ready Program

About the 50001 Ready Program

Get 50001 Ready!

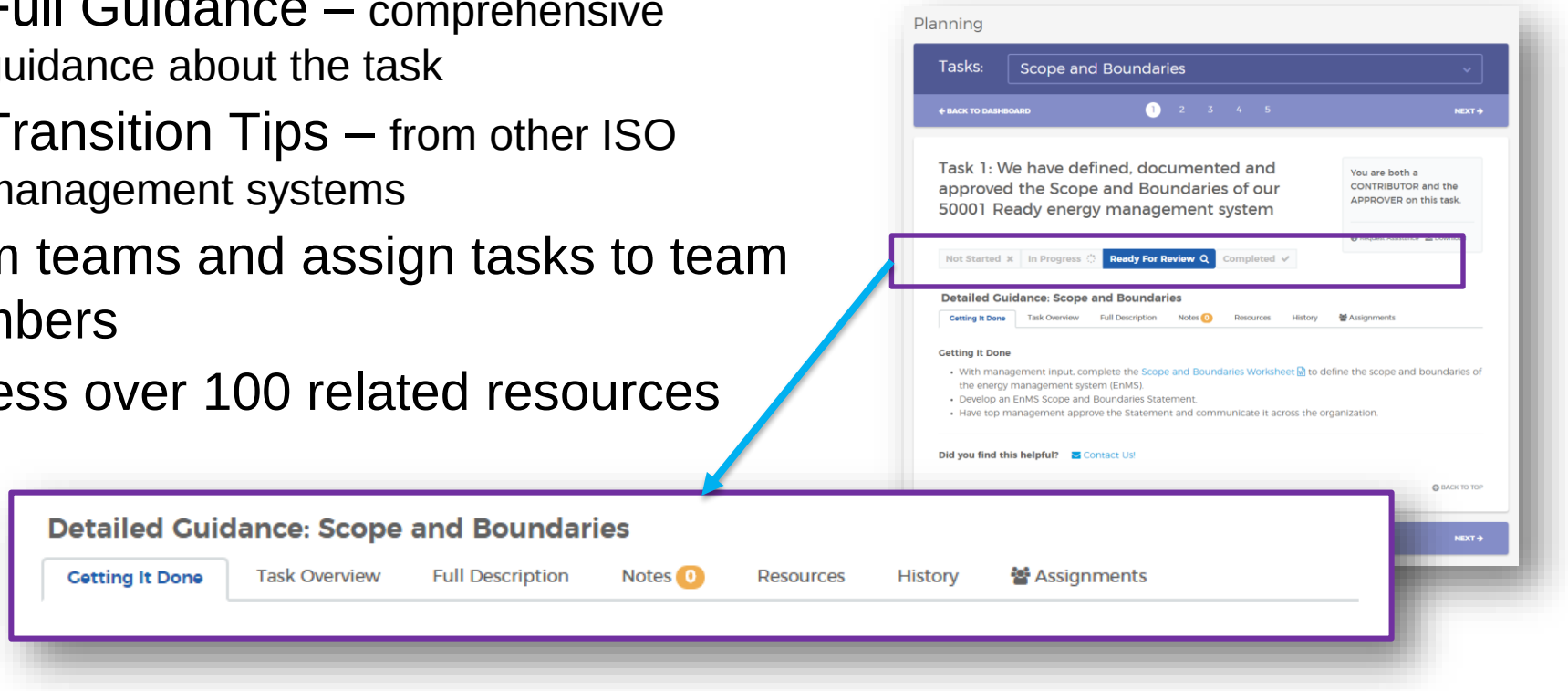
The Energy Management Journey

Tools and Resources

Newsroom

50001 Ready Navigator – Online ISO 50001 based guide to EnMS implementation

- Online step-by-step approach towards ISO 50001 based energy management system standard implementation
- Guidance broken into straight forward sections, including:
  - Getting It Done – what specifically needs to be accomplished
  - Task Overview – how does this task connect with ISO 50001
  - Full Guidance – comprehensive guidance about the task
  - Transition Tips – from other ISO management systems
- Form teams and assign tasks to team members
- Access over 100 related resources

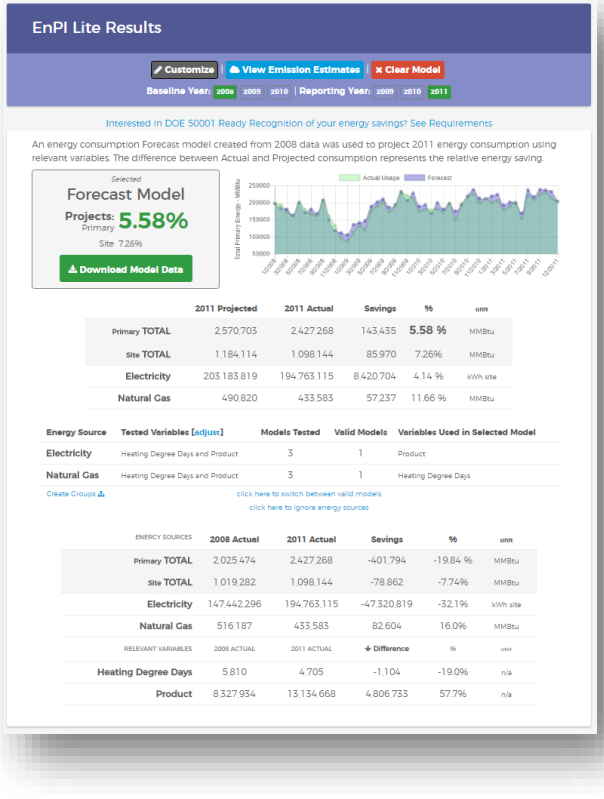


EnPI Lite – Online facility boundaries M&V tool

EnPI Lite is a web based calculator that estimates energy savings relative to relevant variables, like production levels and weather, using linear regression

<u>EnPI Lite Steps:</u>

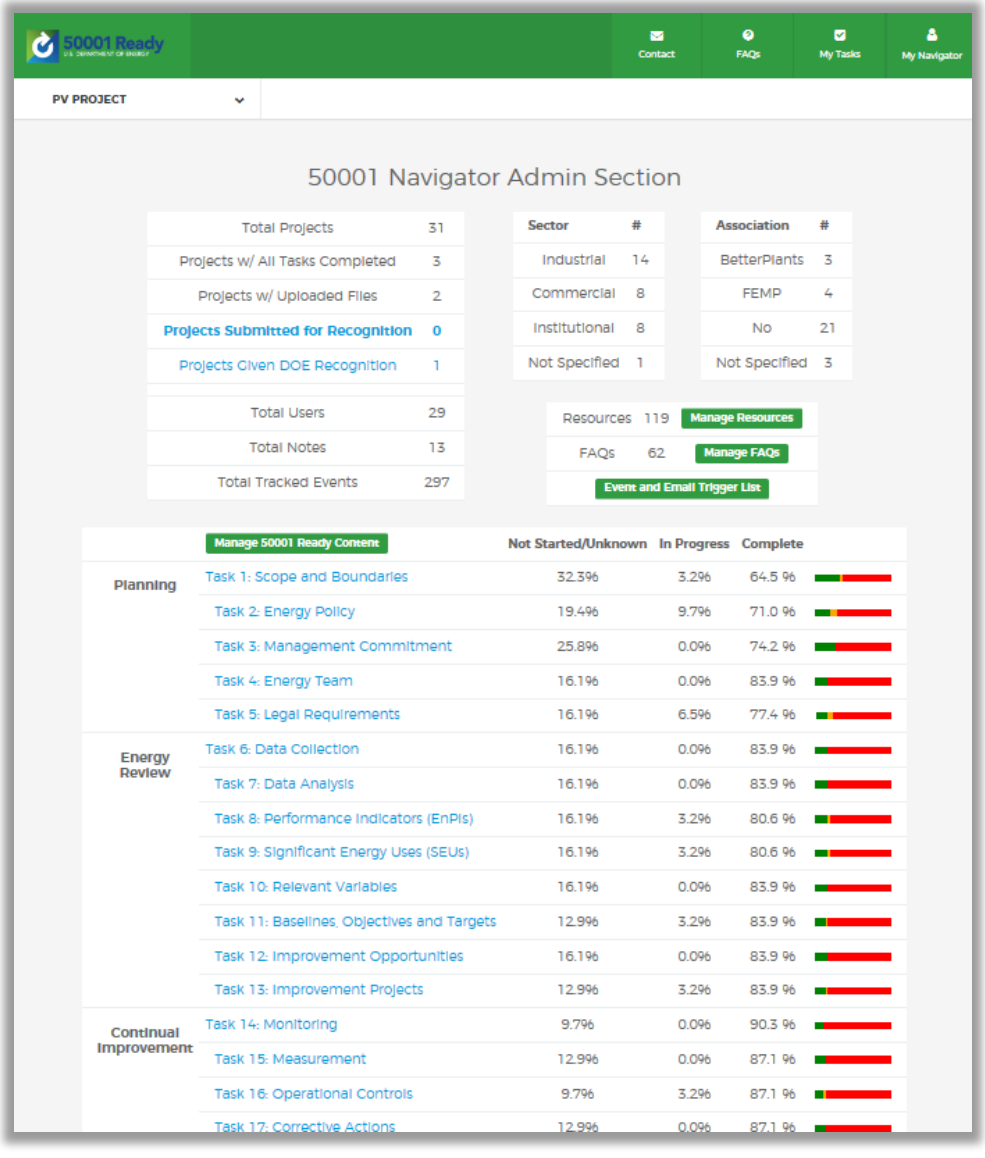
1. Input Energy Consumption and Relevant Variable Data
2. Regression Analysis (*automatic*)
3. Adjust Data / Models as needed
4. Download Results



Note: Provides the same fundamental analysis as the other DOE EnPI tools with similar options

Co-branding and customization

- Navigator has been developed on open-source standards to enable co-branding and customization.
- Issue 50001 Ready recognition as a partner organization
- Add Tooltips, Resources and FAQs specific to your organizational or regulatory requirements
- Track overall process of ongoing projects



First 50001 Recognized facility – in PA

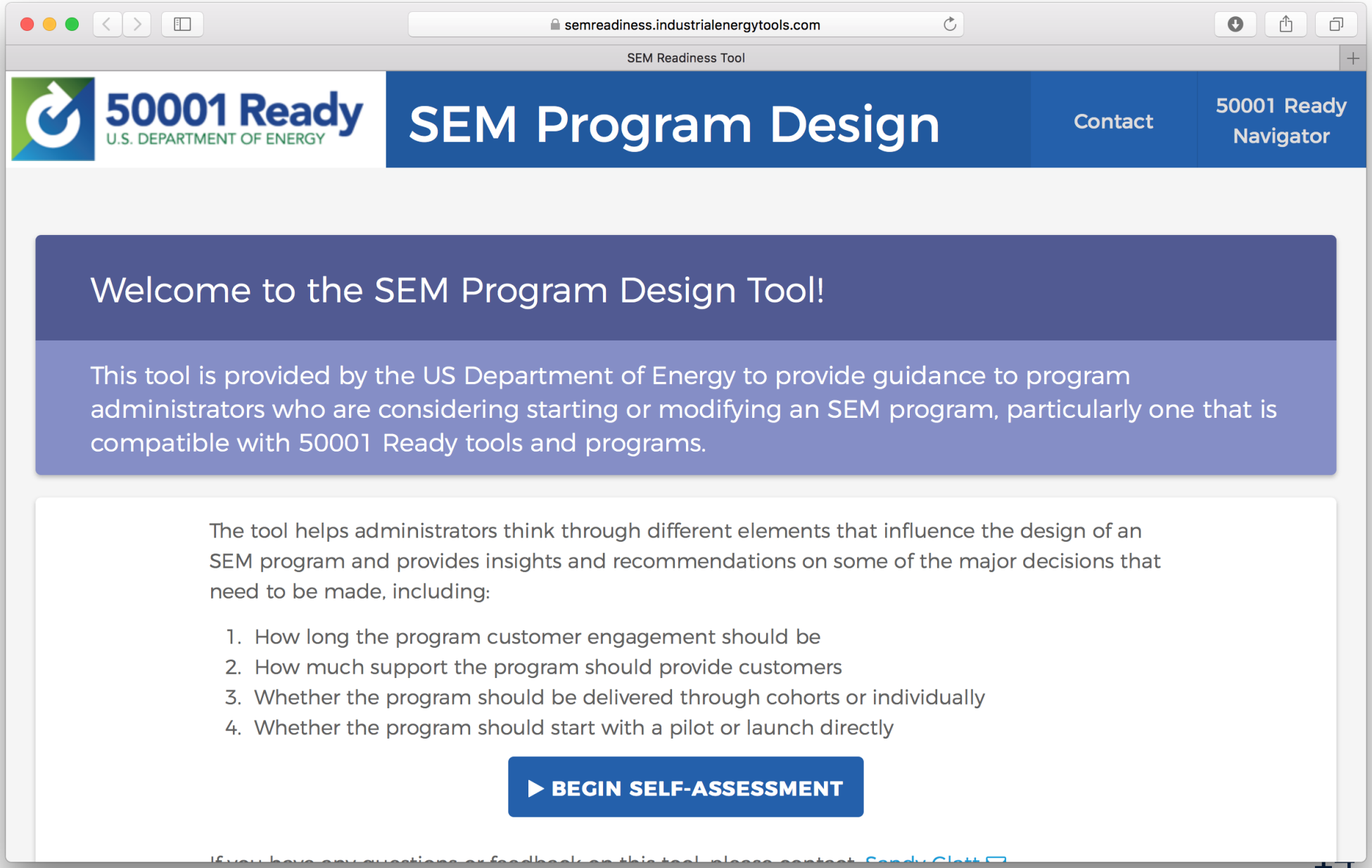
- 266,000 square foot fruit and vegetable refrigerated warehouse
- Started project in May; recognized as 50001 Ready in June
  —5 weeks engagement, approx 80 hours effort
- Drew from expertise from every department, including HR, accounting, packing, warehouse, and executive leadership
- “Great refresher” for reconfirming operations and lessons learned from previous engagement with utility Continuous Energy Improvement program
- Hope to use EnMS practices to improve ENERGY STAR score

Find out more!

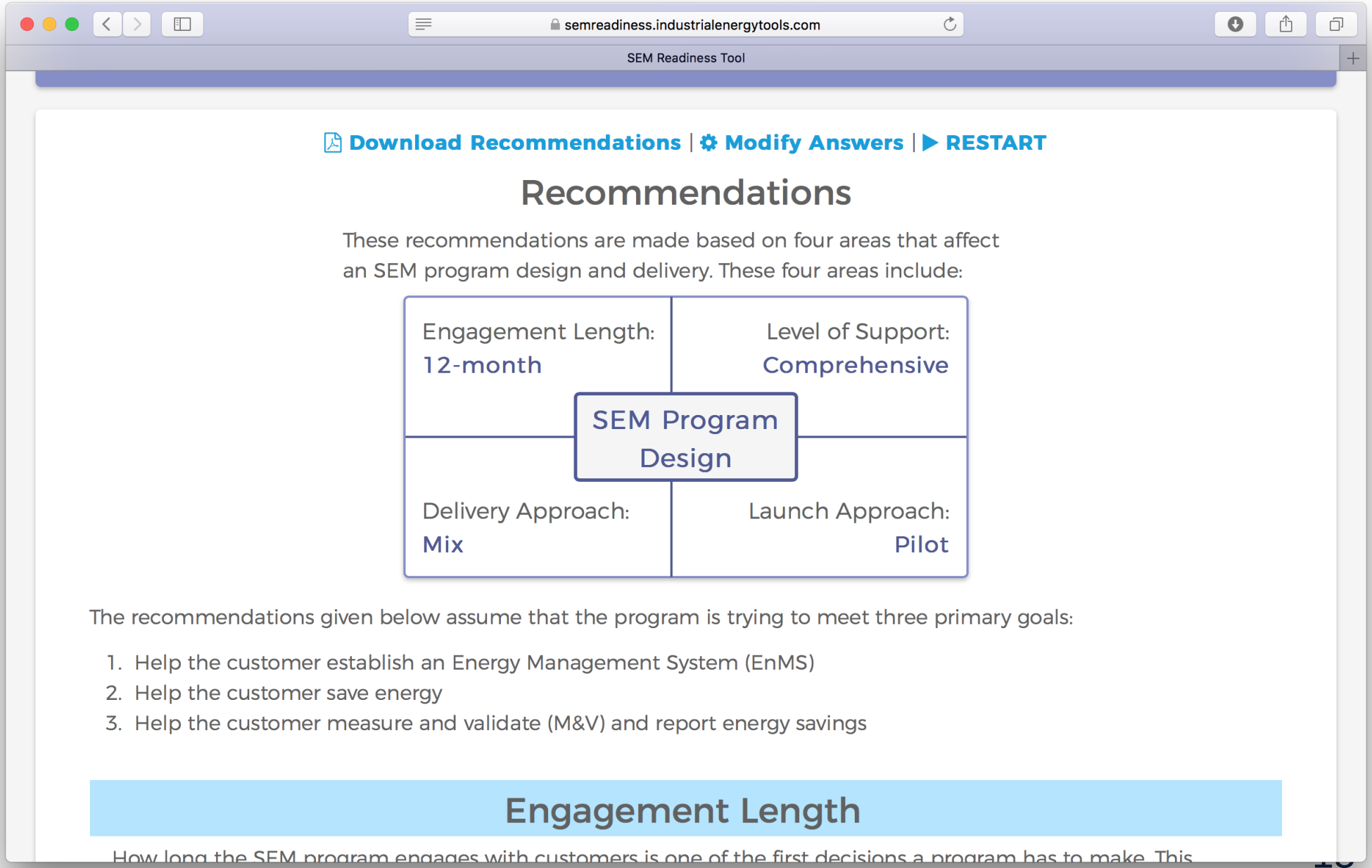
Visit the 50001 Ready website at energy.gov/50001Ready

- Download infosheets and FAQs
- Find links to the Navigator and EnPI Lite
- See 50001 Ready facilities ***coming soon!*
- Read case studies and additional resources
- Read more about ISO 50001 and related programs

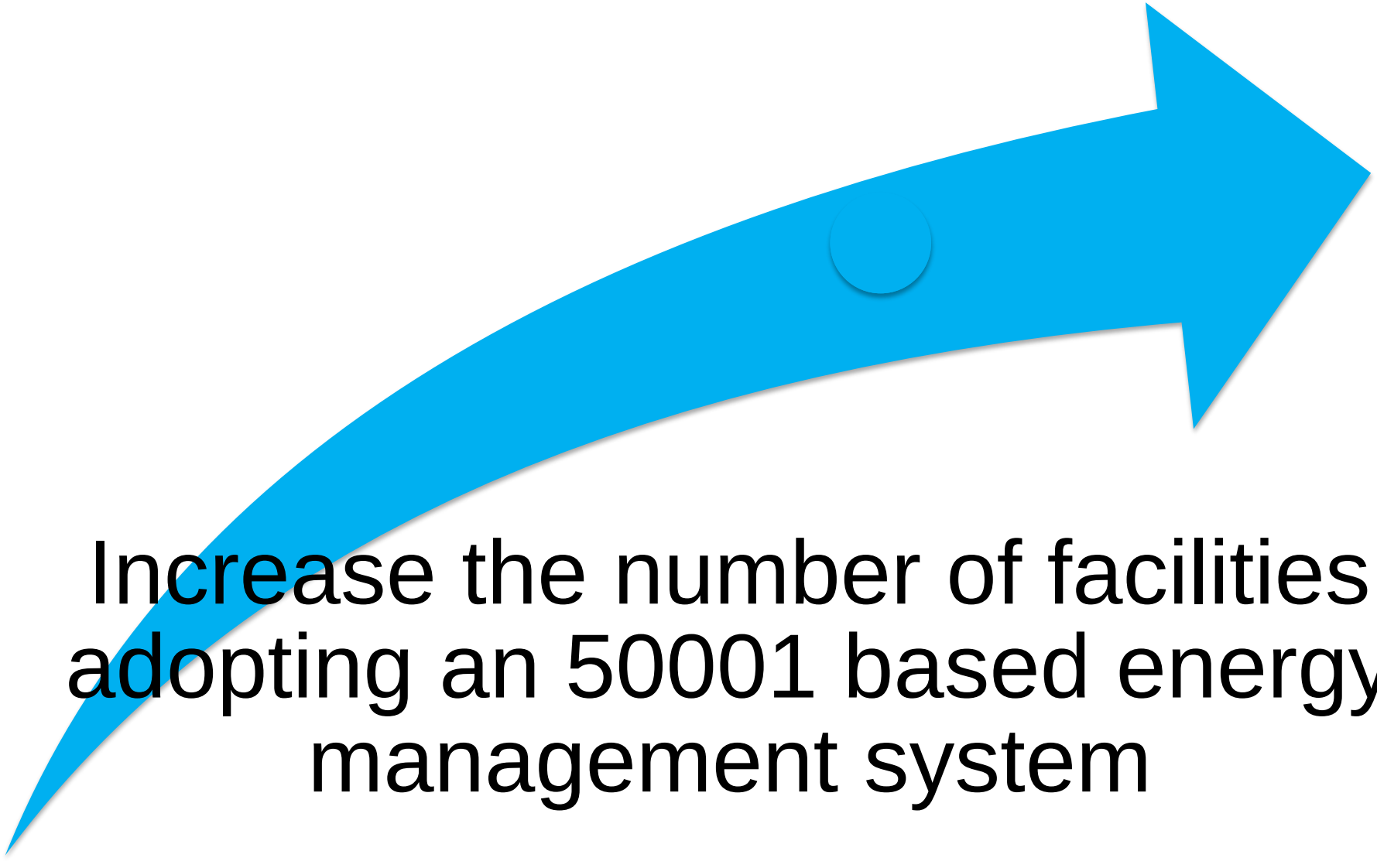
SEM program design tool



SEM program design tool



Partner with utility ecosystem to incorporate 50001 Ready into SEM programs



Increase the number of facilities adopting an 50001 based energy management system

Divergence between DOE goal and SEM resources

Increase the number of facilities adopting an ISO 50001 based energy management system

SEM programs reference existing programs

- Those programs are not aligned with 50001
- Materials from those programs is proprietary or hard to get
- Material is difficult to edit

Value propositions of basing a utility SEM program on ISO 50001

- It is where the market is going
  - —Rapidly becoming the global standard in more than just name
- Will impact supply chains
- DOE recognition for customers
- Platform to know that culture of continual improvement is thriving
- Works for your customers
  - —Facilities in multiple service territories and across state lines
  - —Allows the company to seek ISO certification or not, but they are in line for it
  - —Clear statement of sustainability practices
- Establishes a clear benchmark for energy management

Objective – Converge SEM best practices with ISO 50001 Ready enhancements

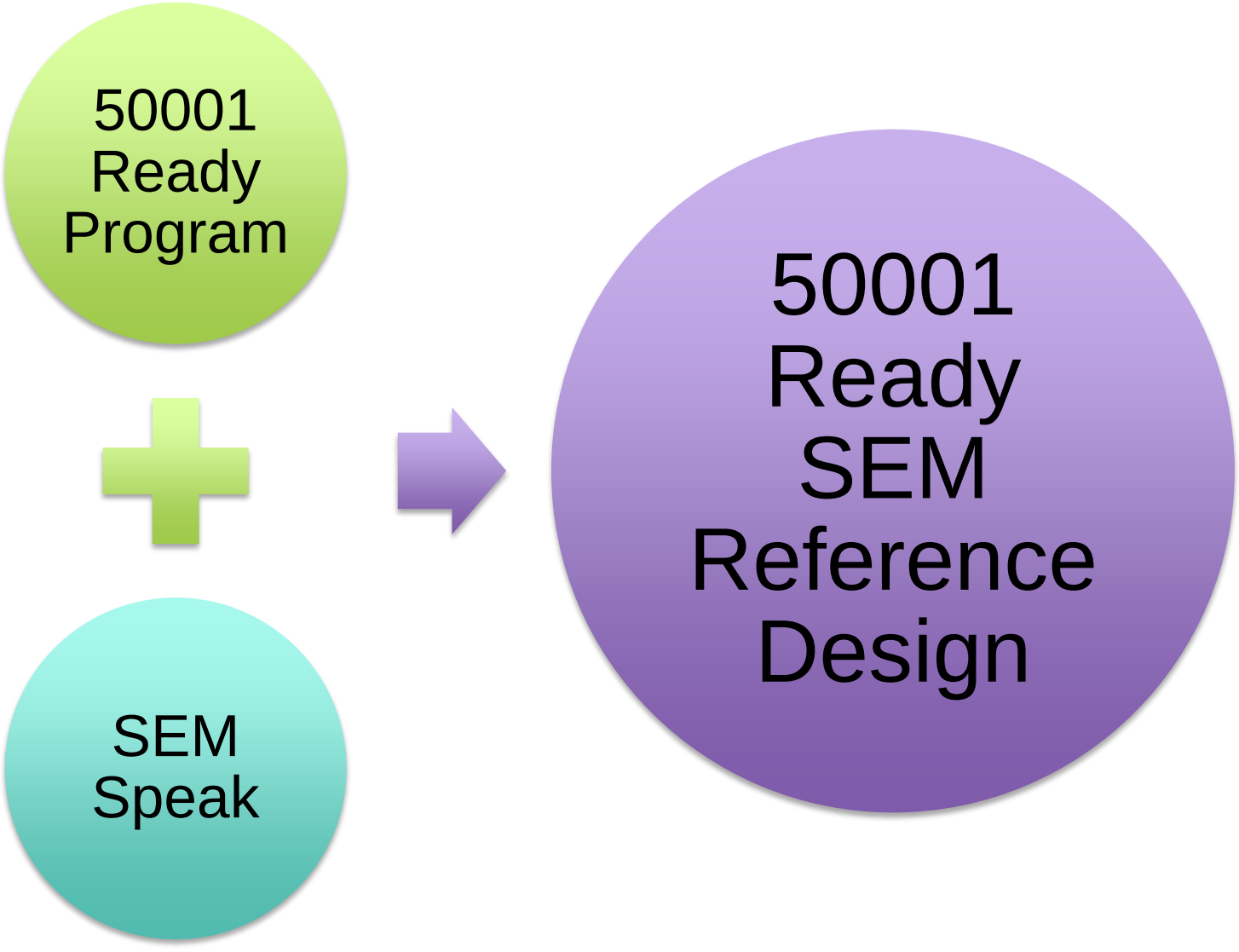
Create a 50001 Ready “SEM” Reference Design

- Publicly and easily available
- Configurable
- Guidance
- Based on proven approaches

Work with the utility "ecosystem" to adopt the design

- National/regional entities (CEE, REEOs, ACEEE)
- Utilities, PBAs
- Implementation contractors
- Regulators

50001 Ready SEM reference design



Why a 50001 Ready SEM "reference" design

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50001 Ready in "SEM Speak"

- **50001 Ready for Utilities**
- Allows facilities working with utilities to seek 50001 Ready attestation

Publicly Available

- **Easy to find**
- Available to all: Utilities, Implementers, Evaluators, regulators, etc.

Configurable

- **Open Source**
- Source documents available
- Easy to edit and modify

Four “buckets” of utilities/PBAs

Established SEM Program (>5 years)	Recent SEM Program (1-5 years)	No Current Program- Launch w/in 1 yr	**No Current Program- Looking to Launch**
• BC Hydro (67) • BPA (92) • ETO (192)	• Ameren Illinois (8) • Commonwealth Edison (18) • Hydro Quebec (20) • Idaho (26) • Nova Scotia (11) • PacifiCorp (17) • Vermont (14) • Wisconsin (30) • Xcel (146)	• California • NYSERDA	• Duke • Massachusetts • National Grid • TVA

Benefits for utilities with no SEM program

- Better Customer Offering
- Faster SEM Program Start-up
- Lower SEM Program Start-up Costs
- More SEM Program Implementers
- Better Alignment with Other Utilities

Approach

California Industrial SEM Design Guide

VERSION 1.0, FEBRUARY 8, 2017

PREPARED BY: SERGIO DIAS CONSULTING LLC

PREPARED FOR: PACIFIC GAS AND ELECTRIC, SAN DIEGO GAS AND ELECTRIC, SOUTHERN CALIFORNIA EDISON, AND SOUTHERN CALIFORNIA GAS COMPANY

Timeline for 50001 Ready "SEM" reference program design

October 2017

- Design Document Draft

December 2017

- Implementation Materials Draft

March 2017

- TBD: Utility and Implementation Tools Draft

We want partners, not just reviewers

To work with us to finalize the 50001 Ready SEM program design and then launch it!

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