Final Report: Northwest Research Pilots for 50001 Ready

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Executive Summary

For over ten years, Northwest utility program administrators have deployed Strategic Energy Management (SEM) programs to deliver energy efficiency through organizational change in the commercial and industrial sectors. These SEM programs were based on Northwest Energy Efficiency Alliance (NEEA) pilot efforts starting in the early 2000s. The SEM programs influenced the creation of an international standard for SEM, ISO 50001, published in 2012. In 2018, the US Department of Energy (DOE) launched 50001 Ready, a platform and toolset that drives ISO 50001 adoption.

In this project, co-funders NEEA and DOE convened regional stakeholders to identify and test ways that 50001 Ready can be integrated into local SEM programs, as well as to identify and surface tools and resources associated with 50001 Ready that may be of high value to utility program implementers and energy end-user customers participating in utility SEM programs. Stillwater Energy (Stillwater) supported NEEA to execute this project and deliver value to the Northwest.

In 2018, DOE funded a project that socialized 50001 Ready with program administrators, gathered their insights and needs, and outlined how various components of 50001 Ready may address those needs. In late 2018, DOE facilitated a request for proposals to deploy 50001 with end-use customers ("participants") via regional energy efficiency organizations like NEEA as well the region's associated utility programs administrators. DOE, through Lawrence Berkeley National Laboratory (LBNL), awarded NEEA a grant to proceed. Stillwater implemented this project on NEEA's behalf as a continuation of the previous DOE funded project. In mid-2019, DOE made a high-level decision to prematurely terminate funding for this project and for other related projects across the country. NEEA agreed to provide funding to complete the effort through the remainder of 2019 to maintain support for participants who had been recruited by their utilities to participate and to provide findings to Northwest utility program administrators.

The goals for this project included:

1. Develop implementation strategies that support the growth of 50001 Ready in the Northwest.
2. Test those strategies as appropriate, incorporating the input and ideas of NEEA stakeholders.

3. Identify program pilot or program implementation opportunities in the Northwest.
4. Recruit participants in a 50001 Ready implementation pilot in order to provide feedback, validation, and verification of the program.

Stillwater executed this project from April to December 2019, engaging two Northwest utilities, NorthWestern Energy (NWE) and Snohomish PUD (SnoPUD), along with participants. This project had the following outcomes:

- Participants completed twelve 50001 Ready Navigator tasks.
- The 50001 Ready Navigator platform was found to be a useful project management tool on which program participants can track their SEM activities based around 50001 Ready tasks.
- The DOE EnPI[1] Tool was found to be useful to create and track basic models; program administrators would likely need to augment its usage with programmatic support from engineering/statistical resources.

This report includes the following sections:

- Implementation Activities – the actions taken to engage partner utilities and end-use customer participants ("participants"), to individually coach the participants, to educate and engage them in workshops, and to provide modeling support using DOE's EnPI Tool
- Survey Results – the current state information about the participants compared to the 25 50001 Ready Navigator tasks
- Conclusions – brief findings of successes and barriers to inform program administrators about the 50001 Ready platform's applicability as an efficiency program
- Marketing and Collateral – materials with messaging useful to recruit and then engage participants
- Insights from Northwest SEM Collaborative – insights gained from a 50001 Ready action session facilitated at the Northwest SEM Collaborative 2019 Fall Workshop
- Using 50001 Ready to Support SEM – recommendations for program administrators

[1] Energy Performance Indicator (EnPI) – a metric indicating energy performance; the EnPI Tool was developed by LBNL to ease the development and usage of energy metrics based on statistical models

In addition, there are appendices containing prior project outcomes, information about each participant, collateral and materials, detailed survey results, and key supporting documents.

This project facilitated informative usage of the 50001 Ready platform and resources that should be helpful for other program administrators deploying SEM and related programs across the Northwest.

Introduction

The Northwest is a national leader in commercial and industrial Strategic Energy Management (SEM) programs that utilize organizational engagement and structure to drive persistent savings and numerous other benefits. The Northwest Energy Efficiency Alliance (NEEA) has been a key initiator of SEM efforts. In recent years, NEEA's SEM efforts have included SEM infrastructure efforts to support regional utility SEM program offerings and mobilize the next wave of industrial and commercial SEM adopters.

NEEA played a crucial role in the development and expanded usage of the international SEM standard ISO 50001, originally published in 2012, and based on real-world experience of many organizations around the world, including organizations participating in Northwest SEM programs. As of 2019, there are over 10,000 ISO 50001 certifications, the vast majority being outside the US. Studies of organizations deploying ISO 50001 show positive results in the form of energy savings as well as in organizational processes that are quite resilient to challenges.

Northwest SEM programs have matured over the past several years, with evolving program designs to maintain engagement, support persistence, provide value, and drive incremental savings. At the same time, DOE and their Advanced Manufacturing Office (AMO), along with LBNL, developed 50001 Ready, a suite of tools to increase uptake of ISO 50001.

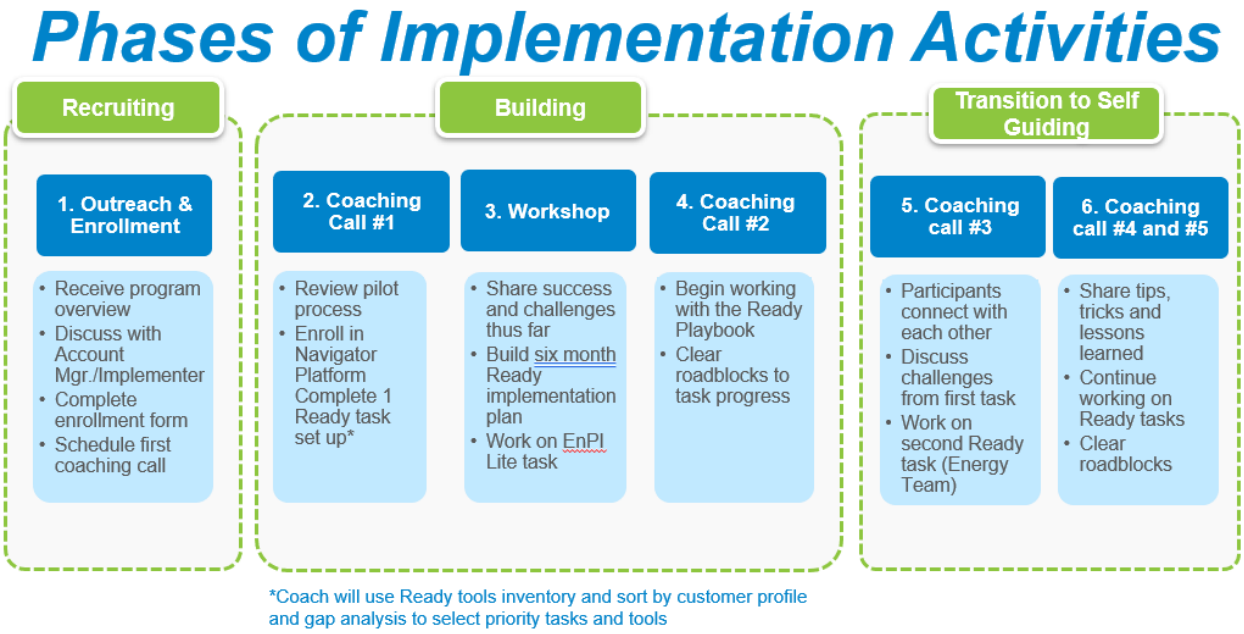
Over the last ten years, the Northwest SEM Collaborative has worked to support a community of practice around SEM, with annual workshops focused on relevant SEM topics. NEEA supported Stillwater to facilitate a 50001 Ready-focused action session in the Northwest SEM Collaborative 2019 Fall Workshop.

Implementation Activities

Stillwater executed a series of activities as part of the 50001 Ready project, to support the project goals:

1. Develop implementation strategies that support the growth of 50001 Ready in the Northwest.
2. Test those strategies as appropriate, incorporating the input and ideas of NEEA stakeholders.
3. Identify program pilot or program implementation opportunities in the Northwest.
4. Recruit participants in a 50001 Ready implementation pilot in order to provide feedback, validation, and verification of the program.

These goals were achieved through the activities outlined below.



Background:

Leading up to this effort, Stillwater and NEEA worked with numerous Northwest program administrators to assess their viability to participate in this pilot. Outreach began when Stillwater facilitated a 50001 Ready workshop for program administrators, including Bonneville Power Association (BPA), Energy Trust of Oregon, Puget Sound Energy, Seattle City Light,

Northwestern Energy (NWE) and Snohomish County PUD (SnoPUD). Through the completion of that earlier project, Stillwater maintained dialog with these organizations, understanding their interest and bandwidth to participate more deeply in a pilot, which is the scope of this report. These program administrators saw varying values to participation, including 50001 Ready's alignment to their current and future SEM offerings, the value of 50001 Ready as a means to drive even greater savings for their customers, and the customer service value that could be obtained through deeper engagement with some of their larger customers. Two utilities, NWE and SnoPUD, committed to participate in the pilot and to lead recruitment of end-use customers to be pilot participants.

Outreach and Enrollment:

In May-June 2019, the participating utilities began end use participant recruitment. Account Managers at NWE and SnoPUD led outreach efforts with several of their large end use customers. Based on Stillwater's SEM implementation and ISO standard experience, key characteristics identified as success factors for ideal participants included:

- Commercial or industrial customer with significant energy bills
- Already familiar with, or certified in, other ISO[2] standards, DOE Superior Energy Performance (SEP), ENERGY STAR, LEED[3], or SEM via participating in an SEM program
- Key accounts and other regional market leaders

Recruitment conversations centered around the three steps needed to earn 50001 Ready recognition including:

1. Complete the 25 tasks in the 50001 Ready Navigator;
2. Self-attest to their completion; and

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[2] The International Organization for Standardization (ISO) is the leading body for global standardization. ISO administers thousands of standards for products and management systems, with popular management system standards including ISO 9001 for quality and ISO 14001 for environmental impact.

[3] The US Green Building Council administers the Leadership in Energy Efficient Design (LEED) standards and accreditations to support more energy efficient buildings.

3. Measure and improve energy performance over time.

The following table details the participants recruited to participate in the pilot.

Participant	Utility	Signed MOU
SEA-LECT	SnoPUD	August 8, 2019
SnoPUD	SnoPUD	May 15, 2019
Town Pump	NWE	June 18, 2019
Vista Outdoor BLACKHAWK	NWE	August 26, 2019
Montana Precision Products	NWE	July 29, 2019

Coaching Calls

Participants received five to seven coaching calls throughout the duration of the program. Coaching calls were held with the energy champion from each facility, Account Manager and a Stillwater coach. Calls occurred on a three week or monthly cadence depending on what the participant preferred. Although some of the details discussed on calls varied between participants, most participants had a similar experience with using the 50001 Ready Navigator tool, and most call content was centered around common topic areas. The following table describes those topic areas as well as key takeaways/feedback from the calls.

Call	Topic Area	Key Takeaway
Coaching Call 1	Walk through 50001 Ready survey to assess current energy management state.	Many organizations do not have energy management practices within their organization. This survey helped coaches tailor coaching call content and provided data on which participant types were interested in the program.
Coaching Call 2	Orientation to 50001 Ready, set up profiles.	Even with the development of a step by step guide to set up Navigator profiles, there is still live troubleshooting that happens when signing on to the Navigator Tool. For example, participants need to specify their utility program administrator and potentially their SEM implementer as "Ready Partners" to enable those groups to monitor progress as well as to support troubleshooting on specific tasks. One benefit of being a "Ready Partner" is that these groups can see aggregated participant information, enabling them to see common successes and challenges across multiple participants.
Coaching Call 3	Progress on tasks 2,3 or 4	Early on participants recognized a greater time commitment than anticipated. There are some initial challenges with Navigator tool including: many links, duplicative resources, playbook does not house all information.
Coaching Call 4	Energy Performance Indicator (EnPI) Tool Review	Participants enjoyed reviewing facility data. Preliminary challenge around having the right functionality embedded into excel. Needed engineering or statistical expertise to walkthrough entering data and building charts. There are no CUSUM charts in the outputs of the EnPI tool.
Coaching Call 5	Prioritize next steps, review additional Navigator tasks, determine handoff from coaches to Account Managers	Final calls for each participant were centered around feeling empowered to use the Navigator Tool as their guide. Account Managers in attendance shared their availability to support in the completion of tasks or energy modeling.

More details of each participant can be found in Appendix 3. As a general trend over the course of scheduled coaching calls, we found that there were fewer attendees on calls and participants looked to reschedule calls more often. Although many different factors could be attributed to this trend, it's worthwhile to note some of the considerations that may have caused this change. These observations were made during coaching calls and meetings with Account Managers:

- a realization of the bandwidth required for the program

- a lack of long-term accountability or viability for this program
- an unclear value proposition and organizational buy-in

There is an opportunity for Utilities to provide more consistent resources for this program to encourage continued accountability through coaching support for participants.

Workshops

Stillwater facilitated two workshops, one for each utility partner and their end-use customer participants. The first workshop was conducted at Snohomish PUD's office on Oct 29, 2019 in Everett, WA. The second workshop was conducted at NorthWestern Energy's office on Nov 1, 2019 in Butte, MT.

The following table specifies attendees of the workshops:

Organization	Workshop 1	Workshop 2	Individuals
SnoPUD – Host Utility	2		Tom Hovde, Doug O'Donnell
SnoPUD – Energy Team	1		Laura Zorick
SEA-LECT	1		Matt Poischberg
NorthWestern – Host Utility		3	Deb Young, Tucker Kramer, Dale Mahugh
Town Pump		4	Jim Britton, Trent Biggers, Jerry Rapp, Jerry Dryer
Montana Precision Products		2	Andrew Smart, Chandler Zins
Vista Outdoor BLACKHAWK		1	Chris Rivenbark
NEEA	2	2	Anne Joiner (Stillwater), Chad Gilless (Stillwater)
Total Attendees	6	12	

Stillwater encouraged participants to attend the workshops through coaching calls as well as via their Utility Account Managers.

These half day in-person workshops had three objectives:

1. Assisted each participating organization to have a plan to complete 50001 Ready implementations;
2. Aided in the development and comfortability of each organization's EnPI tool; and
3. Supported each participating organization and connected them with SEM peers.

These workshops were successful in that, by convening the participants in-person with their peers, they were able to facilitate conversations about activities, results, and challenges, in

ways far more candid than via phone-based coaching calls or electronic follow-up via email. By "meeting them where they are", these sessions enabled specific discussions about barriers and needs, so that Stillwater could provide real-time guidance to help participants move forward on 50001 Ready, even if they did not plan to fully implement 50001 Ready in the near-term. Participants also appreciated the in-person discussions regarding the EnPI Tool, to see its functionality as well as to understand its underlying concepts.

Workshop 1 – October 29, 2019 (Everett, Washington)

Stillwater facilitated Workshop 1 at SnoPUD's downtown Everett offices. Stillwater facilitated the workshop as a discussion, with minimal use of content-heavy slides. Instead, Stillwater led an icebreaker exercise, followed by group discussions on their challenges with 50001 Ready as well as their plans to move forward.

Workshop 2 – November 1, 2019 (Butte, Montana)

Stillwater facilitated Workshop 2 at the NorthWestern Energy's office in Butte, Montana. This workshop was identical in structure and content to Workshop 1.

Workshop Images

To make the Everett and Butte workshops more engaging, Stillwater utilized several alternatives to PowerPoint including an online poll and a whiteboard diagram. The online polling platform Mentimeter served to provide opportunities for participants to vote and interact in other ways with the meeting facilitation. Figure 1 shows the first impressions that respondents think of regarding ISO 50001.

FIGURE 1

In addition, Stillwater utilized whiteboards and flipcharts to engage participants in a real-time manner. One useful whiteboard-based diagram from both workshops was a 2 by 2 matrix attributed to former Intel CEO Andy Grove that shows the interplay between systems and common sense. This diagram is helpful to illustrate why organizations establish more robust systems, for example for information technology (IT), human resources (HR), quality, sustainability, and energy management. The key is to deploy these more robust systems without losing the common sense that made the organizations successful at their outset, to keep them from veering into bureaucracy. This diagram is illustrated in Figure 2.

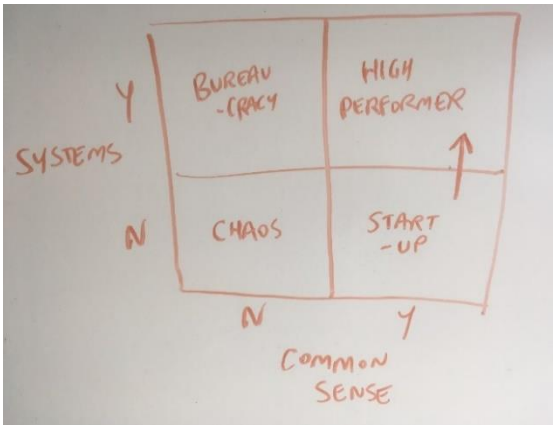


FIGURE 2

Modeling and EnPI Tool

The EnPI tool was created by the DOE to support plant and corporate managers in understating energy consumption and to calculate specific metrics required by DOE programs such as the Better Plants, SEP 50001, and 50001 Ready programs. Stillwater introduced the EnPI tool to participants during the workshops. This included a high-level review of energy modeling concepts, a tour to the EnPI tool resources, and a live demonstration of the EnPI tool's capabilities and outputs. Additionally, during Workshop 1, time allowed for each participant to begin using the tool to analyze their own data.

Following the workshops, Stillwater continued to support participant modeling efforts using the EnPI tool during the coaching calls including hands on guided regression runs, reviewing and troubleshooting participant created energy models, and a deeper dive into the tool data and outputs. Because the EnPI tool output does not include the CUSUM[4] chart typically used in

[4] The Cumulative Sum of Differences (CUSUM) chart is a tool useful in energy management, particularly when working with facility-wide energy models such as those deployed in many SEM programs. While the EnPI Tool utilizes facility-wide energy models, it does not currently include a CUSUM chart as a feature.

SEM engagements, working with participants to use the tool's analysis and output data to build their own CUSUM charts was especially helpful. The tool is easily accessible, simple to install, and requires no special software beyond Microsoft Excel. The "Step-by-step Wizard" integrated in the tool includes thorough instructions and makes data analysis easy to complete, especially in combination with the detailed user guide available. It is expected that participants will continue to use this tool to review and compare energy performance in the future.

The EnPI tool makes running regressions simple and can select the best regression option available but does not apply rigorous statistical thresholds or M&V analysis to the results. Additionally, as mentioned previously, the tool does not include a CUSUM analysis and is not well suited for month to month tracking of energy performance. Overall the EnPI tool was found to be very helpful as an introduction to data analysis and energy modeling, however, it has some limitations that would require additional training and support in order to be used as the main modeling resources for an SEM or 50001 Ready engagement.

The following figures (Figure 3, 4, 5 and 6) are samples of the energy modeling concepts reviewed during the workshops.

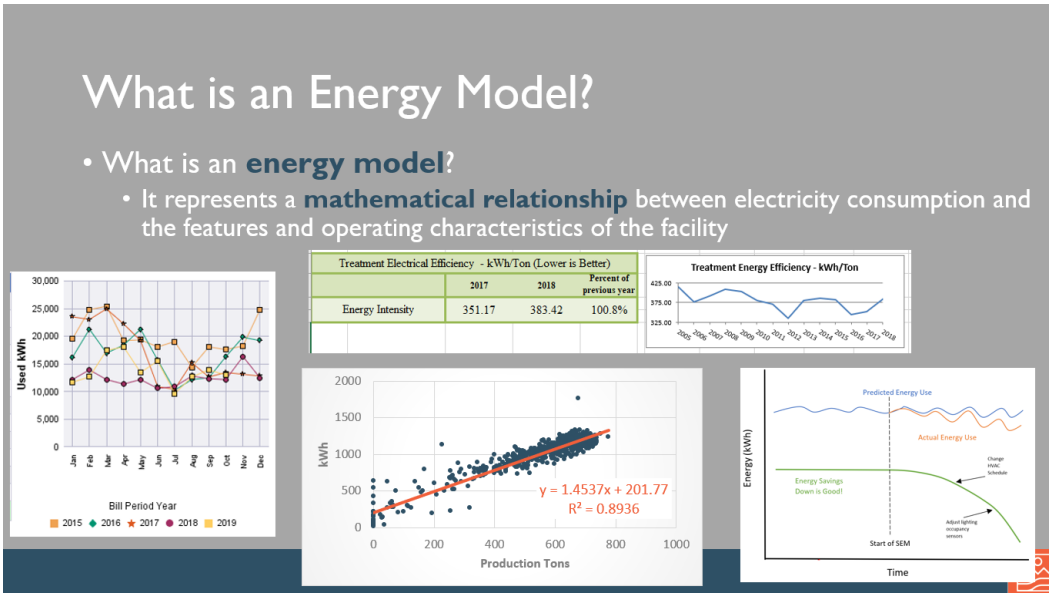


FIGURE 3

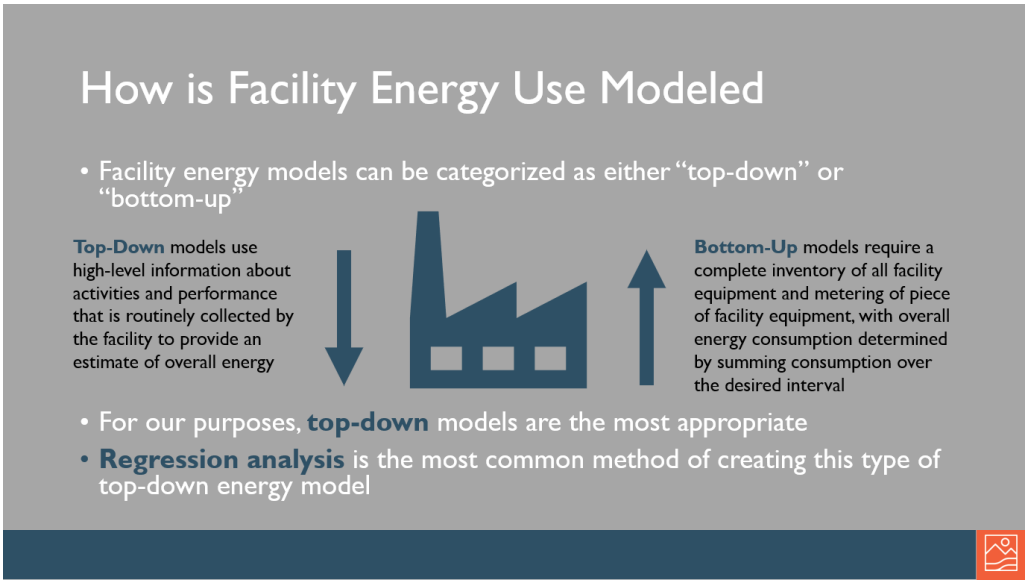


FIGURE 4

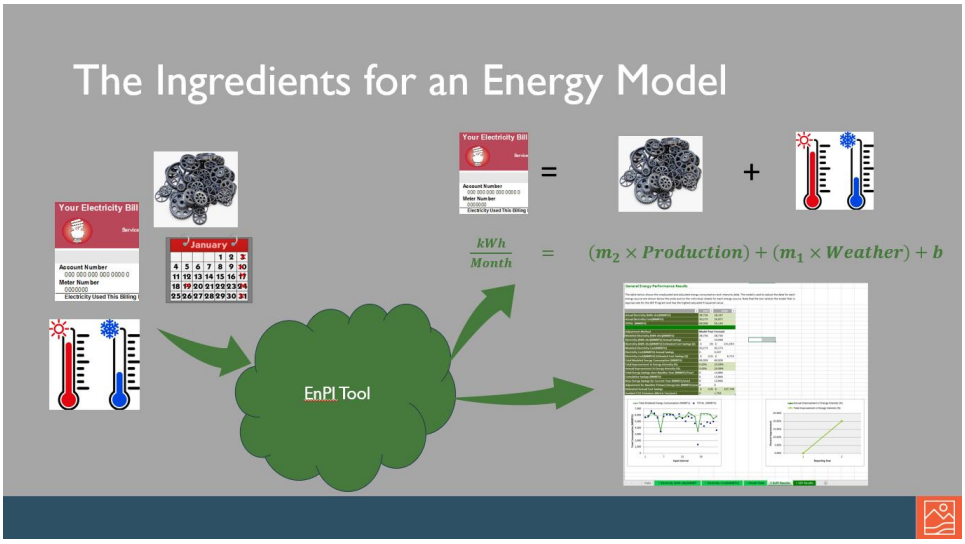


FIGURE 5

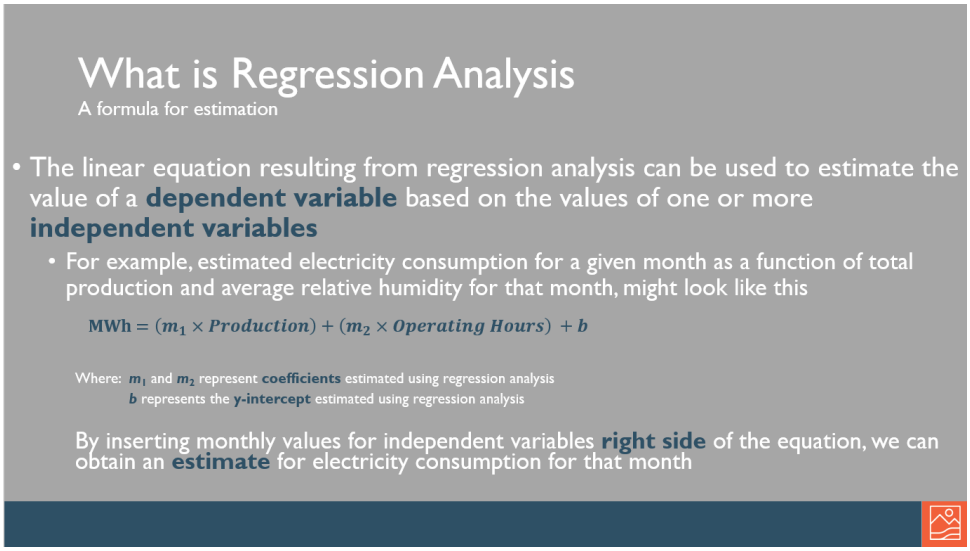

What is Regression Analysis
A formula for estimation
• The linear equation resulting from regression analysis can be used to estimate the value of a dependent variable based on the values of one or more independent variables
• For example, estimated electricity consumption for a given month as a function of total production and average relative humidity for that month, might look like this
$\mathrm{MWh} = (m_1 \times Production) + (m_2 \times Operating\ Hours) + b$
Where: m_1 and m_2 represent coefficients estimated using regression analysis
b represents the y-intercept estimated using regression analysis
By inserting monthly values for independent variables right side of the equation, we can obtain an estimate for electricity consumption for that month

FIGURE 6

Survey Results

Survey

In August 2019, Stillwater administered a web-based survey to the five organizations that participated in the pilot:

- BLACKHAWK-Vista Outdoors
- Montana Precision Products
- SEA-LECT
- Snohomish County PUD
- Town Pump

The survey's intent was to gain a foundational understanding of their current state practices as it relates with ISO 50001 and DOE's 50001 Ready program, to help provide more targeted coaching for the participants on the 50001 Ready Navigator tasks. This survey received 5 responses, representing all 5 participating participant organizations.

The surveys were each administered verbally via phone conference, to enable explanations of the 25 topics. Participants self-rated on the 25 topics that align to the 50001 Ready Navigator's 25 tasks. This was done to optimally connect the participant's current state to the specific tasks. The survey used a 1 to 4 scale, with 1 designating that no action had been taken on a given topic, and 4 meaning that the organization was fully conformant to 50001 Ready Navigator task, and therefore likely ISO 50001 conformant.

In most other SEM programs, this survey would be analogous to an Energy Management Assessment (EMA). It is important to point out that the content on NEEA's SEM Hub EMA is aligned to the principles and requirements of ISO 50001, and for most programs that EMA would be the preferable organizational measurement tool.

High-Level Results

The average results for all 5 participants are shown by the 25 topics in Figure 7.

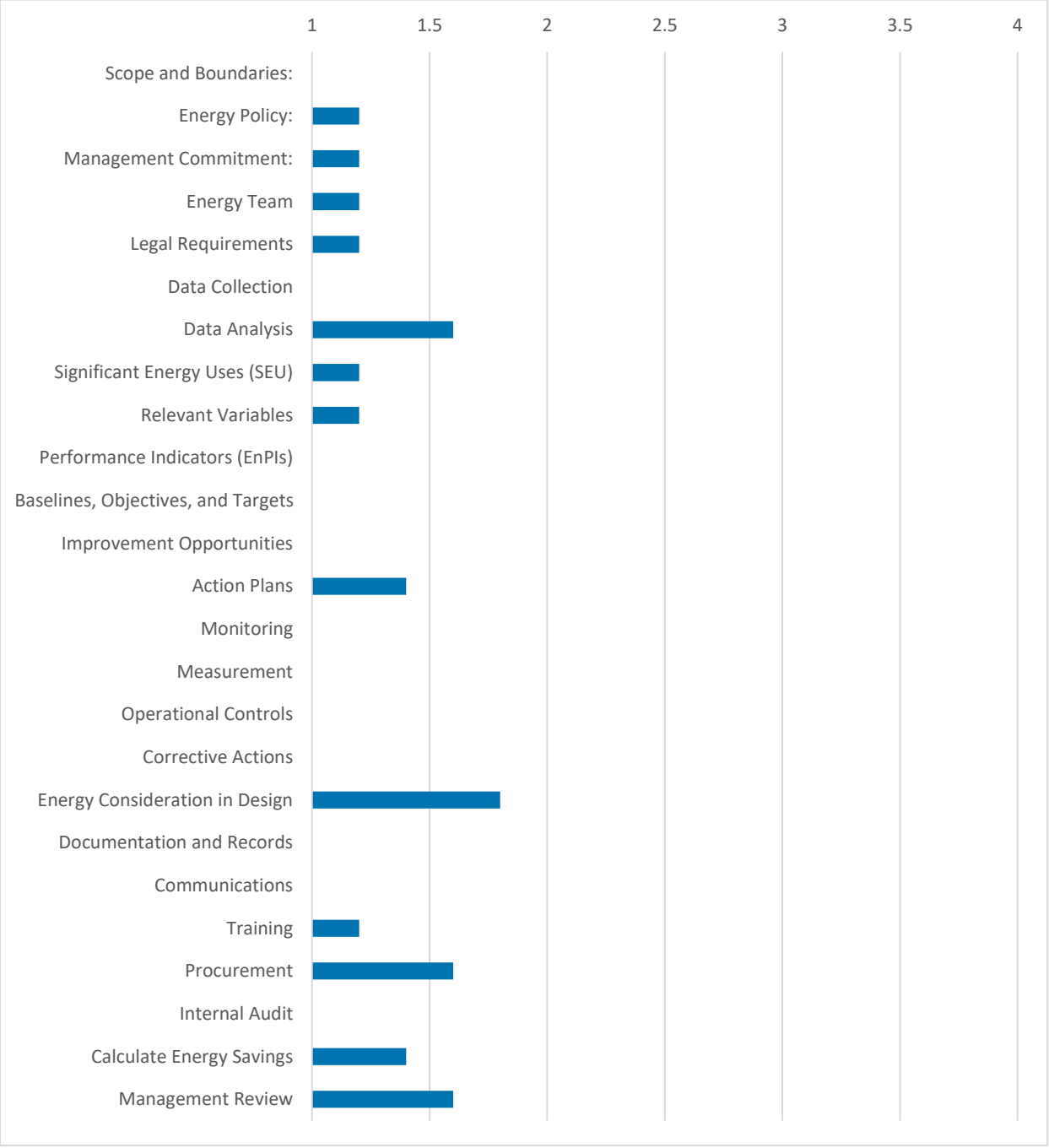


FIGURE 7

Tasks with larger blue bars indicate more advanced or sophisticated practices in place at the time of the survey. For example, in the diagram it is straightforward to see that "Energy

Consideration in Design" is the farthest along for the participants, that there are numerous tasks which average at zero (i.e. no progress), and that compared to the total potential score, all tasks show a significant gap to be filled for all participants to be at the highest level, aligned to the requirements of ISO 50001.

The five participants generally rated themselves not significantly advanced for the topics. On the 1 to 4 scale, the participants average scores for all 25 topics ranged from 1.04 to 1.36. Other relevant observations include:

- The participant averages by utility were virtually identical, with Northwestern Energy participants averaging 1.18 out of 4 and SnoPUD participants averaging 1.20 out of 4.
- By topic, the highest rated topics were Energy Consideration in Design (1.80), Data Analysis, Procurement, and Management Review

The survey's questions and responses are included in Appendix 2: Detailed Survey Results.

Conclusions

As a pilot, gathering feedback on 50001 Ready has been critical to support future implementations. Stillwater gathered conclusions in the form of successes and barriers from conversations during coaching calls directly with participants, check in calls with NWE and SnoPUD, and from workshops. The following summarizes conclusions in the form of successes of and barriers to using 50001 Ready as an efficiency program.

Successes from the pilot include:

- **Utility Account Managers utilized the 50001 Ready program offering as part of their customer service strategy.** The 50001 Ready program offering gives utilities an opportunity to develop deeper relationships with their customers and better understand the needs of their customers. Many tasks in 50001 Ready have to do with utility and energy consumption data in addition to significant energy users and equipment upgrades. This information can provide great insight to utilities.
- **The self-paced nature of the tool allowed for participant flexibility.** Many participants using 50001 Ready Navigator had one team member responsible for implementation of 50001 Ready. With a single team member, the ability to be self-paced within the tool provided much needed flexibility. Additionally, several participant organizations referenced new employees coming onboard. Navigator gave participants the ability to assign tasks to future team members.
- **50001 Ready could be used for documentation and succession practices**. The Navigator platform houses information that can be easily accessible for multiple members of an organization. This tool could be incorporated into onboarding documents as a way to bring new employees up to speed on energy management practices, supporting resiliency through succession planning. As mentioned above, many participants shared employee turnover and the need to bring new employees up to speed quickly.

Barriers identified during the pilot include:

- **50001 Ready is a project management platform, not a program.** In this pilot, Stillwater worked closely with Account Managers from partnering utilities to support participant uptake of 50001 Ready Navigator. Energy coaches and Account Managers were able to hold participants accountable, answer questions about Navigator tasks and

develop a community of SEM participants to learn from during SEM workshops. Although 50001 Ready is self-paced and provides many resources, it's more of a project management platform or tool rather than a program. Most participants could benefit from programmatic support and structure.

- **Challenge gaining participant engagement without existing energy experience.** ISO 50001 conformance is not easy; most SEM programs do not strive for that level of sophistication especially within their first year in a program. 50001 Ready appears to generally be a tool for more mature or sophisticated participants. 50001 Ready does not provide the necessary guidance to implement a holistic energy management program for first year SEM participants. The value of 50001 Ready is more accessible to mature SEM participants who have a baseline understanding of energy management.
- **The DOE EnPI Tool is a powerful tool when used correctly.** Engineering and/or statistical support may be required to ensure that models developed from the EnPI tool are reliable and appropriate. Stillwater provided targeted coaching to help participants develop models using the EnPI lite tool. Although participants saw the value in the tool much support was needed to ensure an accurate model. Even with engineering expertise, some energy data did not yield an adequate energy model.
- **Lack of integration between DOE's Navigator Tool and EPA's ENERGY STAR Portfolio Manager.** Utility feedback shared the need for integration of Navigator Tool and EPA's ENERGY STAR Portfolio Manager. This integration would save both utility and participant time on data entry.

Supporting SEM with 50001 Ready

In using use 50001 Ready to support SEM, the pilot projects found that:

- **There is no perfect timing to begin 50001 Ready.** In order to find the most optimal time for customers to deploy 50001 Ready, it is important to align with customer priorities. For example, do they have a sustainability team, goals, or a continuous improvement mandate. Aligning with customer goals and current priorities will help the program get off the ground and maintain a focal point. In the current pilot, participants with an existing sustainability team have been more successful in adoption and implementation of 50001 Ready.
- **This could be a solution for smaller customers, i.e. Small to Medium Enterprises (SMEs).** This platform could be part of a program solution for SMEs, with engagement maintained over time through a webinar series, Account Manager coaching or self-guided modules. In this pilot, all participants were larger industrial and commercial sites. This was the group targeted by Utilities in order to see significant savings. With limited resources and less energy consumption SMEs could benefit from a lighter touch, self-paced program.
- **The 50001 Ready Navigator tool is useful to track and document participant progress when using the Ready Partner function.** Utilities can use this information to track which projects or tasks have been completed, which are taking longer, and where more assistance could be provided, supporting them to better serve their customers.
- **SEM Experience.** This platform is better suited to serve customers with some semblance of an energy management program. This will give participants a place to start from when they begin to use the Navigator tool. With some SEM experience most of the work of gaining organization buy-in should have already been completed.

Insights from the NW SEM Collaborative

At the Northwest SEM Collaborative 2019 Fall Workshop, Stillwater facilitated an action session on 50001 Ready. Stillwater discussed three prompts, all from the perspective of a program implementor having a successful 50001 Ready offering:

- ***Question: How can 50001 Ready gain uptake?***
  Takeaway: For 50001 Ready to gain uptake, there needs to be a proven and people-centric value proposition that illustrates ease of implementation, relates to dollars saved and solves a demonstrated problem.

- ***Question: What is success for a first year 50001 Ready participant?***
  Takeaway: For 50001 Ready to be successful for a first year SEM participant, there needs to be executive management buy-in and a level of understanding and awareness regarding the value of management systems.

- ***Question: What is success for a continuation or experienced SEM participant?***
  Takeaway: For 50001 Ready to be successful for an advanced SEM participant, they may need to pursue ISO 50001 certification and/or 50001 Ready designation or have alignment from other external factors that illustrate the market value of 50001 Ready.

Following is an image from the 50001 Ready action session.

Appendices

This report includes four appendices:

Appendix 1: Prior Project Outcomes

Appendix 2: Participant Memos

Appendix 3: Collateral and Materials

Appendix 4: Detailed Survey Results

Appendix 1: Prior Project Outcomes

Prior to this project, Stillwater administered a 50001 Ready-related effort on behalf of NEEA. Part of that project included an analysis of the 110 different tools and resources available on the 50001 Navigator platform. This analysis effort consisted of a review of the tools compared to the focus areas prioritized in Workshop 1, including:

- Persistence
- M&V
- Employee Engagement
- Executive Involvement
- NEBs
- Multi-year SEM

The analysis effort reviewed the tools compared to their appropriateness for 3 program types, including:

1. Non-SEM customers (e.g. those in a custom program, or too small for typical SEM)
2. First-year SEM customers
3. Ongoing SEM customers

The analysis of appropriateness to program types as well as appropriateness to address focus areas was summed up for each, and then summed up for both to give a combined score. The top scoring tools were:

- Elevator Speech Worksheet
- Operational Controls Checklist
- Data Collection Responsibilities Table
- Personnel Associated with Significant Energy Uses
- Business Drivers and the Energy Management System (EnMS)
- ENERGY STAR Guidelines for Energy Management
- Energy Manual Guidelines

All of these tools are linked from the SEM Hub website.

Appendix 2: Participant Memos

This Appendix includes Participant Memos that summarize each of the five participants in the pilot program. Stillwater reviewed the participants and included the following components in the Participant Memo:

- Participant Summary – a quick introduction to the participant's business and industry
- Energy Team Overview – list of energy team members and their roles
- Utility Sponsor – which utility service area they reside in
- 50001 Ready Progress– highlights from the engagement and the chart showing progress through the 50001 Navigator tasks and tools
- Lessons Learned – what was learned from working with the participant and how that can be applied to future recruiting

NEEA 50001 Ready Project

Participant Memo – Snohomish Public Utility District

SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1

PARTICIPANT SUMMARY:

Snohomish Public Utility District[1] is the second largest publicly owned utility in Washington state, serving over 350,000 electric customers. Snohomish Public Utility District is committed to reducing energy use in their facility and participated in this NEEA pilot as a utility sponsor and as a participant.

ENERGY TEAM:

- **Energy Champion:** Laura Zorick
- **Executive Sponsors:** Tom Hovde
- **Other Members:** Doug O'Donnell, Chuck Peterson

UTILITY SPONSOR:

Snohomish Public Utility District (SnoPUD)

50001 READY PROGRESS: *Participant highlights.*

1. Is working diligently to make progress through the steps of the 50001 Ready Navigator, having reviewed all 25 tasks and completed 11 of the tasks.
2. Has focused on understanding the nuances of the navigator and tools in order to be a continuing resource for their customers.
3. Attended the October workshop and participated in five coaching calls.
4. Has made good headway related to energy data analysis including completing the site footprint tool and using the Energy Performance Indicator (EnPI) tool to model facility energy use and track the trends overtime.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

Project / Organization	Task Progress	Cohort (internal title)	Last Action
Snohomish PUD #1 - Electric Building / Snohomish Public Utility District No. 1	44%	SnoPUD 50001 Ready Cohort 1	12/13/2019

LESSONS LEARNED:

Snohomish Public Utility District is in a unique position being both a utility sponsor for the NEEA 50001 Ready pilot as well as a participating organization. Not only are the organizations naturally energy focused, having the utility sponsor participate is a great way to connect with customers and to lead by example, which supports and encourages the engagement of the other participants. This has been a successful test case for including utility sponsors as ideal participants.

PARTICIPANT SUMMARY:

Snohomish Public Utility District[5] is the second largest publicly owned utility in Washington state, serving over 350,000 electric customers. Snohomish Public Utility District is committed to reducing energy use in their facility and participated in this NEEA pilot as a utility sponsor and as a participant.

ENERGY TEAM:

- **Energy Champion:** Laura Zorick
- **Executive Sponsors:** Tom Hovde
- **Other Members:** Doug O'Donnell, Chuck Peterson

UTILITY SPONSOR:

Snohomish Public Utility District (SnoPUD)

50001 READY PROGRESS: *Participant highlights.*

1. Is working diligently to make progress through the steps of the 50001 Ready Navigator, having reviewed all 25 tasks and completed 11 of the tasks.
2. Has focused on understanding the nuances of the navigator and tools in order to be a continuing resource for their customers.
3. Attended the October workshop and participated in five coaching calls.
4. Has made good headway related to energy data analysis including completing the site footprint tool and using the Energy Performance Indicator (EnPI) tool to model facility energy use and track the trends overtime.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

Project Organization	Task Progress	Cohort (internal title)	Last Action	
Snohomish PUD #1 - Electric Building Snohomish Public Utility District No. 1	44% 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	SnoPUD 50001 Ready Cohort 1	12/13/2019	Notes 0

LESSONS LEARNED:

Snohomish Public Utility District is in a unique position being both a utility sponsor for the NEEA 50001 Ready pilot as well as a participating organization. Not only are the organizations naturally energy focused, having the utility sponsor participate is a great way to connect with customers and to lead by example, which supports and encourages the engagement of the other participants. This has been a successful test case for including utility sponsors as ideal participants.

[5] https://www.snopud.com/AboutUs.ashx?p=1106

PARTICIPANT SUMMARY:

Snohomish SEA-LECT Plastics Corporation,[6] located in Everett Washington, is an injection molding plastics manufacturer focusing on custom designed and manufactured products. SEA-LECT provides design, product development, and expert tooling through skilled employees, improved processes, innovation and strong customer relationships. SEA-LECT Plastics is committed to reducing energy use in their facility and participated in this NEEA pilot as a utility sponsor and as a participant.

ENERGY TEAM:

- **Energy Champion/Executive Sponsor:** Matt Poischberg
- **Back Up Energy Champion:** Amber Glenn

UTILITY SPONSOR:

Snohomish Public Utility District (SnoPUD)

50001 READY PROGRESS: *Participant highlights.*

1. Has shown steady progress through the 50001 Ready Navigator tool and associated tasks despite time constraints. Based on the final coaching call, SEA-LECT has completed the first seven tasks and is currently working on task eight, Significant Energy Uses.
2. Attended the October workshop and participated in five coaching calls and is poised to continue engaging with utility sponsor moving forward.
3. Successfully aggregated data and utilized the Energy Performance Indicator (EnPI) tool to model facility energy use and track the trends overtime.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

(Chart not available for SEA-LECT)

LESSONS LEARNED:

SEA-LECT meets the criteria for an ideal participant including having a key Account Manager and being already familiar with other ISO standards and knowledgeable about energy efficiency having participated in previous energy management activities with SnoPUD. SEA-LECT is a good example of the benefits received from having top management bought in and highly engaged in an 50001 Ready or SEM process and reinforces the necessity of executive sponsor engagement to program success.

[6] https://sealectplastics.com/

PARTICIPANT SUMMARY:

Town Pump[7], based in Butte Montana, is chain of truck stops, gas stations, casinos, hotels, and convenience stores with more than 200 locations. Town Pump has been a mainstay for the community since it was founded in 1953 and is committed to reducing energy use in their facility and participated in this NEEA pilot in partnership with NorthWestern Energy.

ENERGY TEAM:

- **Energy Champion:** Jim Britton
- **Back Up Energy Champion:** Trent Biggers
- **Executive Sponsor: Jerry Rapp**
- **Other Members:** Brad Nelsen, Jerry Dryer, Ron Knight

UTILITY SPONSOR:

NorthWestern Energy

50001 READY PROGRESS: *Participant highlights.*

1. Had four team members attend the November workshop who were highly engaged and shared meaningful examples and context with the group. Town Pump also participated in three coaching calls.
2. Had a high level of executive and management representation on energy team that supported strong organization buy-in and engagement.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

Project Organization	Task Progress	Cohort (internal title)	Last Action	
Town Pump test project Town Pump Inc.	0% 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	NorthWestern Energy 50001 Ready	10/14/2019	Notes 0

LESSONS LEARNED:

Town Pump is not the typical SEM or 50001 Ready participants. Historically many small and/or distributed sites have not been the focus for SEM or 50001 Ready recruiting, but Town Pump's participation in this pilot shows that the interested from this category of customers is there and that the energy management principles can add value across a portfolio of small to medium sized sites. The potential for engaging portfolio type customers has exciting prospects for extending the reach of SEM and 50001 Ready and provides the potential to look at energy management both at the individual site level and from a portfolio perspective.

[7] https://www.townpump.com/

PARTICIPANT SUMMARY:

Montana Precision Products[8], based in Butte Montana, is an aerospace manufacturing company focused on making tube and duct assemblies and small structural casings. Montana Precision Products is an AS9100 certified manufacturing facility strives to provide world class castings and assemblies to their customers through teamwork, technical innovation and continual improvement. Additionally, Montana Precision Products is committed to reducing energy use in their facility and participated in this NEEA pilot in partnership with NorthWestern Energy.

ENERGY TEAM:

- **Energy Champion:** Andrew Smart
- **Back Up Energy Champion:** Chandler Zins
- **Executive Sponsor:** Justin Parnell

UTILITY SPONSOR:

NorthWestern Energy

50001 READY PROGRESS: *Participant highlights.*

1. Willing to learn concepts of ISO 50001 and open to changing mindset related to energy management practices.
2. Attended the November workshop and participated in two coaching calls.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

LESSONS LEARNED:

Montana Precision Products is familiar with the tenets of ISO standards, and understands the long-term value related to energy management practices. Participation in this offering fell more into the realm of fact finding and testing the waters for Montana Precision Products. They would have benefited and potentially found more value from additional coaching, support, more hands-on working sessions, and increased accountability especially as the energy champion was time constrained and generally working alone.

[8] https://www.mtpp.com/

NEEA 50001 Ready Project

Participant Memo – Vista Outdoor BLACKHAWK

PARTICIPANT SUMMARY:

Vista Outdoor BLACKHAWK[9] is a manufacturer of tactical, military, shooting sports, and law enforcement equipment. The facility located in Manhattan Montana is primarily an injection molding facility that manufacturers molded plastic products for the BLACKHAWK product line. Additionally, BLACKHAWK is committed to reducing energy use in their facility and participated in this NEEA pilot in partnership with NorthWestern Energy.

ENERGY TEAM:

- **Energy Champion:** Chris Rivenbark
- **Executive Sponsor:** Lamont Kotter

UTILITY SPONSOR:

NorthWestern Energy

50001 READY PROGRESS: *Participant highlights.*

1. Attended the November workshop and also participated in two coaching calls.
2. Familiar with tenants of ISO standards, and grasped the long-term potential value of ISO 50001.

The chart below illustrates the progress made within the 50001 Ready Navigator Tool.

LESSONS LEARNED:

Limited resources including time and people constraints were a significant barrier for BLACKHAWK. While the desire to make progress was evident and tasks were able to be addressed during coaching calls, it was clear that other competing priorities at the facility took precedence over 50001 Ready activities, especially as the energy champion was working independently through this process. More frequent coaching calls with a greater emphasis on targeted task completion and more case studies and examples would more fully support participants working individually through this process.

[9] http://media.vistaoutdoor.com/brands/blackhawk/default.aspx

Appendix 3: Collateral and Materials

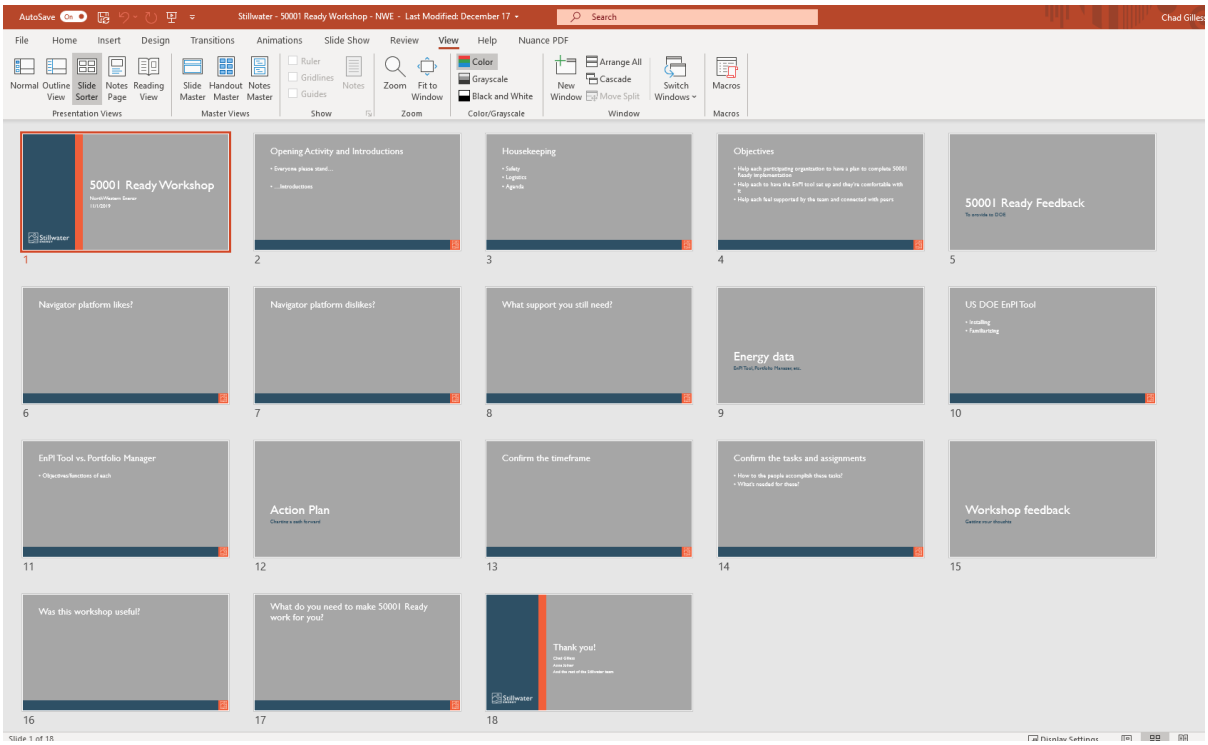
For this project, Stillwater developed and utilized numerous forms of marketing collateral and workshop materials. The principal objectives of these pieces were to:

1. Explain the 50001 Ready Pilot to potential utility partners and to potential participants
2. Explain ISO 50001 and management systems thinking
3. Facilitate dialogue on successes and challenges of 50001 Ready task implementation

Specific files have been provided to NEEA, including the following materials:

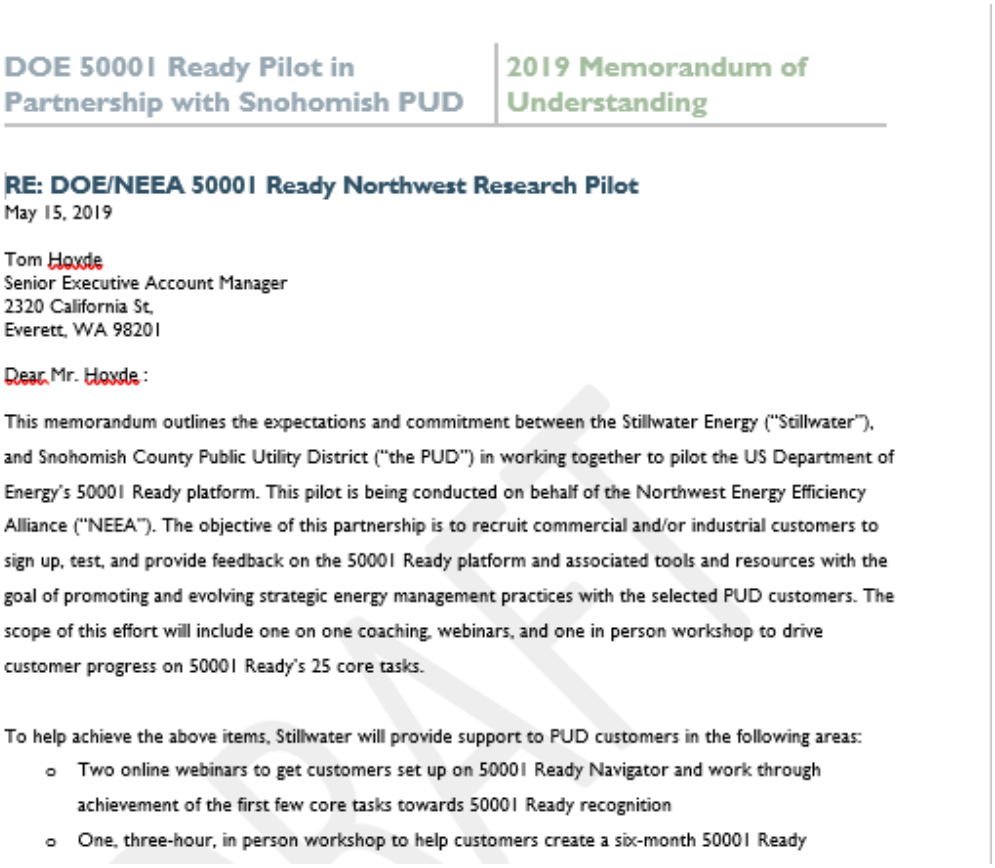
Workshop Decks

Stillwater created and utilized PowerPoint slide decks for the 50001 Ready workshops facilitated in Everett, WA and Butte, MT. As these workshops were designed to be more of a facilitated discussion rather than presentations of information, the slide decks were relatively minimalistic. The following image shows the slide sorter view of the deck from the Butte workshop.



Memos of Understanding

Stillwater created Word documents for the Pilot Memos of Understanding to set expectations for roles between the utilities and the administrator (Stillwater).



DOE 50001 Ready Pilot in Partnership with Snohomish PUD | 2019 Memorandum of Understanding

RE: DOE/NEEA 50001 Ready Northwest Research Pilot
May 15, 2019

Tom Hoxde
Senior Executive Account Manager
2320 California St,
Everett, WA 98201

Dear Mr. Hoxde :

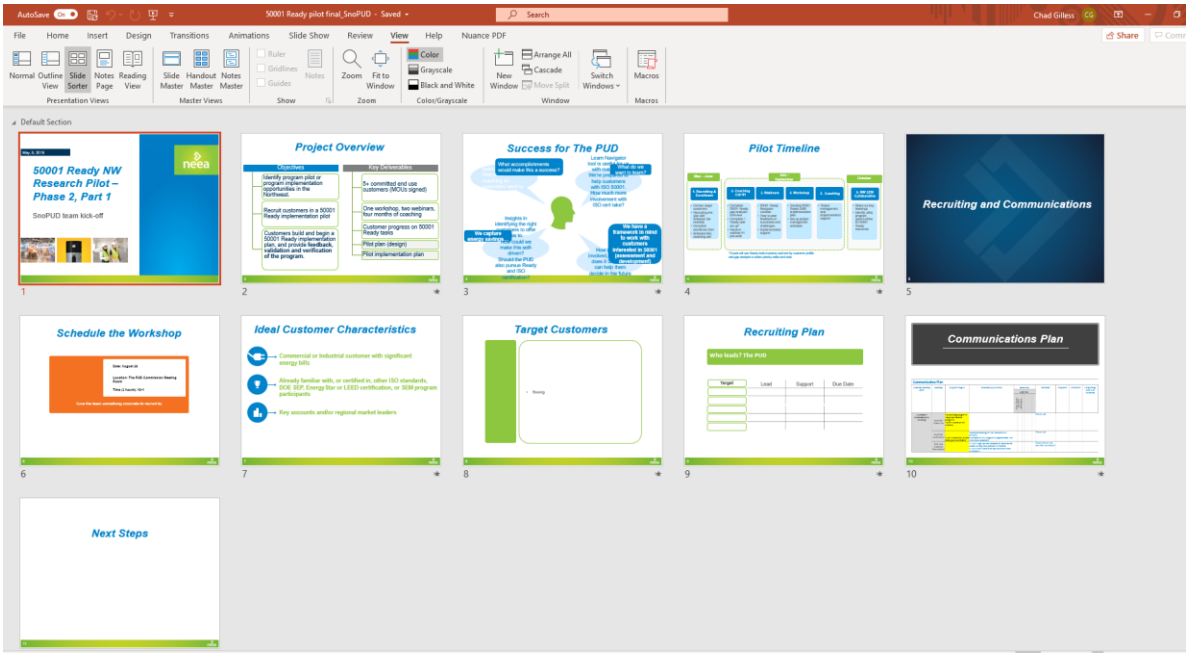
This memorandum outlines the expectations and commitment between the Stillwater Energy ("Stillwater"), and Snohomish County Public Utility District ("the PUD") in working together to pilot the US Department of Energy's 50001 Ready platform. This pilot is being conducted on behalf of the Northwest Energy Efficiency Alliance ("NEEA"). The objective of this partnership is to recruit commercial and/or industrial customers to sign up, test, and provide feedback on the 50001 Ready platform and associated tools and resources with the goal of promoting and evolving strategic energy management practices with the selected PUD customers. The scope of this effort will include one on one coaching, webinars, and one in person workshop to drive customer progress on 50001 Ready's 25 core tasks.

To help achieve the above items, Stillwater will provide support to PUD customers in the following areas:

- Two online webinars to get customers set up on 50001 Ready Navigator and work through achievement of the first few core tasks towards 50001 Ready recognition
- One, three-hour, in person workshop to help customers create a six-month 50001 Ready

Webinar Slides

Stillwater conducted webinars for utility partners and participants. The following slides illustrate content discussed in a utility webinar for SnoPUD.



Appendix 4: Detailed Survey Results

This Appendix includes more detailed results for the survey described and summarized in this report's section "Survey Results".

Question 1. Name

This was an open-ended question to gather the respondent's name.

Question 2. Organization/Company

This was an open-ended question to gather the respondent's organization name.

Question 3. Scope and Boundaries

Response	# of responses	% of responses
We do not currently have this	5	100%
We have defined the scope and boundaries of an Energy Management System (EnMS)	0	0%
We have formally written the scope and boundaries	0	0%
Management has approved the written scope and boundaries	0	0%
Management has communicated the EnMS scope and boundaries across the organization	0	0%

Question 4. Energy Policy

Response	# of responses	% of responses
We do not currently have this	4	80%
We have a written energy policy	1	20%
Management has approved the energy policy	0	0%
Management has communicated the policy across the organization	0	0%
The energy policy is incorporated into an EnMS awareness program	0	0%

Question 5. Management Commitment

Response	# of responses	% of responses
We do not currently have this	4	80%
We have briefed top management on the business drivers and benefits of an EnMS	1	20%
We have clear energy management roles and responsibilities	0	0%
Top management has committed to implementing an EnMS	0	0%

Question 6. Energy Team

Response	# of responses	% of responses
We do not currently have this	4	80%
Top management has appointed a management representative to the Energy Team (i.e. Energy Manager, Energy Champion)	1	20%
Top management has communicated the appointment of this management representative to the Energy Team	0	0%
The assigned management representative has identified energy team members, assigned roles and scheduled regular meetings	0	0%

Question 7. Legal Requirements

Response	# of responses	% of responses
We do not currently have this	4	80%
We have identified legal and compliance requirements related to energy	1	20%
A periodic review of legal and compliance requirements has been scheduled	0	0%
Someone is responsible for periodically reviewing legal compliance	0	0%

Question 8. Data Collection

Response	# of responses	% of responses
We do not currently have this	5	100%
Someone is responsible for energy data management and tracking	0	0%
Energy data is regularly tracked and collected	0	0%
Energy data is stored in a data management tool (i.e. Excel spreadsheet, energy management software)	0	0%

Question 9. Data Analysis

Response	# of responses	% of responses
We do not currently have this	2	40%
We regularly analyze past and present energy use of our whole facility	3	60%

Question 10. Significant Energy Uses (SEUs)

Response	# of responses	% of responses
We do not currently have this	4	80%
We have a written list of the largest energy using systems and equipment	1	20%
We have a consistent methodology for selecting and evaluating SEUs	0	0%
We consistently review and update this list	0	0%

Question 11. Relevant Variables

Response	# of responses	% of responses
We do not currently have this	4	80%
We have a list of variables that affect our facility energy use (i.e. weather, occupancy)	1	20%
We have a list of the variables that affect our Significant Energy Uses (i.e. production intensity)	0	0%

Question 12. Energy Performance Indicators (EnPIs)

Response	# of responses	% of responses
We do not currently have this	5	100%
We have clear and shared indicators of our energy performance	0	0%
We compare EnPIs to their baseline values on a regular basis	0	0%
These EnPIs are communicated to top management	0	0%

Question 13. Baselines, Objectives and Targets

Response	# of responses	% of responses
We do not currently have this	5	100%
We have an energy baseline calculated for our EnPIs	0	0%
We have energy performance targets	0	0%
Top management has approved and communicated these targets	0	0%
We have clear conditions set under which we will adjust the baseline	0	0%

Question 14. Improvement Opportunities

Response	# of responses	% of responses
We do not currently have this	5	100%
We have a list of energy performance improvement opportunities	0	0%
We have criteria by which we prioritize opportunities to implement (i.e. cost, savings, effort)	0	0%
We regularly scan or search for energy improvement opportunities	0	0%

Question 15. Action Plans

Response	# of responses	% of responses
We do not currently have this	3	60%
We create and follow action plans for pursuing energy saving opportunities	2	40%
We implement opportunities in pursuit of our organization's savings targets	0	0%

Question 16. Monitoring

Response	# of responses	% of responses
We do not currently have this	5	100%
We have a clear process and timeline to monitor, measure and analyze energy performance	0	0%
This plan includes regular review of our key EnMS component (i.e. SEUs, opportunities, action plans, EnPIs, targets)	0	0%

Question 17. Measurement

Response	# of responses	% of responses
We do not currently have this	5	100%
We have a plan and timeline to review our energy measurement system for any new or changing measurement needs	0	0%
Checking and calibrating energy measuring/monitoring equipment is included in this plan	0	0%

Question 18. Operational Controls

Response	# of responses	% of responses
We do not currently have this	5	100%
We have clear criteria and controls governing our SEUs	0	0%
These controls are communicated to responsible personnel	0	0%
We review how well these criteria and controls are being met	0	0%

Question 19. Corrective Actions

Response	# of responses	% of responses
We do not currently have this	5	100%
Our EnPIs have criteria or parameters to define a significant deviation in performance	0	0%
We have a process for investigating and responding to deviations	0	0%
We record the results of these investigations	0	0%
Appropriate personnel are trained on how to recognize and respond to performance deviations	0	0%

Question 20. Energy Consideration in Design

Response	# of responses	% of responses
We do not currently have this	1	20%
We consider energy performance in facility design (i.e. design and construction, equipment procurement)	4	80%

Question 21. Documentation and Records

Response	# of responses	% of responses
We do not currently have this	5	100%
Our EnMS documents and records are stored and organized in a centralized place (i.e. files, database, digital file storage, or other document control system)	0	0%
We have defined how long we retain specific records	0	0%

Question 22. Communications

Response	# of responses	% of responses
We do not currently have this	5	100%
We have a communications plan and schedule for energy management	0	0%
We conduct periodic communications campaigns about energy management	0	0%
Top management has communicated the importance of energy management across the organization	0	0%

Question 23. Training

Response	# of responses	% of responses
We do not currently have this	5	100%
We are aware of our energy related training needs	0	0%
We have conducted a training needs assessment	0	0%
We offer EnMS training to our personnel	0	0%

Question 24. Procurement

Response	# of responses	% of responses
We do not currently have this	2	40%
Energy performance is considered in purchasing decisions	3	60%
We have documented energy performance criteria to be included in purchasing decisions	0	0%
Our purchasing policy includes energy performance for relevant purchases	0	0%

Question 25. Internal Audit

Response	# of responses	% of responses
We do not currently have this	5	100%
We have someone responsible for periodically reviewing our EnMS	0	0%
We have a documented procedure to audit our EnMS	0	0%
We conduct regular EnMS audits	0	0%
Audit results are communicated to top management	0	0%

Question 26. Calculate Energy Savings

Response	# of responses	% of responses
We do not currently have this	3	60%
We use simple energy bill analysis to calculate energy performance at the whole facility level	2	40%
We use a tool or energy calculator to calculate energy performance at the whole facility level	0	0%

Question 27. Management Review

Response	# of responses	% of responses
We do not currently have this	3	60%
Management occasionally reviews energy performance	1	20%
Management regularly reviews energy performance	1	20%
Management follows up on decisions/actions from a regular review of energy performance	0	0%

Question 28. Do you currently use the EPA "ENERGY STAR Portfolio Manager"?

Response	# of responses	% of responses
Yes	0	0%
No	5	100%