Electric Regulatory Compliance

How to ensure compliance with complex electric industry regulations without being bogged down by inefficiencies? Is the management of your facility fully optimized and audit-ready 24/7? If not, then read on.

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the electric industry: from humble beginnings

Although electricity has been around since Earth's origins, the ability to harness it for reliable commercial use is a relatively new phenomenon — the first electric bulb was made available in the 1870s. Once the possibilities of electricity caught on, small power stations (circa Edison and Westinghouse) were built to serve isolated communities. As the capacity of these stations expanded, they started to connect with each other... forming the basis of an interconnected system. By the 1960s, isolated power systems were a thing of the past.

Unfortunately, these interconnected systems all operated by their own rules in terms of standards, procedures, operational methods, and so on. They were connected, but the underlying system was fragile. This fragility was exposed in 1965 when a small improperly-configured component led to a massive blackout in the Northeastern U.S. and Canada, affecting 30 million people across 80,000 square miles. This 13-hour blackout was the catalyst for the creation of the North American Electric Reliability Corporation (NERC), the de facto source for regulatory standards in the electric industry.

In this whitepaper we'll look at some key challenges that electricity providers face in the highly-regulated electric utility industry. More importantly, we'll have a look at some Microsoft-based solutions and how they can help your organization address these challenges.

getting everyone on the same page

The Northeast Blackout of 1965 was a wake-up call for the burgeoning electric industry: if electricity was to be reliably delivered across North America, then its providers had to be on the same page in terms of implementation. With government backing, NERC's policies transformed into enforceable Standards that, if violated, would automatically incur high fines.

In today's world, the business of legally operating within NERC Standards poses a considerable challenge to both large & small system providers. Regulations are continually updated, enhanced, and modified to protect against the risks of our modern age, such as cybersecurity. Although there are multiple areas that electricity providers need to address, the most common topics of concern are training, audit preparation, communications, and asset management.

maintaining a skilled workforce

Employees in the electric industry need to be trained to not only do their job properly, but to also retain the internal & external accreditations required to maintain the organization's NERC compliancy. Power system operators need a broad depth of knowledge in order to maintain the integrity of complex electrical systems; in addition to external certifications, operators often need to undergo internal training in order to keep current with requisite skill-sets.

The growth of NERC, and its associated Standards, has made industry compliance a complex issue. The Standards themselves are quite comprehensive, covering everything from Resource and Demand Balancing to Nuclear Plant Interface Coordination. Voltages, interchange scheduling, critical infrastructure protection, and personnel performance, training & qualifications are all Standards that are highly regulated and subject to enforcement. In short, there is a lot of information to know. Electric facility employees must undergo internal accreditations as well as

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completing NERC's System Operator Certification Program.

This need for constant education, combined with internal & external accreditation requirements, has placed training as a primary factor in the operation of electrical systems. Managing training programs for thousands of employees can be a difficult task and is best facilitated by computer software, particularly Microsoft products. Microsoft SharePoint, coupled with Microsoft Mix, are two solutions at the vanguard of modern training programs in the electric utility industry.

training: getting into the mix

A relatively new solution that is making an impact on training programs is Microsoft Mix. Available as a PowerPoint add-in for Office 365 and Office 2013+, Mix enables users to create interactive rich media content (i.e., videos) for inclusion within PowerPoint presentations. The primary feature set in Mix is its audio & video recording capabilities along with presentation-oriented tools, such as drawing on the screen. Users can also add polls, quizzes, and interactive apps.

As expected, the default save for a new "Mix" is the cloud (office.com) with Web-based accessibility and social media sharing. Mix's features are largely focused on the needs of educators, such as quizzes and interactive polls, both of which are designed to enable teachers to engage with students.

In terms of usage in the electrical industry, the main benefits are accessibility and ease-of-use. A majority of companies already subscribe to Office 365 (or run Office 2013+) and are intimately familiar with PowerPoint. The actual usage of Mix is fairly straightforward, with a focus on drag & drop functionality and cloud integration. Mix-created interactive videos can be played back on any device without compromising usage, which is particularly useful when developing quizzes that include in-the-field technical references. Finished products can be embedded in company blogs, Websites, and/or social media for sharing.
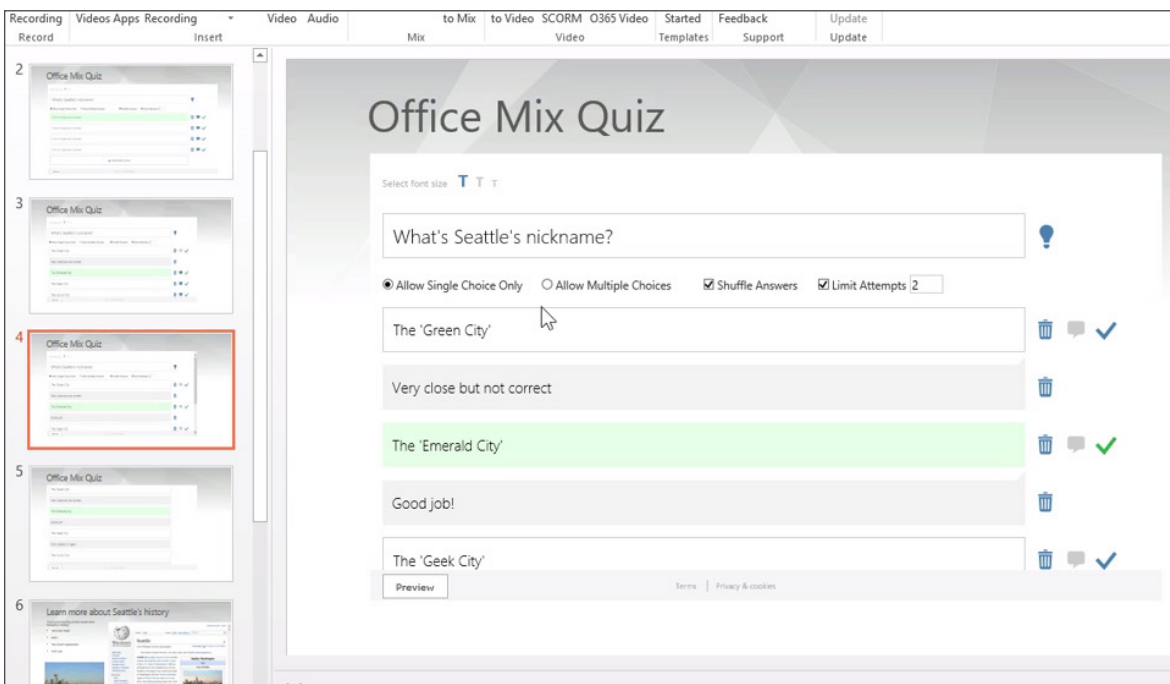
audit & training: managing communications

In addition to training, audit preparation consumes a significant amount of time for any electric service provider; this is typically manifested by using internal audits to prepare for unannounced external audits by NERC. Maintaining a constant state of audit preparedness is critical to the smooth operation of any electric service provider — not doing so would likely result in regulatory infractions coupled with significantly high fines.

Effective internal communication lies at the heart of audit preparation and successful training programs. Microsoft SharePoint, in combination with Crow Canyon's Help Desk solution, provides a user-friendly platform that excels at integrated communications, approval tracking, and knowledgebase management.

Some key features that a SharePoint-enabled Help Desk system can offer include:

- Automatically transform all e-mail communications into tickets that can be routed, tracked, and memorialized for future review and auditing;
- Configure approval processes (e.g., training programs, NERC Standard requirements) using role-based communications — ensure that sensitive messages are automatically sent to the correct recipient(s);
- Build user-friendly customizable forms to create a wide variety of templates, such as a completion checklist for a NERC certification preparation course or an asset maintenance review;
- Take control of the flow of your information with comprehensive trigger-based notifications & alerts. Use our Microsoft Outlook add-in to automatically transform your e-mails into intelligent routable tickets;
- Create a knowledgebase repository for documents, logs, communications, etc.;
- Measure, track, and analyze the entire ticket-based communications cycle. View reports on your employees, time spent performing assigned tasks, and ticket routing information. For example, a configurable report could convey exactly how much time each employee spent preparing for certification tests compared to actual certification test results;
- Create internal surveys to gain an understanding of auditing and training practices or create external surveys to understand key viewpoints from 3rd party partners.

audit preparation: data logging

Audit preparation is worthless if the process is not backed-up by a robust data logging procedure. "The proof is in the pudding," as the saying goes, and a successful audit or data request hinges on your organization's ability to quickly provide NERC-requested evidence. Crow Canyon's Help Desk system tracks, records, and saves all ticket-based communications, enabling you to quickly discover the data you need when confronted with a NERC data request.

Powerful reporting capabilities empower your organization to quickly discern who worked on specific assets, who created tasks, who approved tasks, and who are the responsible parties. These analytical tools are key to understanding and improving the flow of information in your enterprise.

keeping track of the hardware: asset management

Generators, voltage regulators, security systems, power system stabilizers, and monitoring systems... these represent a small fraction of the hardware assets typical in an electric service provider facility. Real-time information about all of these assets needs to be immediately available to Management, such as:

- Where is the asset physically located right now?;
- What is its current status in terms of operability?;
- Who is currently using it? Do they have proper permissions/clearances?;
- Fixed or disposable asset?;
- Does it depreciate?;
- Does it require maintenance? If so, how frequently?;
- What is the lifespan of the item? How is the lifespan measured: by time or usage?;
- Are the items owned or leased? If leased, what are the contract details? How are supplier details stored? Are notifications in-place when the lease/contract expires?; and so on.

Crow Canyon's Asset Management system, a Microsoft SharePoint integrated platform, is designed to answer all of these questions. The platform integrates seamlessly with the Help Desk system, enabling organizations to streamline their asset-based communications, such as maintenance work orders and service requests.

The Asset Management and Help Desk systems are designed to provide a holistic asset and communications experience for the entire organization. Asset tracking is facilitated by the use of barcoding technology, mobile communications, and—for IT assets—automatic network inventory detection. Critical asset information, such as maintenance history, purchase orders, and financial documentation, are associated with asset records for easy reference.

Like the Help Desk system, the Asset Management platform features robust reporting capabilities that convey visualizations such as asset status, usage, and maintenance requirements. Reports can be configured and customized, as needed.

conclusion

Electric service providers carry a heavy burden: millions of people depend on them to consistently provide electricity 24/7/365. The reliability of the North American electric system is due, in large part, to the operational standardizations that NERC has provided. The regulatory framework ensures that all facilities act in accordance with a common service denominator.

The effective management of an electric service facility depends on the alignment of multiple critical factors: training, audit preparation, communications, and asset management. Microsoft SharePoint, as the world's leading collaborative platform, has the power and functionality required to handle these complex tasks. Our solutions are designed from the ground-up and work seamlessly with your SharePoint and Office 365 environments. This tight integration enables your organization to address your communications & asset management needs in a familiar environment.

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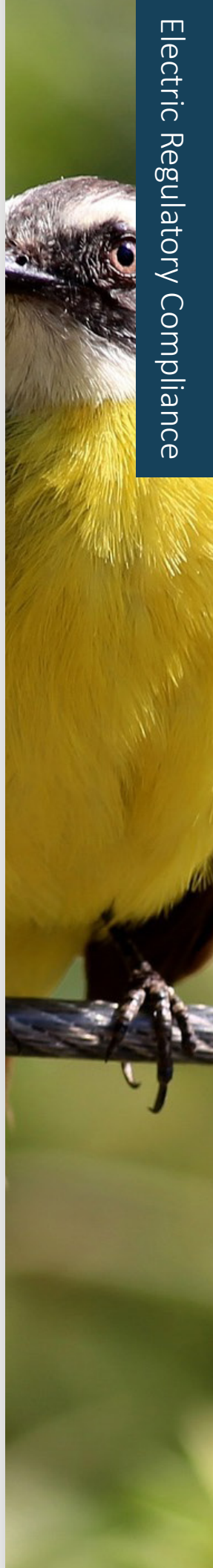
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