

# Customer Training Needs Assessment



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# Executive Summary

## Overview of Customer Training Needs Assessment

Since its formation nearly 20 years ago, MISO has established its core business of enabling the reliable delivery of low-cost energy through efficient, innovative operations and planning. As a developing organization, the training provided to customers was not a primary business focus. The last time there was a wide scale update to customer training materials was in 2013-2015 during the southern region integration.

As a result, the majority of current training materials available to MISO's customers has not been recently reviewed for content accuracy, does not align with adult learning best practices, and does not incorporate advances in educational, digital or mobile technology. More importantly, MISO did not have a clear view of whether the current training met the needs or wants of its customers.

Given the current state of customer training, how can MISO leverage training opportunities to affect real measurable change in customer interactions and improve our customers' experience through education?

The approach used to answer this question was to conduct a Customer Training Needs Assessment. Informed by research, data, and customer feedback, the findings from the assessment led to the development of prioritized recommendations on near-term, mid-term and long-term enhancements to transform MISO customer training. These recommendations will be reviewed by MISO management and customers to determine feasibility, funding and resource availability.

## Recommendations

### Near-Term

- Communicate/promote findings from Customer Training Needs Assessment to internal and external customers
- Update all current training materials posted on the Customer Training page of the MISO website (Updates to template and content)
- Remove out-of-date, duplicative or non-relevant materials from the Customer Training page
- Redesign the Customer Training page on the MISO website to allow customers to locate appropriate training; organize materials by business area/job function, then by level
- Post Customer Training Materials database to The Grid to assist MISO employees in recommending appropriate training to customers
- Evaluate the establishment of a Training Advisory Group to steer future training development
- Prioritize and establish schedule for training materials redesign:
  - Top three training topic requests (based on customer survey responses):
    - Settlements
    - MISO Markets
    - System Planning

### Mid-Term

- Create a "Subject Matter Expert Instructor" certification training program to prepare internal Subject Matter Experts to provide instruction to external customers on their area of expertise
- Identify resources needed to complete training materials redesign, adjust schedule/plan based on available resources
- Ongoing prioritization/scheduling of existing or emerging training needs

## Long-Term

- Training Materials Redesign
  - Develop online modules and/or materials using adult learning instructional design best practices to develop basic, introductory level content where appropriate
  - Develop and implement MISOpedia (Name TBD): Develop online resource of informative, microlearning opportunities on key concepts (videos, job aids, reference material summaries, MISO overviews)
  - Transition all core competency training to MISO Learning Management System where it can be tracked
    - Assessments for all core competency training materials
    - Certificates of completion/badges
- Subject Matter Expert Instructor Certification
  - Available for 1:1 in-person instruction as needed – resource for Client Relations/Customer Managers
  - Develop in-person/virtual trainings on prioritized areas of need; offer trainings through the Learning Management System
  - Record any in-person/virtual trainings; add assessments on content and post to the MISO Learning Management System for those unable to attend training in person
- Continued Assessment/Improvements
  - Establish annual review cycle of all posted materials to ensure content is up to date and relevant
  - Investigate/implement xAPI technology to track learning opportunities from various sources outside the LMS
  - Association of Talent Development membership/ISO-RTO Council participation to remain up to date on current trends and new technologies
  - Ongoing assessment of existing/emerging training needs
- Establish criteria for when MISO will design and deliver in-person training

## Introduction

### Purpose of Customer Training Needs Assessment

The Customer Training Needs Assessment is a comprehensive review of the current and future state of the training opportunities MISO offers to its customers. Its purpose is to use research, data collection and internal/external customer feedback to suggest prioritized recommendations on near-term, mid-term and long-term enhancements to transform MISO from its current state into an industry leader in the quality and effectiveness of the training we provide to our customers.

### MISO Customer Training – A History

The Midcontinent Independent System Operator (MISO) ensures the reliable, least-cost delivery of electricity across all or parts of 15 US States and the Canadian Province of Manitoba. MISO also operates the financial energy market for its region (i.e. the buying and selling of electricity). There are currently 181 member companies and 454 market participating companies. MISO has been a Regional Transmission Organization for less than 20 years and during that time external training was not a key business focus. Most existing training was created by the business group who identified the need, without any consideration for adult learning best practices, evaluation/assessments, etc. The last time there was a wide-scale update to the posted training materials was in 2013/2014 when the southern region was integrated.

### Current State

The bulk of MISO's Customer Training consists of PowerPoint decks of bullet points (some decks are 500+ slides long) posted to the Customer Training page of the MISO website ([www.misoenergy.org](http://www.misoenergy.org)), organized by Level (Level 100, Level 200, etc.). The majority of this material has not been updated since 2014/2015. As a result, much of the content in the slides is not updated to reflect current business practices or procedures.

MISO business areas hold annual workshops for Financial Transmission Rights/Auction Revenue Rights, Loss of Load Expectation and Stakeholder Governance topics. There are currently no other in-person customer trainings offered. Several Members/Market Participants have requested individual 1:1 training but MISO does not have dedicated resources to accommodate most of these requests. Currently, these requests are addressed by the Client Relations or Customer Advisors working in conjunction with Subject Matter Experts. MISO has a Learning Management System that is accessible to external customers, but it is underutilized. There are only a handful of online training modules on Stakeholder Governance, and no upcoming in-person trainings are available for registration.

MISO also offers System Operator technical training, in-person workshops and limited instructor-led training. In-person training is currently offered by Operations for system operators (annual readiness/hurricane/system restoration drills).

*It should be noted that System Operator training is a separate training department under Operations: The customer training referred to in this report applies only to non-System Operator training.*

### Ideal Future State Vision

MISO is the industry leader in the quality and effectiveness of the instruction provided to its customers. Training development is based on a deep understanding of the needs and wants of our customers, who collaborate with MISO to oversee this development.

The MISO website is a rich resource of foundational information for those with an interest in MISO and the energy industry, including multimedia content and downloadable resources. MISO Members and Market Participants use the MISO Learning Management System to easily access training geared to their specific job function, thanks to recommended role-specific curriculums (i.e. Transmission Planning or Settlements) and personalized suggestions using xAPI technology. Learners have the option to complete online, self-study computer-based training modules using any digital or mobile device: These computer-based trainings provide Level 100 introductory knowledge and serve as pre-requisites for subsequent, more in-depth training.

Computer-based trainings are developed and designed using Lot Like Agile Method Approach; an iterative instructional design model based on Agile project management (Torrance, 2017a). Level 200/300 trainings are provided in a blended learning format (computer-based pre-work, followed by in-person or virtual instructor-led sessions), which allows learners to ask questions of the instructor and of each other. Action Mapping is used to develop meaningful, effective instructional activities (Moore, n.d.).

All of these learning opportunities offer a certificate upon completing the course and receiving a passing score on a post course assessment. These certificates are used by MISO's customers to fulfill their yearly internal learning and development obligations. All curriculum material is assessed using the Kirkpatrick model of evaluation to ensure learner satisfaction, learning retention, behavioral change and organizational results. All content is reviewed on a regular schedule to ensure accuracy.

In-person/virtual trainings are taught by pool of MISO Certified Subject Matter Expert Instructors, who have completed an internal Learning & Development certification curriculum focused on "Train the Trainer" techniques and adult learning best principles/practices. These Subject Matter Experts are also available for one-on-one and Member/Market Participant-specific custom sessions.

The MISO Customer Training team is available to offer advice and guidance to customers. It collaborates with customers and internal Subject Matter Experts to design and develop instructional materials.

## Recommendations and Justifications

### Near-Term

- **Communicate/promote findings from Customer Training Needs Assessment to internal and external customers**

Communication and change management principles will be a key to a successful training redesign. MISO will demonstrate its commitment to Customer Experience by actively working to provide training enhancements and solutions based on customer feedback and recommendations and promoting these changes to both internal and external customers.

- **Update all current training materials posted on the Customer Training page of the MISO website(Updates to template and content)**

This is a crucial first step that will provide customers with a resource of updated information during the transition. The majority of materials were last reviewed in 2014/2015. These materials may contain information that is not consistent with current MISO business processes or procedures. The majority of these materials are also not in line with current branding standards. The presentations should be updated to the most recent template for a consistent, branded look. Although 60% of the respondents to the Customer Training Needs Survey report accessing materials from the Customer Training page on the website in the past year, comments regarding the content are negative:

#### Customer Comments (2018 Customer Training Needs Survey – Appendix A)

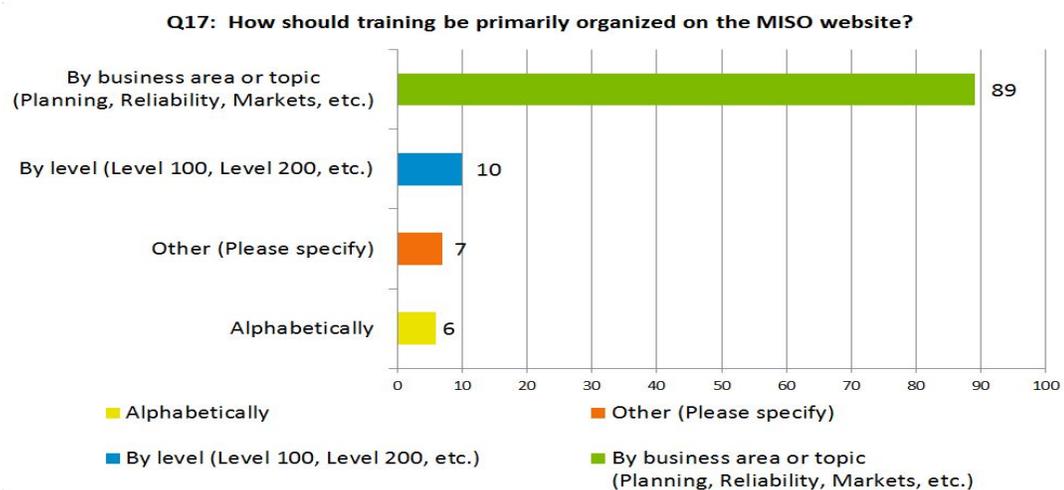
- “Some materials are dated.”
- “Severely out of date, and almost impossible to find.”
- “The MISO 101 material is several years old. Maps do not even have MISO South.”
- “MISO materials need to be updated.”

- **Remove out-of-date, duplicative or non-relevant materials from the Customer Training page**

All training material that is no longer relevant or duplicative should be removed from the website.

- **Redesign the Customer Training page on the MISO website to allow customers to locate appropriate training; organize materials by business area/job function, then by level**

There is overwhelming support from both external and internal customers to support this change:

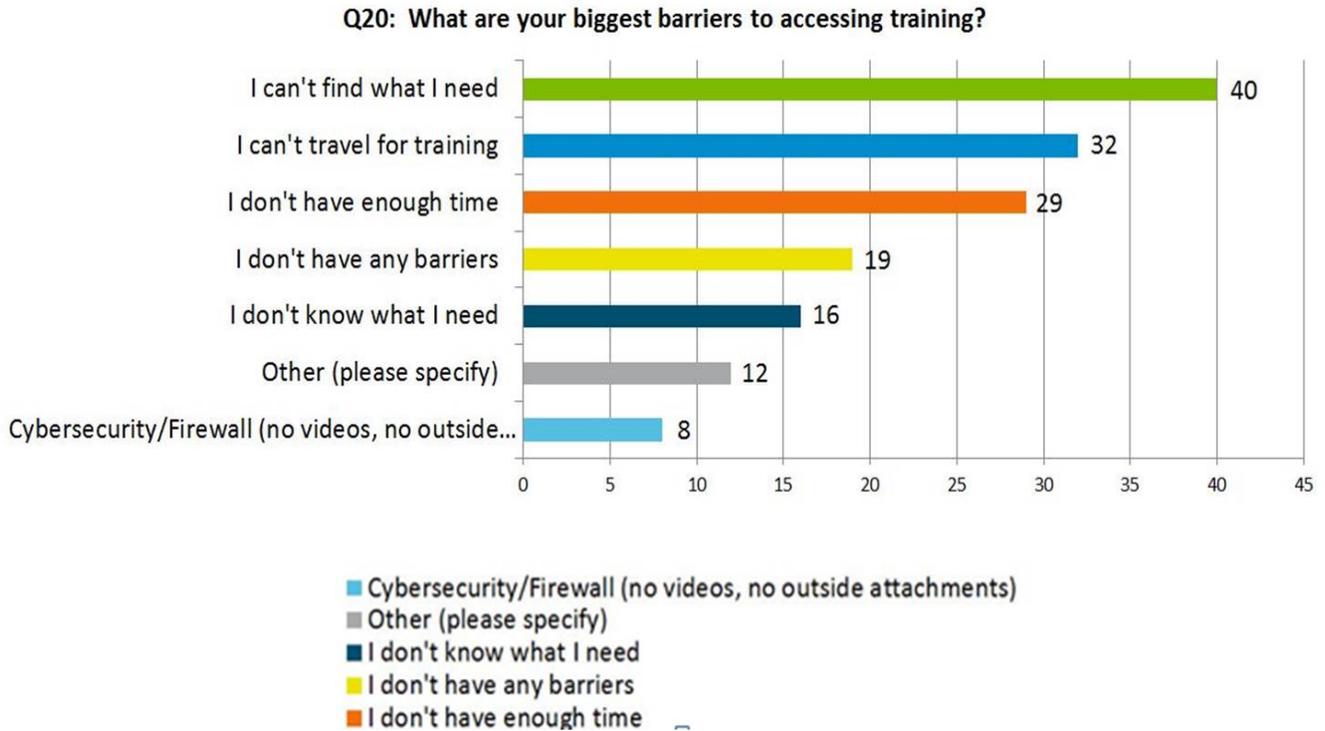


- **Post a Customer Training Materials database to the MISO Intranet or similarly accessible location to assist MISO employees in recommending appropriate training to customers**

The Customer Training materials database was created during the materials review portion of the Customer Training Needs Assessment process: It consists of all current materials and includes the following data:

- |                                  |  |
|----------------------------------|--|
| ○ Internal Business Area Contact | ○ Last date updated                          |
| ○ Training Level                 | ○ Current location on MISO website           |
| ○ Title                          | ○ Number of slides/length                    |
| ○ Description                    | ○ Related Training and BPM/Related Documents |
| ○ Audience                       | ○ Notes                                      |
| ○ Format                         |  |

This database can be a resource to Client Relations, Customer Advisors, or any other MISO external-facing employees when asked by customers to recommend appropriate training. Training and communications will be provided to key MISO employees on where to locate the database and how to use it to recommend training for external customers. Customers have reported that not being able to find the training they need is the biggest barrier to accessing training (Figure 2).



- **Evaluate the formation of a Training Advisory Group to steer future training development.**

A Training Advisory Group would allow MISO and its customers to work collaboratively on prioritizing and identifying current/future training needs. Adult Learning theory suggests that adult learners wish to be included and involved in the development of their learning, and a collaborative training group would align with this idea. Several internal and external customers have expressed interest in participating in such a group if it were formed.

- **Prioritize and establish schedule for training materials redesign:**

After the current materials have been verified for content accuracy and branding, the next step is to prioritize and plan for a training materials redesign.

Customers and internal business area representatives were asked to identify the top training needs as part of the Customer Training Survey, 1:1 interviews and small group discussions. The top three areas were (See Appendix B for full list and sub-topics):

- Settlements
- MISO Markets
- System Planning

#### Mid-Term

- **Work with MISO Learning and Development to create a “Subject Matter Expert Instructor” certification to prepare internal SMEs to provide instruction to external customers on their area of expertise**

Subject Matter Experts are, as the name suggests, experts in their associated topic. This knowledge does not automatically make them effective instructors: For this, a new skill set is required. Programs of a similar type are

already implemented at California ISO and ISO-NE: It should be noted that both of these programs prepare Subject Matter Experts to instruct as part of System Operator Training. A similar program at MISO for non-System Operator training would create a pool of Subject Matter Experts who are able to:

- Convey information to customers in a clear and concise manner
- Provide In-Person, Instructor or Virtual-led trainings through the MISO Learning Management System on topics of greatest need/priority
- Record micro-training (short 2 – 10 minute videos) as content for the MISO website’s MISOpedia page on frequently asked questions or pain points (MISOpedia is a long-term recommendation)
- Participate in online, “Ask an Expert” segments or other social media initiatives
- Provide recommendations and advise the instructional designer on the development of instructional materials.

- **Identify resources needed to complete training materials redesign, adjust schedule/plan based on available resources**

Options for fulfilling the objectives of the training redesign project should be compared to determine the best path forward. Options will be evaluated on resource requirements/availability, alignment to organizational/Customer Experience goals and costs of implementation. These options may include:

- In-house design and development
- Outsourced design and development
- Consultant-assisted development
- A combination of all three

A comprehensive project plan and schedule based on the most viable option will provide a roadmap to prioritized training solutions.

- **Ongoing prioritization/scheduling of existing or emerging training needs**

Training must constantly evolve as business and customer needs change. Outcomes from the Customer Experience Journey mapping efforts, Voice of the Customer feedback, new tool/process implementations and other performance improvement efforts at MISO will identify additional training needs that may take priority over the established training redesign schedule. The schedule will be revised to accommodate higher priority training development projects based on resource availability.

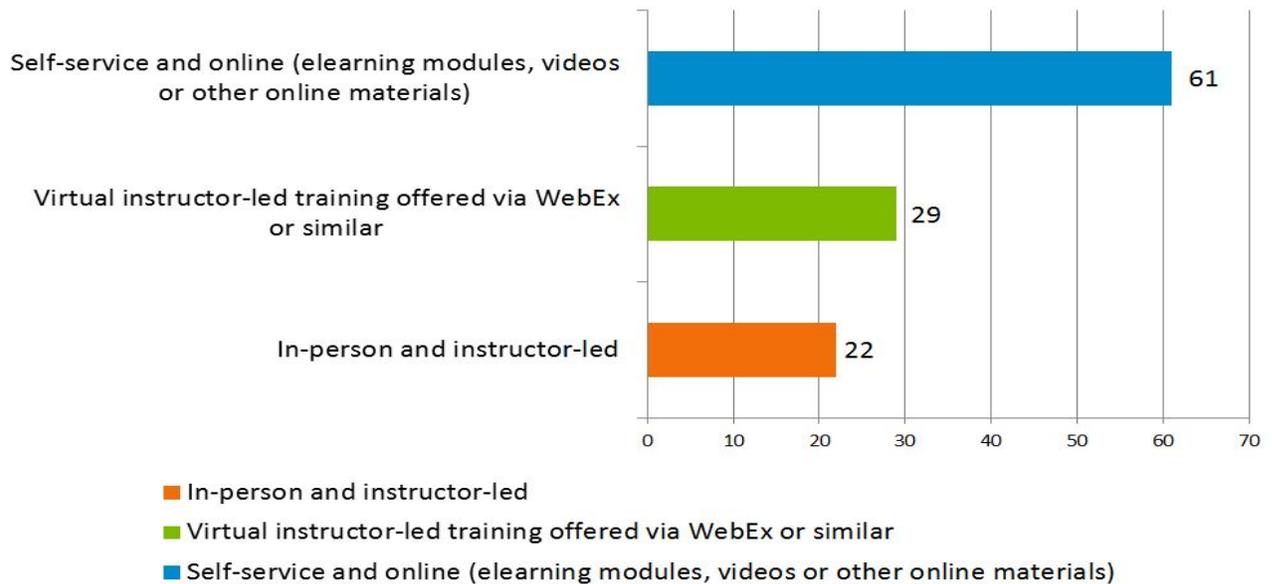
## Long-Term

- **Training Materials Redesign**

- **Develop online modules and/or materials using adult learning instructional design best practices to develop basic, introductory level content where appropriate**

Feedback from the Customer Training Survey indicates a clear preference for self-service, online training when the information presented is foundational or introductory:

**Q13: For training on basic/introductory concepts, I prefer training to be:**



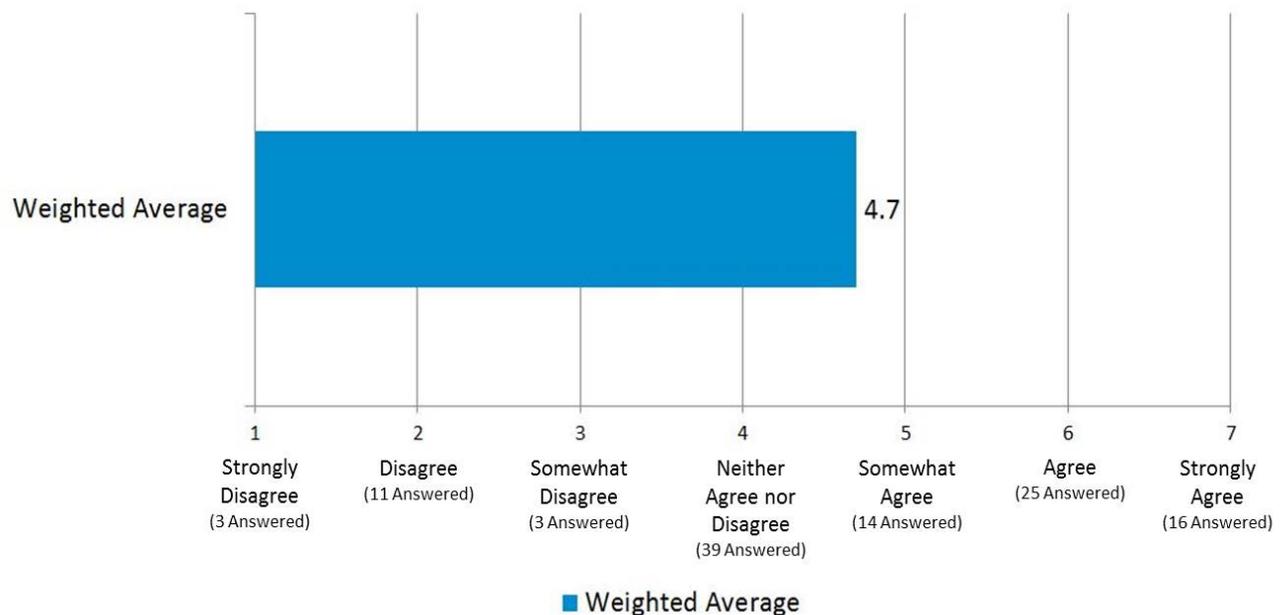
The Lot Like Agile Method Approach (LLAMA) is recommended for computer-based training design and development. LLAMA is an instructional design and project management approach based on the Agile Method. LLAMA modifies the traditional Analyze-Develop-Design-Implement-Evaluate (ADDIE) instructional design model into iterative cycles (Torrance, 2017).

Benefits of using the Lot Like Agile Method Approach include:

- Frequent iteration allows for review and editing to catch potential problems early in the design process when it is easier to fix
- Similarities to the Agile method used in other MISO business areas allows for the instructional designer to speak with Subject Matter Experts in a common language
- **Develop and implement MISOpedia (Name TBD): Develop online resource of informative, microlearning opportunities on key concepts (videos, job aids, reference material summaries, MISO overviews)**  
The concept of MISOpedia (Name TBD) has received unanimous support from internal and external customers. The vision is to create an online, multimedia, interactive resource of information on MISO, its business initiatives, industry terms, and other microlearning opportunities.
- **Transition all core competency training to Learning Management System (LMS) where it can be tracked**
  - **Assessments for all core competency training materials**
  - **Certificates of completion/badges**

All graded core competency training curriculums should be transitioned to the MISO Learning Management System to allow for tracking of individual student data and integrated assessments. The LMS can also offer the option of a downloadable certificate of completion that can be used towards the learner's individual learning and development goals. In the Customer Training Survey, the response to the question, "I would like to receive a certificate, badge or training credit upon completion of training" received a weighted average of 4.72, which indicates that customers "Somewhat Agree" with the statement.

**Q11: I would like to receive a certificate, badge, or training credit upon completion of training.**



Although this is not a strong preference, the Learning Management System has the functionality in place: Certificates upon completing a course can be provided without needing additional resources.

Evaluations are not embedded in the majority of the current training materials: These will need to be added before certificates can be made available. Kirkpatrick and Kirkpatrick (2006) state that “The reason for evaluating is to determine the effectiveness of a training program” (3). The Kirkpatrick model of evaluation assesses instruction on four levels: learner satisfaction, learning retention, behavioral change and organizational results.

- **Subject Matter Expert Instructor Certification**
  - Available for 1:1 in-person instruction as needed – resource for Client Relations/Customer Managers
  - Develop in-person/virtual trainings on prioritized areas of need; offer trainings through the MISO Learning Management System
  - Record any in-person/virtual trainings; add assessments on content and post to the MISO Learning Management System for those unable to attend training in person

The Subject Matter Expert Instructor Certification program could provide long-term benefits for MISO, some of which are described here. As the program matures, additional opportunities can be identified.

- **Continued Assessment/Improvements**
  - Establish annual review cycle of all posted materials to ensure content is up-to-date and relevant
  - Investigate/implement xAPI technology to track learning opportunities from various sources outside the MISO Learning Management System
  - Association of Talent and Development (ATD) membership/ISO-RTO Council participation to remain up to date on current trends and new technologies

- **Ongoing assessment of existing/emerging training needs**

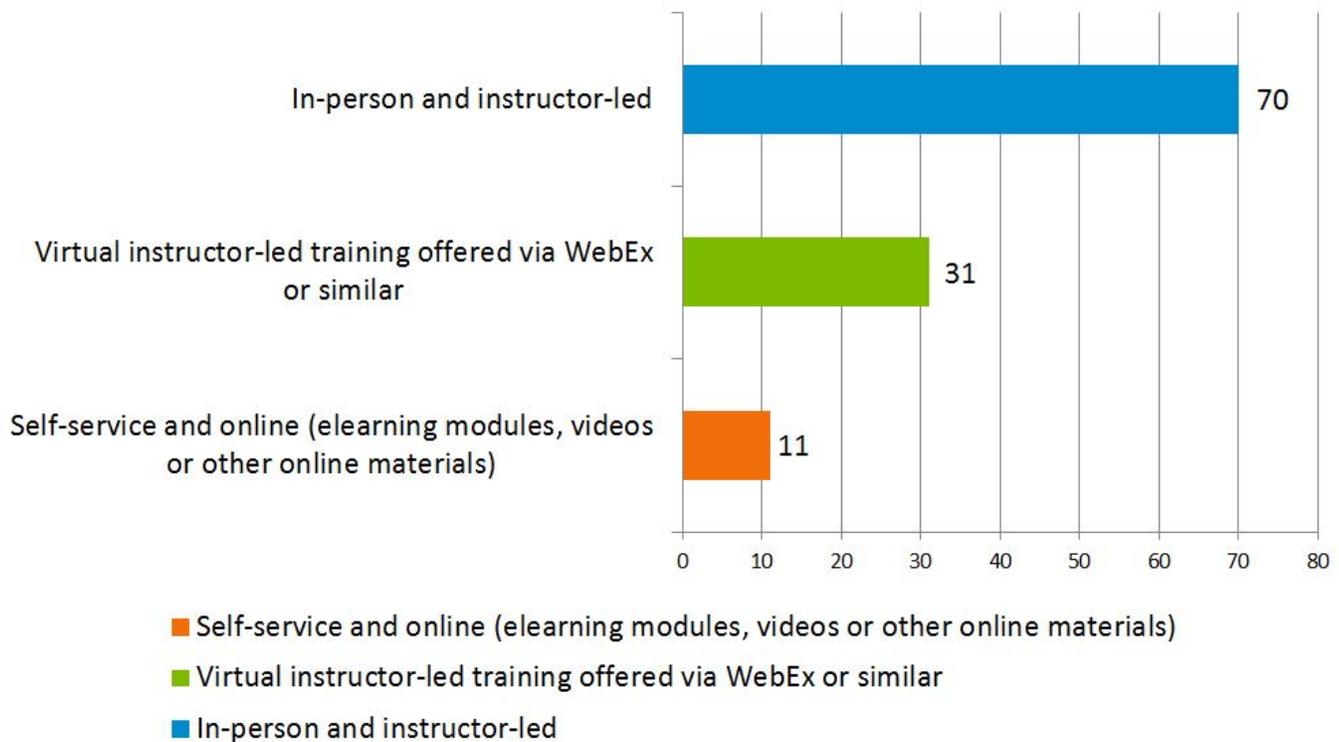
A training program must have constant evaluation and review to ensure that the material is relevant and best meets the needs of our customers and business initiatives. A training materials review process should be established based on the Business Process Manual review process already in place to ensure the accuracy of the materials.

xAPI is an emerging trend in Educational Technology. It is much more technologically advanced than Shareable Content Object Reference Model (SCORM), which is the current technical specification for eLearning technology. xAPI offers enhanced reliability, better tracking and the ability to collect rich data outside the confines of the traditional Learning Management System (LMS). (Anderson, 2016).

- **Establish criteria for when MISO will design and deliver in-person training**

To ensure that resources are allocated appropriately and accurately, criteria for the design and development of in-person or virtual instructor-led training will be established. Audience, prioritized need, timeliness, costs and the robustness of the Subject Matter Expert Instructor Certification program will all be considered. There is strong preference for more in-person, instructor-led training, especially for advanced or complex topics:

**Q15: For training on advanced or complex topics, I prefer training to be:**



## Process and Methods

### Customer Training Needs Assessment Outline/Approval

Planning for Customer Training Needs Assessment began in Quarter 4 of 2017. An initial project outline executive summary and a presentation on the need for a comprehensive Customer Training Needs Assessment were

developed.

### **Customer Training Needs Assessment Advisory Group**

Customer facing business areas were identified and contacted regarding participation in an internal advisory group for the effort. Twenty business areas were contacted and 20 MISO employees from 17 business areas agreed to participate. Advisory Group members were asked to provide feedback on their current training, discuss frequent pain points their customers encounter, and suggest ideas for enhancing customer training. They also began reviews of the existing training in their subject area and provided feedback on the initial recommendations.

### **Existing Materials Review**

There are 149 instructional materials posted to the Customer Training page on the MISO website. There are 34 recorded WebEx presentations; 9 Excel spreadsheets, 5 PDF documents, 2 word documents and 130 PowerPoint presentations. Only eight of these presentations have been updated since 2017. The bulk of the available trainings were last updated in 2014 as part of the southern region integration. Almost all of the presentations do not comply with current corporate branding guidelines and should be renamed using a consistent naming convention. There are several duplicate presentations posted, and a number of presentations that are no longer relevant in their current form (ex. Level 200 New Market Changes, detailing 2015 market changes). The materials are organized by level (i.e. Level 100, Level 200) on the Customer Training page.

There are 220 training events available/active to external customers on the MISO Learning Management System. Most of these events are for System Operator training or for past events (example: 2016 MISO South Region EOP workshop) that still show as active. An external customer who is new to the MISO LMS will discover 31 Technical Training (System Operator) opportunities; 2 Stakeholder governance online modules and 2 online classes on MISO and MISO markets.

Data on active training materials were compiled in a Training database (Excel), which includes the following data:

- Internal business area contact
- Training level
- Title
- Description
- Intended audience
- Format
- Last date updated
- Location on MISO website
- Number of slides (if applicable)
- Related training
- BPM/Related Documents.

## Other RTOs/ISOs

- **PJM:**

PJM's customer training page offers 31 online courses, 27 in-person courses, 16 virtual courses, and 2 blended learning opportunities (online plus instructor-led). Courses can be filtered based on target audience and method of instructional delivery. Target Audiences are: Curtailment services, energy efficiency, general/government; generation; Generator Operator Blackstart; Load Serving Entities; market operations; MOC generation; power marketers; existing PJM members; Transmission Owner field personnel; transmission owners; state commissions and wind operators. There are also suggested initial training requirements for Transmission Owner Operators; Generation Dispatchers; Small Generation Plant Dispatchers; Demand Response and Energy Storage Device Operators. PJM also has a certification program made up of three credentials: Generation Dispatcher; Transmission Owner/Operator and PJM Markets. These certifications are distinct but complementary to the NERC System Operator Certification program. A course catalog and a schedule of training events are available for download online. All course materials are available for download: Each materials package has the date it was last updated displayed next to the title. The majority of the trainings were last updated in 2017/2018. Customers may suggest training topics by clicking a "Training Wish List" button on the page. The goal of the credential process is to prepare the learner to participate in the markets and operations of PJM. There are links to a member community social network and contact information for the PJM Training team. In addition, PJM provides a video series called "Power Clips – High-level Lessons from PJM experts". These short videos explain high-level and PJM industry topics.

- **SPP**

SPP offers an Integrated Marketplace Training Catalog that includes: 6 instructor-led opportunities, 10 virtual instructor-led courses, 91 self-study computer-based training, and reference materials, job aids, and how-to guides. SPP offers one and a half day instructor-led training on marketplace fundamentals. The online computer-based modules include five "Short Burst" options that deliver foundational knowledge in short microbursts of learning (example: "How to calculate Area Control Error") The learning modules are built in Captivate (a common course authoring platform), and offer the learners the opportunities to make choices to direct their learning (example: Choosing which method to use to calculate Area Control Error). After allowing the learner to work through the examples, she is asked to prove her learning by completing challenge exercises. There are also several bundled self-study curriculums available including: Integrated Marketplace Overview, Control Performance Standards, Operator Awareness; Outage Coordination; Z2 Crediting Process; Power Systems Protection Fundamentals; Pricing; Reserve Sharing; Restoration Principles; Transmission Loading Relief and Voltage Control. There is an online glossary that defines commonly used acronyms. The SPP Learning Center uses the Cornerstone Learning Management System (LMS) platform (like MISO), and recommends training based on the learner's activity.

- **ISO-NE**

ISO-NE's training page is slightly more difficult to find than PJM and SPP. There is an online calendar that can be filtered to display specific types of training available. They offer three in-person, instructor-led trainings throughout the year:

- Introduction to Wholesale Electricity Markets (WEM 101) – offered twice a year
- Intermediate Wholesale Electricity Markets (WEM 201) – offered twice a year
- Forward Capacity Market (FCM 101) – offered once a year

There are several webinars offered on specific topics throughout the year (Examples: Forward Capacity Markets Existing Capacity Qualification process; Demand Resources – Energy Market Offers and Asset Management). There are 91 computer-based training (CBT) modules available. There is a dedicated page for Settlements (“Understanding the Bill”) resources and how-tos to assist customers in understanding the billing process. Learners register for in-person trainings and access CBT through the ISO Training and Events Network (ISO-TEN). ISO-NE does have some outdated webinars (Example: 2013 Q1 Settlements Issues Forum) available online: each entry includes the date the material was last updated. The online training modules are created using PowerPoint and Captivate. The ISO-TEN uses the Cornerstone LMS platform (like MISO) and recommends training based on the learner’s activity.

- **California ISO**

California ISO offers external customers courses organized into 4 learning tracks: Markets and Operations; Western Energy Imbalance Market; Settlements and Metering; and Congestion Revenue Rights. There is also a direct link to the computer-based training library for easy access to 23 online courses, each also grouped by learning track. The online courses are created using Articulate Storyline and Articulate Rise and include frequent realistic scenarios, examples and knowledge checks. There is a short how-to video that provides a tour of the Learning Center on the main page, along with a highlighted section for new modules based on corporate initiatives. There are four in-person trainings offered throughout the year, and multiple webinars. Each training track page offers relevant downloadable materials. The California ISO develops all of their instructor-led learning content in-house and works with a third-party instructional developer for computer-based training.

### **Customer Outreach**

- **In Person Meetings/Conference Call**

Customer Advisors were asked to assist in arranging on-site visits with Members/Market Participants to discuss their specific training needs and gather feedback on the future of MISO customer training. This collaboration resulted in several in-person meetings with groups of customers from across the MISO footprint.

In addition to the in-person meetings, 20 customers requested a 1:1 conversation on their training needs. A summary of each of these phone calls was reviewed with the customer for accuracy and shared with the Customer Advisor, Client Relations representative and any other relevant business area.

- **Training Needs Survey**

The Training Needs Survey was intended to reach a larger number of customers than could be met with in person. The survey consisted of 20 quantitative and qualitative questions on training needs and preferences and was deployed in September 2018. The survey was sent to the Customer Satisfaction Survey and MISOALL mailing lists and resulted in a total of 113 responses. Question responses were surprisingly consistent regarding training preferences, and customer comments expressed frustration with the current state of MISO customer training. The complete survey and responses are available as Appendix A.

### **Emerging Technologies/Future Considerations**

The field of Educational Technology is constantly evolving. The following should be further explored for potential future application to MISO Customer Training:

- xAPI: Rich data collection within and outside the Learning Management System (LMS)
- Articulate 360: Latest version of course authoring software (Current: Articulate Storyline 2)
- Gamification: Modern day adaptation of Behaviorism. Other RTO/ISOs are incorporating gaming elements in online and instructor-led learning
- Virtual Reality (VR): Use in simulations
- Attendance at yearly educational technology conferences to stay informed on emerging technologies

### **Adult Learning (Andragogical) Considerations**

All training materials should be informed by Adult Learning and eLearning best practices and principles. According to Knowles (1984), there are five characteristics of adult learners:

- They are self-directed
- They bring a wide range of pre-existing experiences to learning
- They require a reason for learning
- They do not want to learn for the sake of learning
- They are internally motivated to learn

Knowles (1984) also proposed four “Principles of Andragogy”:

- Adults need to be involved in the planning and evaluation of their instruction
- Experience provides the basis for learning. This includes mistakes as learning opportunities
- Adults are most interested and motivated to learn what has immediate relevance and impact to their daily life
- Adult learning is problem-centered rather than content-oriented

These characteristics and principles should be considered in any design of instructional materials or content for our customers. Learning must be relevant to their specific need, be built on prior experiences and allow for self-direction and choice. Andragogical principles should be applied to the design of eLearning in the forms of simulations, problem-based realistic scenarios and games. The reason for learning must be made clear, and should provide real-world problem solving challenges with immediate guided feedback (Pappas, 2013). Elearning should incorporate live demonstrations, multimedia and opportunities for further exploration via links and resources to foster self-direction in a flexible format. Instruction should provide immediate opportunities to apply acquired learning and opportunities for social interactions with peers (Dettmer, 1986).

Of additional consideration is the high percentage of “gifted and talented” or high-functioning adults in MISO’s core learning population. Gifted adult learners have a strong need to be independent thinkers and to create structure around the information they require (Powell & Haden, 1984). They also tend to prefer cognitive driven instruction that deal with hypothesis generation, problem solving and memory processing (Keefe, 1987). These types of learners require less external structure; appreciate opportunities for deep dives via links/resources; and prefer social interaction opportunities such as mentoring and coaching.

Research suggests that digital and mobile technology is resulting in significant changes in the human cognition process, including memory, reward/gratification and attention. The term “digital native” refers to younger generations who have always had constant access to information. Mobile technology has limited the brain’s ability to

sustain focused attention; while demands on the human sensory system often result in multi-tasking. Multi-tasking then leads to higher cognitive load or cognitive overload. Dirksen (2018) recommends that eLearning designs be focused and free from miscellaneous details or unnecessary visual content that could result in cognitive overload.

Research also suggests that digital games stimulate the brain's reward circuitry. Digital natives are less able to delay gratification for rewards. Gaming elements such as badges, leaderboards, status bars and avatars motivate the learner and personalize the learning experience, while tapping into the basic psychological and intrinsic needs for competence, autonomy and social relatedness (Sailer, et al., 2017). This indicates that gamification should be explored and incorporated in training opportunities. PJM and SPP are already incorporating gamification in their instructional designs.

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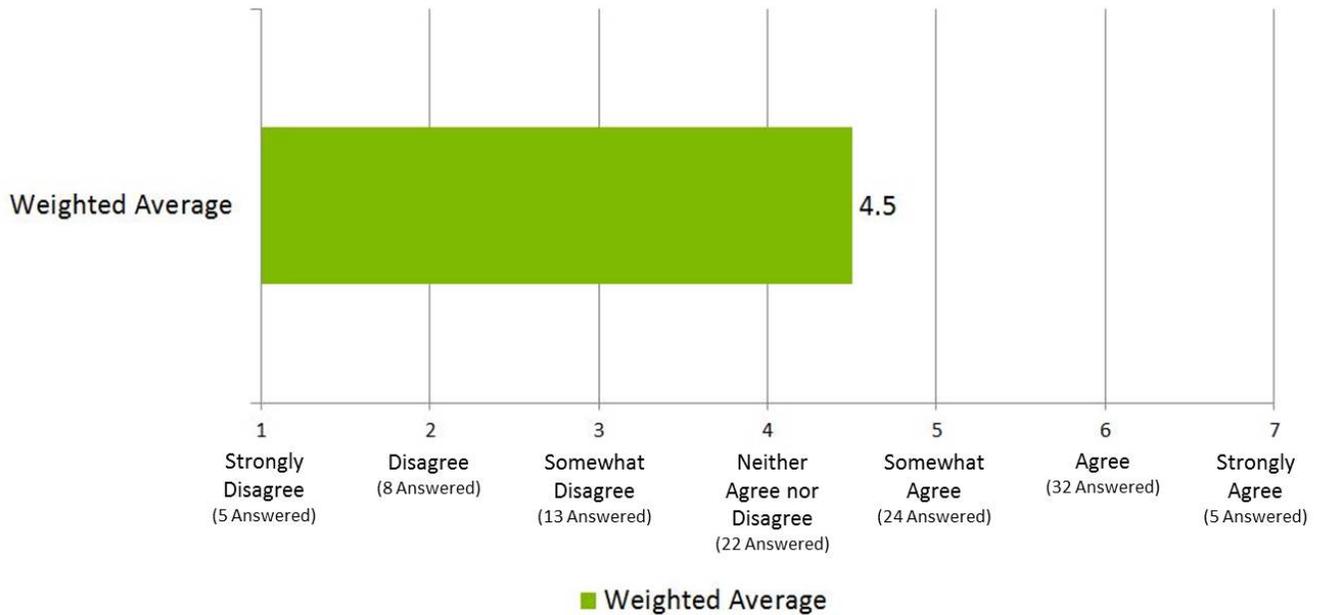
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## Appendix A – Customer Training Survey

Link to online survey: <https://www.surveymonkey.com/r/MISOCustomerTraining>

### Results and Data

**Q1: I am satisfied with the customer training currently provided by MISO:**



Q1		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree	Total Responses	Weighted Average
Responses	#	5	8	13	22	24	32	5	109	4.54
	%	4.59%	7.34%	11.93%	20.18%	22.02%	29.36%	4.59%		

**Q2:**

Please enter additional comments here:

Answered 32

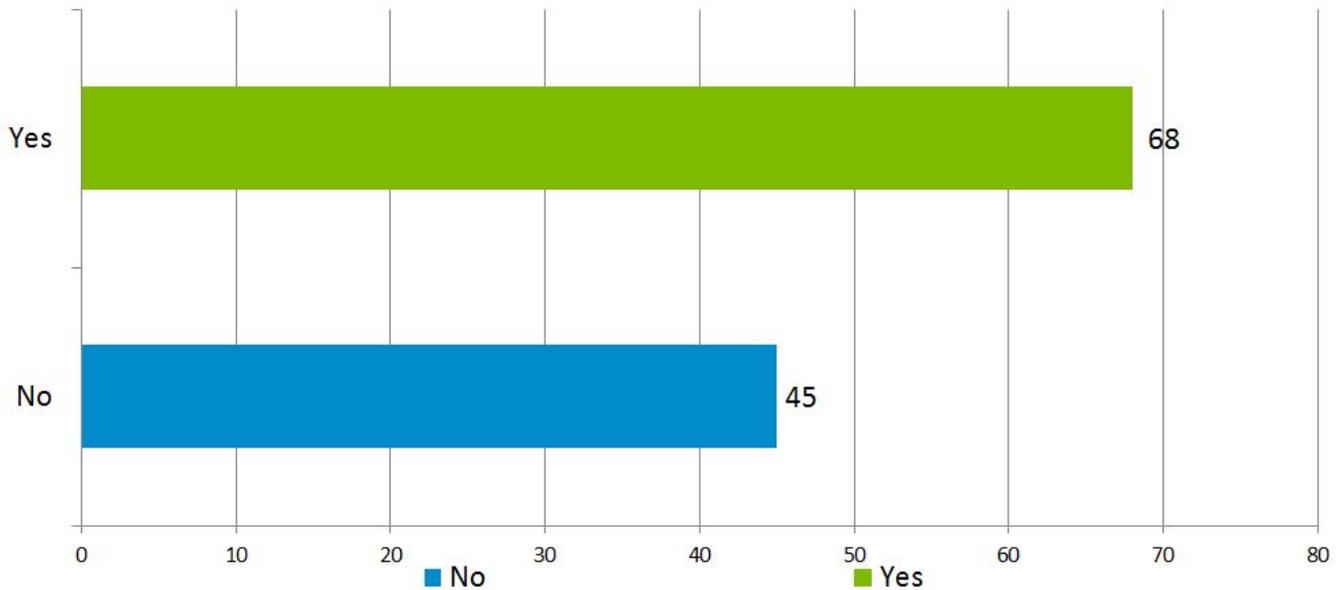
Skipped 80

Responses	
1	I would like to see more frequent offerings for trainings around MISO and regards to the tariff
2	Seems MISO offers very little training for Market Participants.
3	Would love it if MISO had free CE training for operators like PJM offers.

4	The level I'm looking for certainly exists, but perhaps I have not looked closely enough. Online and offline, high-level material focused on process is what I'm looking for (e.g. how does the market work, how does the congestion management process occur, how are MVP projects approved)
5	I have been provided no MISO training by the company.
6	From a settlement standpoint, I feel MISO needs to provide more teacher led training on those areas that are changing (UD tolerance band) or more complex charge types (PV MWP, EXE/DFE)
7	Could use more training around transmission planning. Most training is operator-related or market-related.
8	The customer training is mostly geared towards reliability and not necessarily markets. I find that many of the level 100, 200, and 300 topics could use an update. Also, a more interactive system for basic topics like the level 100, 200, and 300 would be helpful for training new and existing staff.
9	There are certainly some materials that could use updating, while other topics aren't covered in as much detail. However, I consider the current set of materials as a whole to be a great resource.
10	Training is weak. Often presented by someone with technical knowledge, but with few presentation skills. Sessions are too long, too many slides, almost impossible to pay attention that long. It all starts sounding the same after about slide 78.
11	I would like to see more training on MISO procedures. The recorded versions do not have any way to Q&A parts of the materials. Also, more restoration training.
12	I utilize training offered from SPP, and think MISO could offer some more on-line classes, as the in class are not an option for folks in the west that are part of MISO, can't get to MN, IN or AR.
13	MISO has really slipped on this recently. Perhaps due to change in leadership.
14	I am new to my role, so I am not sure what I need to know yet.
15	PSR drills have become cumbersome with the use of the Linksys simulator.
16	It would be useful for new employees or employees who transfer into Transmission specific jobs to have face to face meetings available.
17	How can all other RTO/ISOs have training departments focusing on hosting regionally specific training, yet MISO has just a couple people dedicated toward that customer need? (E.G.: SPP and PJM Staffing.....ask yourself "Why are we different?")
18	I think more customer engagement is needed
19	The items presented on the site now are from 2012. Need updated.
20	I would like MISO to offer training on the Market-to-Market flowgate process from the method MISO uses to establish a Market-to-Market flowgate, to the dispatch process for Market-to-Market flowgates, and to the process through which Market-to-Market flowgates are settled.
21	I would like to see more in-house training that focus on Settlements
22	Most of the training posted was created 4 years ago during the Southern integration.
23	MISO discontinued offering MISO 101 in-person. This is needed for our new employees.
24	Several of the presenters are very difficult to understand
25	There is always a lot of options for training - you just have to look for it. I have participated in the past both "live" as well as accessing training documents from time to time which are always very good.
26	I don't think I've seen a lot of customer training available.

27	I think it is a disgrace that EUCI is hosting MISO Capacity Auction training for nearly \$2000 and a MISO director is one of the speakers. This is much needed training that should be hosted by MISO at no cost to Market Participants.
28	I believe there is great value in an informal certification path for market settlement staff, similar to operators. As new charges and concepts get more complicated, formal effort to stay current in settlement understanding provides a vital feedback loop to the front office. This feedback loop will make the whole market more efficient as companies optimize their operations.
29	I generally do not attend MISO training. I spend more time participating in the MISO stakeholder process. I did attend a governance training that was good.
30	MISO needs to get back to instructor led classes similar to training when MISO south was created back in 2013.
31	I have gained a lot from some in-person training sessions, but have a very hard time finding relevant sessions with enough time to get internal approvals to attend.
32	Would like more notices.

**Q3: I have accessed customer training from the MISO Learning Management System (LMS) within the last year.**



Q3	Answer Choices	% Response	# Response
		Yes	60.18%
No	39.82%	45	
TOTAL RESPONSES			113

Q4:

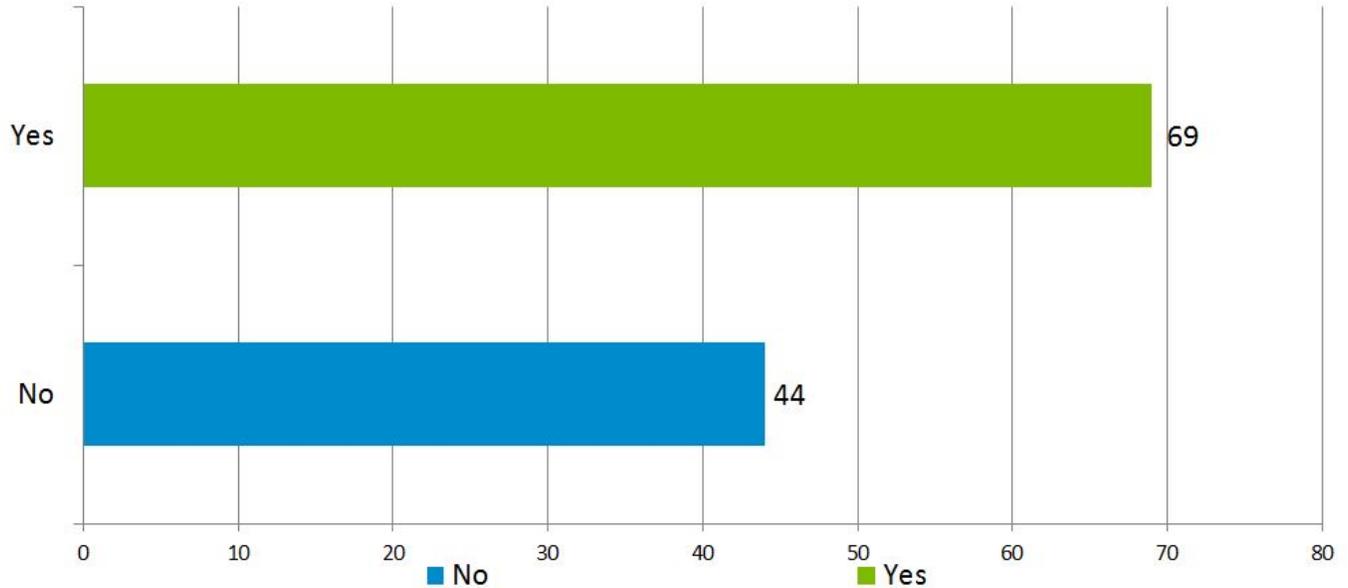
Please enter additional comments here:

Answered 16

Skipped 95

	Responses
1	I have attended training in person at Carmel, IN.
2	When I first got involved in my current role, I did access MISO's training. Now that I have been in my role for 6 years, I don't have the same training needs.
3	LMS has gotten better/more user friendly
4	Are training opportunities available for parties to call-in? Travel may make these opportunities challenging for some.
5	No relevant courses.
6	LMS is not very intuitive but does the job; takes some time to get comfortable navigating. I highly doubt this is something with which MISO folks are unaware.
7	I didn't know MISO was offering courses on their LMS. I've only used it to register for training.
8	PSR and SRD
9	I personally have not needed training in a specific area.
10	It is designed for internal users and is not user friendly for a user that accesses the system only a couple times a year.
11	Some of it (100 level, at least) is quite dated. Is it still current?
12	MISO LMS materials need to be updated.
13	I believe it has been over a year since relevant training was offered through LMS
14	I think I have, but I am not 100% sure.
15	Would like to see a user's guide for the LMS system.
16	I've been promoted and haven't been involved with day-to-day.

**Q5: I have accessed training materials from the Customer Training Page on the MISO website within the last year.**



Q5	Answer Choices	% Response	# Response
	Yes	61.06%	69
	No	38.94%	44
TOTAL RESPONSES			113

**Q6:**

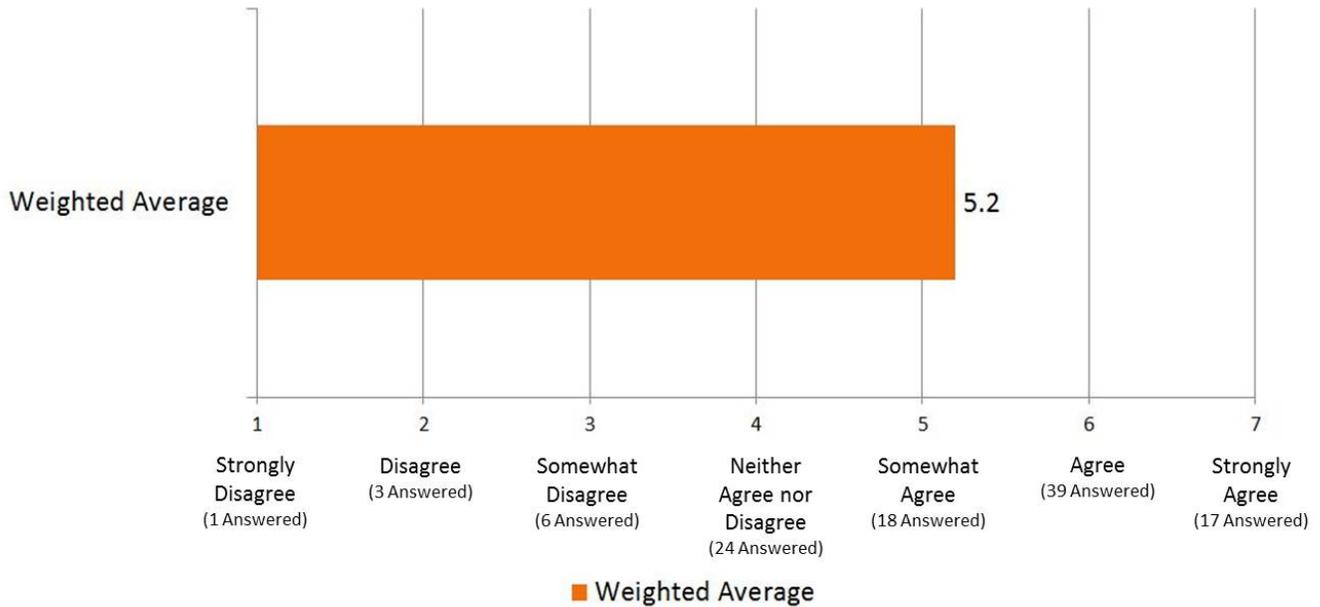
Please enter additional comments here:

Answered 9

Skipped 104

	Responses
1	Some materials are dated
2	What customer training page? Never heard of it.
3	Same as above.
4	Severely out of date, and almost impossible to find
5	I was unaware this page existed
6	The MISO 101 material is several years old. Maps do not even have MISO South
7	MISO LMS materials need to be updated.
8	Same as above
9	same

**Q7: MISO needs more online, self-service training options.**



Q7		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree	Total Responses	Weighted Average
Responses	#	1	3	6	24	24	39	17	108	5.22
	%	.93%	2.78%	5.56%	22.22%	16.67%	36.11%	15.74%		

**Q8:**

Please enter additional comments here:

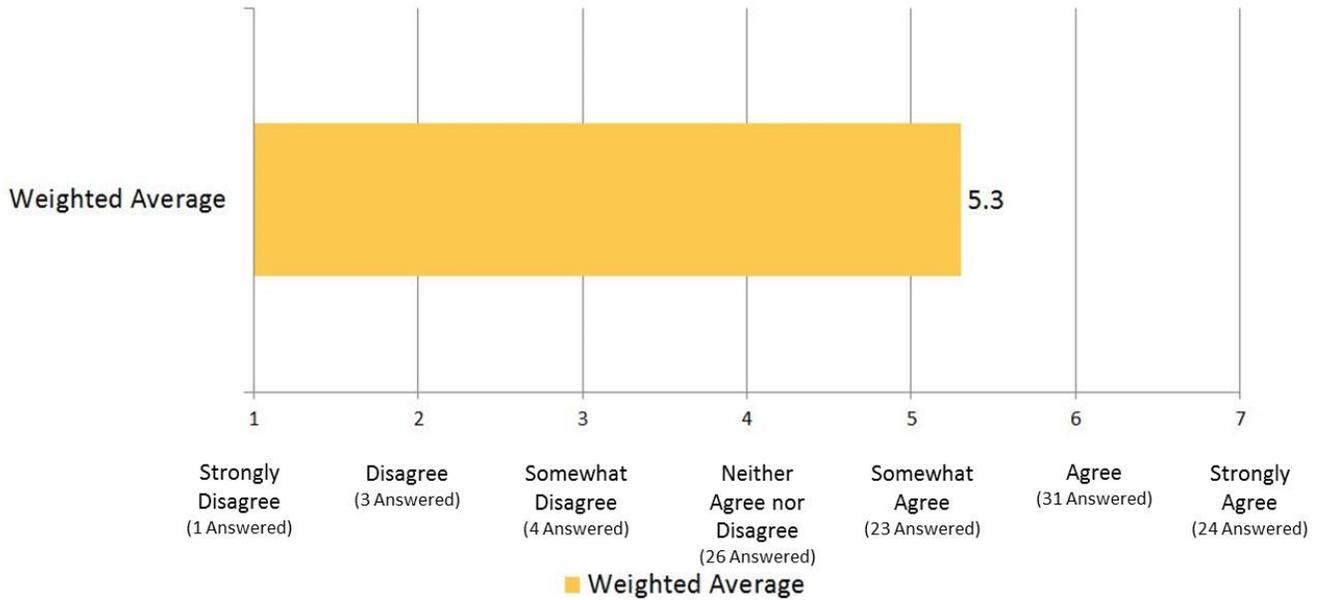
Answered 21

Skipped 92

Responses	
1	Should be able to obtain answers to questions by finding the appropriate resource on MISO's website, which is too often not the case. Relevant Business Practice Manual or material on the Customer Training page is too often inadequate.
2	The RAN whitepaper was great. To appreciate the difficulties a little better, maybe some training going through examples of either what did happen, or what could happen could be useful.
3	CBT for continuing education would be beneficial so operators can do some self-paced training
4	I couldn't find PSSE training on MISO website. Do you have it and where is it located?

5	more updated with pertinent changes.
6	that would be great
7	This would be very helpful for our staff to have MISO led training on the basics of markets. Right now, the training slides are available in pdf form which isn't the best format for a self-study. An interactive online options would be much improved over the materials currently available.
8	Good idea
9	I think most every RTO does this and PJM does a wonderful job. Would recommend MISO try some PJM training because they really do offer a better service.
10	A training coordinator would be useful to discuss training options.
11	Again....Look to what other ISOs are offering PJM and SPP
12	Especially if they included NERC CEH's
13	Please see my comments to the first response above.
14	More training is needed for specific settlements topics as a result of several changes within the market.
15	Not only online, but up-to-date. As things change, trainings need to be reflected accordingly. My experience, especially with the Settlements trainings, is just this...They aren't updated to reflect things such as 5-minute settlements and PVMWP changes. This would be helpful.
16	I have always found what I have needed.
17	Video of classes with meeting materials or WebEx training would be helpful.
18	Self-service is a great addition to instructor led. I believe WebEx is fine for training broken into smaller pieces. Complex topics or those taking more than two hours should be conducted in person.
19	I have not used this option.
20	Individuals within utilities have varying schedules and commitments. Allowing for online training would be a plus.
21	Prior to taking the job I currently have, I was not exposed to the jobs of the ISOs / RTOs and I did not have the time or ability to read the full Tariff. Basic training about definitions, sections of the Tariff that apply to various types of entities, etc. would be really helpful!

**Q9: MISO needs more online, self-service training options.**



Q9		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree	Total Responses	Weighted Average
Responses	#	1	3	4	26	23	31	24	112	5.29
	%	.89%	2.68%	3.57%	23.21%	20.54%	27.68%	21.43%		

**Q10:**

Please enter additional comments here:

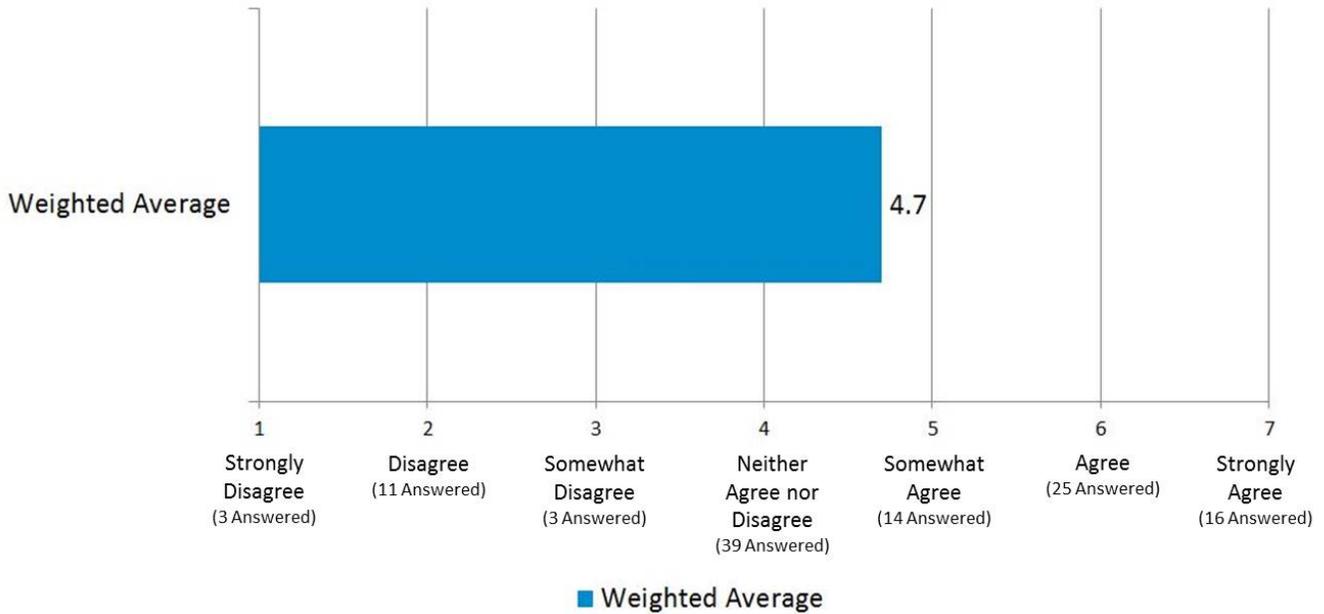
Answered 30

Skipped 83

Responses	
1	The MOD Training I attended in Carmel, IN was WebEx training. I believe it would have been even better if led in person.
2	Perhaps in-person, instructor-led training would be helpful when a new product is introduced or there is a major change in settlements.
3	travel is limited at my company, so I prefer the computer based learning.
4	MISO has been giving more training across all of the groups within MISO. I personally feel that there should be more SME instructor led training.
5	this would be nice to interact more in person.
6	I would like to have PSSE dynamics training, and PSSE advanced Load flow, training and/or materials

7	In-person, instructor led training is the best as can ask questions, get clarification, etc.
8	I would like to see more training opportunities to learn more about the details about how MISO's markets work and specific market rules.
9	In person really helps people understand complex concepts and how and why something operates the way it does. maybe group concepts together so certain people can travel and stay for 2 full days if needed.
10	If there is actually in-person training, the information about it is difficult to find.
11	that would be great too, I feel the more options out there the better
12	It wouldn't hurt if MISO coordinated a periodic review of training sessions. If this is done it would be worthwhile to break out into different topics like reliability, market operations, settlements, etc.
13	There are numerous training sessions available throughout the year. Small one-off workshops could be valuable to address current and relevant issues. I've been reading the various whitepapers being produced for the RAN initiative, and they have all made mention of the need for customer training regarding LMRs, EDRs, etc. I have yet to see a training session or workshop materialize. MISO may be working on developing something to that end, and if so it would be helpful to see an announcement or calendar placeholder at a minimum.
14	I'm not flying down for training.
15	Nothing replaces instructor led training. Need more of these on a regular basis
16	More opportunities for restoration related training would be helpful.
17	How about WebEx (remote) training? Instructor can deliver via WebEx and testing can be conducted in the LMS.
18	Need to be closer to the West, as comment above, being in CO, is hard for corporate budgets to send folks to MN, IN or AR.
19	Yes, I think we need someone to train us in very specific areas. We don't want someone to read a power point to us, but rather someone at MISO who has been in the trenches.
20	It's easier for me to set aside time to come to a class than to try and carve out time to do online training.
21	This is the best method for new employees.
22	Less generic training (WE can schedule Mike), and more procedure based/ MISO Specific Tools Training.
23	Yes, I would encourage MISO to provide more in-house training related to MISO Settlements i.e. transmission, RSG MWP, and 5-Minute Settlements.
24	more participation in Wisconsin System Operator (WSO) and American Power Dispatchers Association (APDA) - WUMS training sessions.
25	Need much more up to date training on current issues presented in MCS
26	Please bring back MISO 101 in-person.
27	Speaking from my perspective with Settlements, I would love to have a MISO expert give a deep dive into the uplift charges and some of the broader charge codes that are hard to get your arms around.
28	MISO offers considerable training including at the monthly Info Forum as a basis for Hot Topic paper preparation.
29	Perhaps short bursts of training before/after stakeholder meetings would be beneficial, since so many stakeholders are in Carmel.
30	I believe it is sufficient as is.

**Q11: I would like to receive a certificate, badge, or training credit upon completion of training.**



Q11		Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree	Total Responses	Weighted Average
Responses	#	3	11	3	39	14	25	16	111	4.70
	%	2.70%	9.91%	2.70%	35.14%	12.61%	22.52%	14.41%		

**Q12:**

Please enter additional comments here:

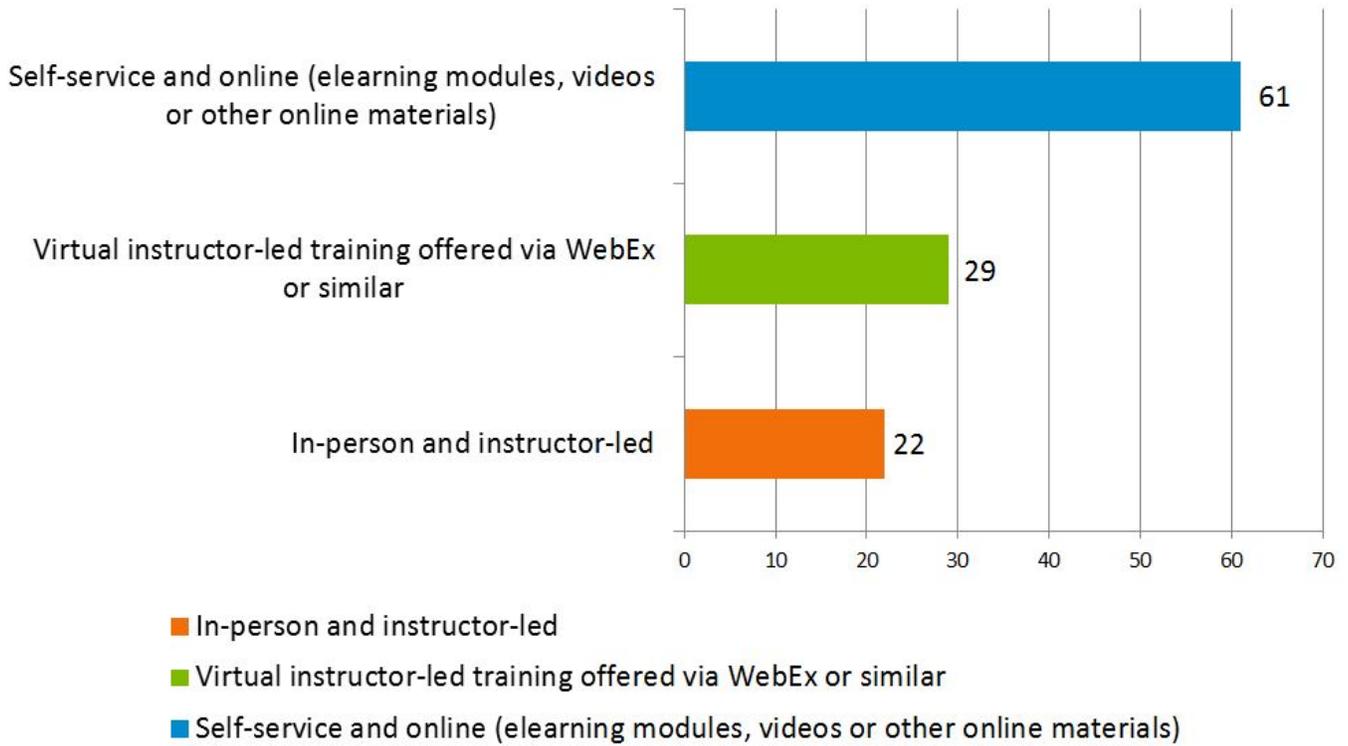
Answered 24

Skipped 89

Responses	
1	I personally do not need to receive a certificate, etc. upon completion of training, but I think in some positions it would be useful. However, only if the training is effective.
2	Would be nice for PDHs
3	This would help for CPE requirements
4	this helps track what you are experts/trained in
5	not a huge deal, but CEHs are important
6	If the training qualifies for continuing education, then I'd need a certificate for documentation purposes for my PE license.

7	Some folks such as system operators may require proof of course completion in order to maintain job qualification.
8	But I would take a sticker :)
9	The process to access certificates and training credit now through the LMS is just fine.
10	Make the completion certificate available on the LMS
11	I would like to receive CEHs whenever possible for training. Certificates and badges aren't nearly as important. As long as there is a prepared agenda that's usually sufficient.
12	CEHs for completed training are necessary for all system operators.
13	No additional comments.
14	No reason the ILA can't be approved prior to delivering and the assessment graded and credit issued before student leaves the course. Look toward utilizing the LLMS application in this fashion, not just manually posting to the LMS.
15	Credit
16	NERC CEH's are important
17	I would not get any value from receiving a certificate, badge, or training credit upon completion of training.
18	NERC CEHs should be made available on as many training modules as possible, see PJM's online training as an example.
19	Already receive NERC CEH through training
20	Completion of a course should be shown on the stakeholder's profile. Nothing beyond that (certificate) is needed.
21	A certificate of completion for Settlements Analysts will be a great help to raise the status of knowledgeable staff that have put in the time and effort to master this topic.
22	I am ambivalent. But operators would probably prefer some sort of certification or credit.
23	NERC CEH would be a benefit.
24	It provides assurances that all work is completed in a satisfactory manner.

**Q13: For training on basic/introductory concepts, I prefer training to be:**



Q13	Answer Choices	% Response	# Response
		Self-service & online (e-learning modules, videos & other online materials)	54.46%
Virtual instructor-led training offered via WebEx or similar		38.94%	44
In person & instructor-led		19.64%	22
TOTAL RESPONSES			112

**Q14:**

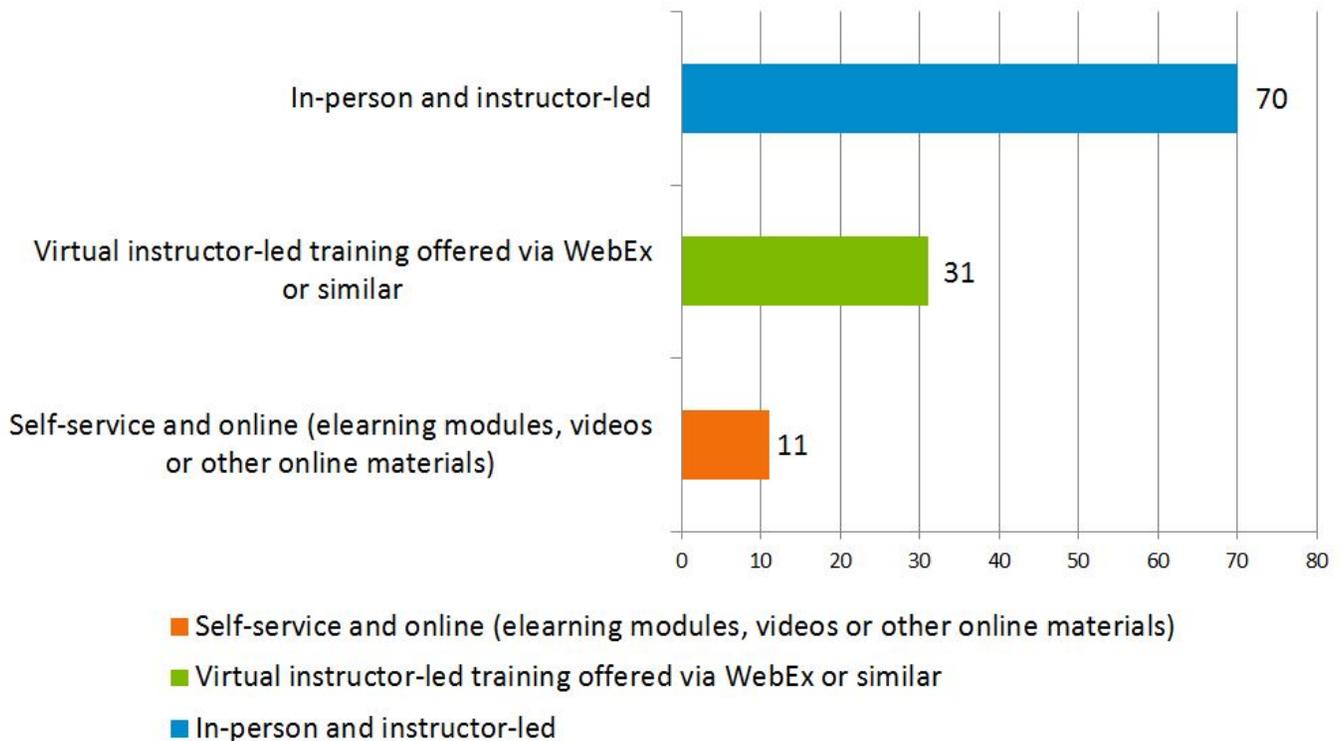
Please enter additional comments here:

Answered 13  
Skipped 100

Responses	
1	i would be open to any of the three options listed above. i would learn more from an in-person presentation, though the other two may provide flexibility i need to fit in my busy schedule.
2	Virtual instructor-led is also fine.
3	some of the ppt on the basics is good but outdated. i wonder if a person completely new to utilities could pick learn from the 100 level documents.

4	I would select all three options. Technology enables an in-person session to be simultaneously offered via WebEx and recorded for later use in an online, self-service platform. The recorded portion may be edited to fit the needs of the online service.
5	Self service is fine if the material is solid.
6	It might be beneficial if MISO would offer some NERC test prep for new operators coming to the industry.
7	No additional comments.
8	Blended learning is best.....Self-Service (Pre-Requisite) followed by instructor led, with small classrooms, ensuring instruction matches intended learner outcomes.
9	award NERC CEHs
10	I prefer in person and instructor led, with videos posted for reference of those that cannot attend, and later re-watching training.
11	All are good. No preference. Communication by MISO on what is being held when (and in what form) is fine - something I think MISO currently does.
12	I prefer self-service training, but I know most in my company prefer instructor-led training.
13	Allows for questions.

**Q15: For training on advanced or complex topics, I prefer training to be:**



Q15	Answer Choices	% Response	# Response
		In person & instructor-led	62.50%
Virtual instructor-led training offered via WebEx or similar	27.68%	31	
Self-service & online (e-learning modules, videos & other online materials)	9.82%	11	
TOTAL RESPONSES			112

## Q16:

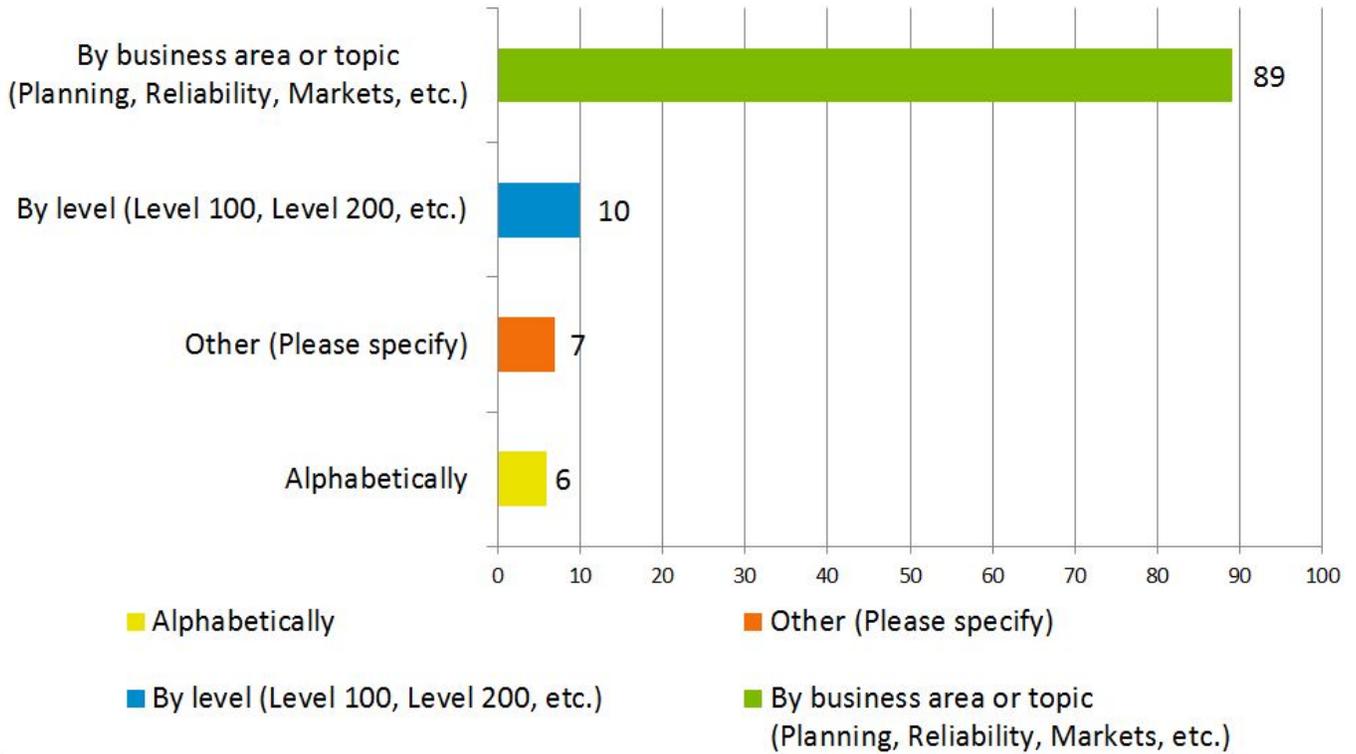
Please enter additional comments here:

Answered 10

Skipped 103

Responses	
1	same comment as above.
2	I would select all three options. Technology enables an in-person session to be simultaneously offered via WebEx and recorded for later use in an online, self-service platform. The recorded portion may be edited to fit the needs of the online service.
3	For complex topics it's helpful to be able to ask questions in a live environment.
4	No additional comments.
5	See above comment.....most performance based training should be Blended
6	award NERC CEHs
7	I prefer in person and instructor led, with videos posted for reference of those that cannot attend, and later re-watching training.
8	See above.
9	I prefer self-service training, but I know most in my company prefer instructor-led training.
10	same

**Q17: How should training be primarily organized on the MISO website?**



Q17	Answer Choices		
		% Response	# Response
	By business area or topic (Planning, Reliability, Markets, Settlements, etc.)	79.5%	89
	By Level (Level 100, Level 200, etc.)	8.9%	10
	Other (Please specify)	6.3%	7
<b>TOTAL RESPONSES</b>			<b>112</b>
<b>Other responses:</b>			
	"I don't know what this means"		
	"Nothing to suggest"		
	"Topical area first, then complexity level next (#1 then #2)"		
	"a combination of business area/topic and level"		
	"Why can't it be all 3 based on selection?"		
	"By business area or topic and then broken down by level."		
	"It can be hard to know what to search for if you're starting from the bottom. I don't know what "level" means, for example. Sometimes training covers aspects of multiple business areas/topics, so maybe being able to search by many of these topics."		

**Q18:**

Please enter additional comments here:

Answered 7  
Skipped 106

	Responses
1	...with the ability to have key words like "congestion" identify applicable training.
2	NYISO does a training week for settlements or other market users to train utilities staff on settlements, it happens once every couple of years or when there is a need. it would be great if MISO could offer a 2 or 3 day training on specific MISO issues or workshops or intro to settlements for new hires across the footprint.
3	No additional comments.
4	Training Staff must be both led and staffed by qualified and capable people, with regional or industry experience, otherwise , just continue to ignore this input as you have in the past, and you will continue to take a back seat to all other RTO/ISOs in the customer training realm.
5	It will be very valuable to have more training on MISO forecasting, resource planning and reliability.
6	Simply listing out the topics alphabetically on one screen (or two etc.) would be the simplest what to see what is available.
7	Organized by date and training material which is older an indication that the training is still relevant or applicable

**Q19:**

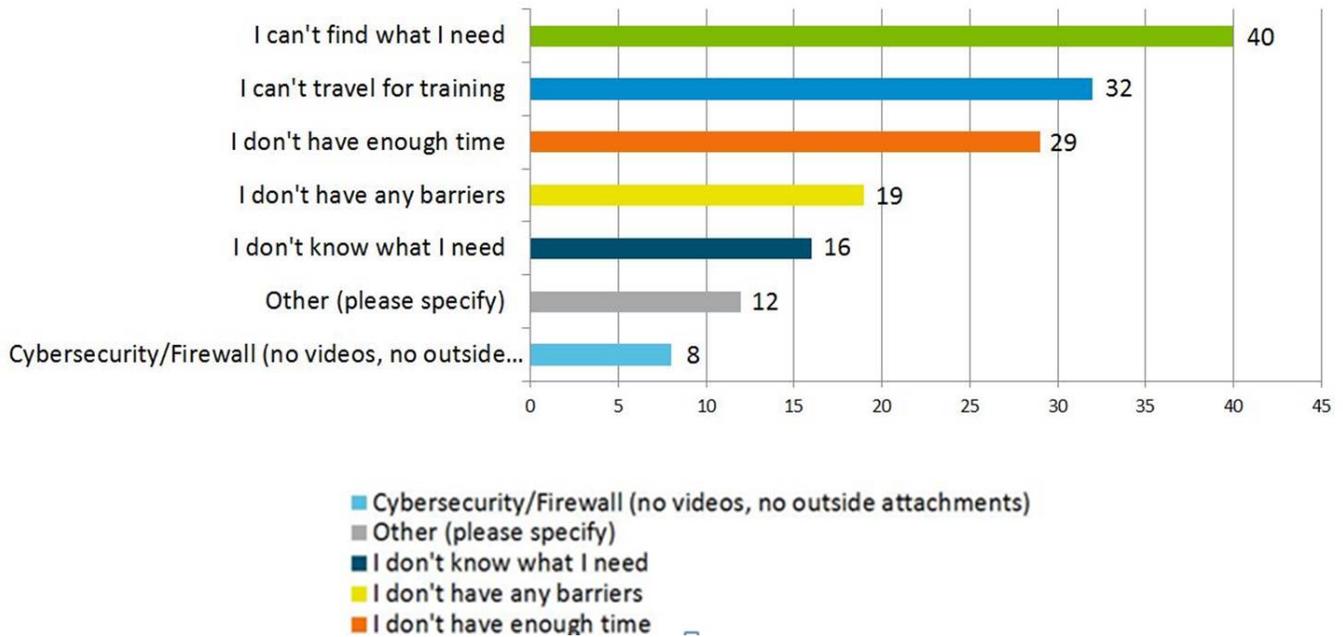
Please enter additional comments here:

Answered 20  
Skipped 93

	Responses
1	also if you have any updated power points this would be nice to check out.
2	An update CROW PowerPoint or development tool new operators could practice on.
3	PSSE Dynamics and PSSE advanced Load flow training
4	I'm interested in training about Markets and topics addressed by the Market Subcommittee
5	MISO market rules and operations
6	-resource adequacy overview and details of BPM 011 -Settlement charge codes for managers (not settlements analysts) -transmission settlements - training on the new settlement system should happen well before the cut-over date to ensure no hiccups in implementation.
7	Transmission system
8	DIR units related to Tariff and BPM
9	Transmission planning
10	I like the summer awareness trainings, which both MISO and SPP do, items for new standards or updates, could utilize a WebEx or on-line to get NERC CE for operators. We have both TO and GOP that could utilize training provided by MISO

	We need specific training on: Resource Adequacy-- how to comply with the must offer requirement. --how to comply with RA and the daily emergency max limits. how to enter de-rates into CROW in order to meet RA requirements? GADS-- how do we treat coding outage/de-rates under unique issues with our power plants? GADS-- how do we insure our GVTC is compliant with Tariff Requirements?
11	RSG 101-- what is it and how can it be minimized?
12	How transmission level storage devices will be treated.
13	See SPP and PJM Training platform outlines.....Good place to start.... No Sense inventing a wheel everyone, that everyone else already uses
14	DER Forecasting, Energy Efficiency future trends and predictions.
15	Ancillary Service Markets
	RTOE
	Curtailments
16	DCS recovery
17	OASIS transaction Screening for powerflow models
18	More details on ancillary service markets, products, and settlements.
19	RT bid process. Settlements overview. Bidding capacity. Calculating ICAP and UCAP. MISO/NERC needs from generators. How DA awards are made. +/- generating band.
20	Market movements. Tariff changes.

**Q20: What are your biggest barriers to accessing training?**



Q20	Answer Choices		
		% Response	# Response
	I can't find what I need	37.04%	40
	I can't travel for training	29.63%	32
	I don't have enough time	26.85%	29
	I don't have any barriers	17.59%	19
	I don't know what I need	14.81%	16
	Other (please specify)	11.11%	12
	Cybersecurity/Firewall (no videos, outside attachments)	7.41%	8
TOTAL RESPONSES			108
Other Responses:			
"Not necessarily training, but the schedules published on the MISO website don't seem to align with the requests that are sent out (e.g., MTEP). Different terminology is used frequently, which makes it hard to match up with our obligations."			
"Budget constraints are an issue"			
"many of the training materials are outdated and no longer accurate"			
"Budget"			
"Scheduling, often the classes are scheduled at times where it is difficult to get away"			
"Finding the time to receive training that will fit into my schedule"			
"What is needed is not offered"			
"Need more higher level (400+) level courses"			
"limited travel budget and time"			
"outside of training opportunities at Eagan office, travel is limited"			
"It would be helpful if you could search the training materials only for a specific topic"			
"Combinations of the above. Some of it is time. Other times it is trying to figure out what you need"			

**Q21:** Is there anything else you'd like us to know about your training needs? Ideas for improvements?

Answered 10  
Skipped 103

Responses	
1	more interaction in person would be great.
2	I would like to see more on how the MISO tariff is structured and administered. I am in the process of going through the tariff, and constructed a tariff outline (because there was none on the MISO website), so that I can understand how it is all linked together.

3	<p>i have looked at a lot of the training materials and many of them are outdated and no longer accurate. they need to be updated with the latest BPM changes and issues.</p> <p>i know it is difficult to make time to go through a training at work on my computer. sometimes it is a better use of my time to travel to a MISO 2 or 3 day training in Minneapolis to be able to talk with other stakeholders and learn from a community of learners and the experts. it is nice to get the questions answered in real time. it would make sense to have 2 full days of training that might pertain to a group of people and could potentially attend all of them together. RA, settlements, transmission settlements, MECT, battery storage etc.</p>
4	<p>I'm not sure I have the global view of every trainings that are available. I'm aware of the self-service trainings online.</p>
5	<p>some of our employees cannot fly due to medical issues, so having training offered at multiple site is great. There was a training conference held at CLECO this past year, which was great since it required little travel. Having training held at other utilities can be nice because you get a chance to go somewhere you may have not been and get introduced to industry professionals you haven't met.</p>
6	<p>no</p>
7	<p>More sessions on EOP (Restoration) training.</p> <p>Because of the shift schedule of operators, not everyone from my organization has been able to attend the restoration drills which are offered only twice a year.</p>
8	<p>It would be helpful to have training on major data requests sometime prior to receiving the request. For example, for the 2019 Series MISO Planning Powerflow model request this year, MOD training was provided by MISO one month prior to the due date of the request, which was very helpful. It would have been great to extend that training to include examples of how to build BLG/DEV profiles. While also discussing in detail the requirements to fulfill the data request, formatting, data verification, and best practices for building the generator profiles/building future load profiles, etc.</p>
9	<p>Send an email each month with the "training of the month" to draw more folks to the correct training pages on the MISO website. I think the dual filtering of business area and then level is ideal.</p>
10	<p>More Webinars and record them.</p> <p>Need SME to present complex topics</p>

Q22 I would like to discuss my organization's specific training needs with MISO in more detail.

Answered: 19 Skipped: 92

ANSWER CHOICES	RESPONSES	
Name	100.00%	19
Company	100.00%	19
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	100.00%	19
Phone Number	0.00%	0

## Appendix B – Compiled Training Requests by Topic

Topic	Requests	Notes
<b>Settlements</b> - UD Tolerance Band - Complex Charge Types - 5 min Settlements - PVMWP - Uplift charges - BTMG	14	Request for instructor led; Settlement Certificate
<b>MISO Markets</b> - Market Roadmap - DER Forecasting - Energy Efficiency Future Trends/Predictions - Storage Energy Resources (SER) - BTMG	14	
<b>System Planning (TAM)</b> - MTEP - Studies - Siting methodology - Futures - Economic planning process - MCPS - MTEP Study dispatch overview table & uses - MISO Forecasting - Cost Allocation - MVP	14	
<b>DA/RT ASM Markets</b> - Unit Commitment/Dispatch - RT Bid Process - Pseudo Tie Overview - LMP Mechanics - Congestion Management - DIR - Enhanced Combined Cycle - Compensate Must-Run Resource with MWP - Bidding Capacity - ASM Products - LMR/EDR	13	

<b>RT Operations</b> - RTOE Curtailments/DCS Recovery - Voltage/Frequency Response - "+/- generating band" - EOP Restoration Procedures (5) - Outage Coordination	10	
<b>Resource Adequacy</b> - Must Offer - Emergency Max limits - entering de-rates in CROW to meet RA <b>Requirements</b> - GADS coding outage/derates - GVTC Compliance with Tariff - RSG 101 - MECT - Capacity Auction - BTMG - ICAP & UCAP Calculations - Resource Planning	9	
<b>MISO Specific Tools</b> - PROMOD - CITRIX - Tara Generator Deliverability - Market Portal - MISO Website - MISO LMS	7	Manuals for tools & training should be provided months in advance before new tool is launched w/ sandbox environment. Changes to existing tools: microtrainings
<b>MISO Terms/General</b> - BPM Changes and Issues - Glossary of Terms - Acronyms - Tariff (Definitions, applicability, changes)	5	
<b>MISO 101</b>	4	In Person preferred

<b>Modeling Data Requests</b> - Powerflow Model requests - MOD Training on BLG/DEV profiles - Fulfilling a data request - Formatting - Data verification - Best practices for generator profile - Building future load profiles) - How to Model - How to obtain model data	4	
<b>Standards and Compliance</b> - MISO Requirements - NERC Requirements - Operating Procedures/Operating Guides - Coordinated Functional Registration (CFR)	4	
<b>Market Reports</b>	3	Should be descriptions of each report available on the Market Report page
<b>Transmission Settlements</b>	3	General Overview
<b>Generation Interconnection/Queue</b>	2	
<b>Asset Owner/LSE Focused training</b>	1	
<b>Demand Response</b>	1	
<b>FTR/ARR - General Overview</b>	1	Need less detailed, generalized overview
<b>M2M</b> - Flowgates - Dispatch - Settlements	1	
<b>QF Training on DA and RT markets</b> (Commitment to deliver and the tools to deviate from DA offers)	1	
<b>TOP/GOP Training</b>	1	