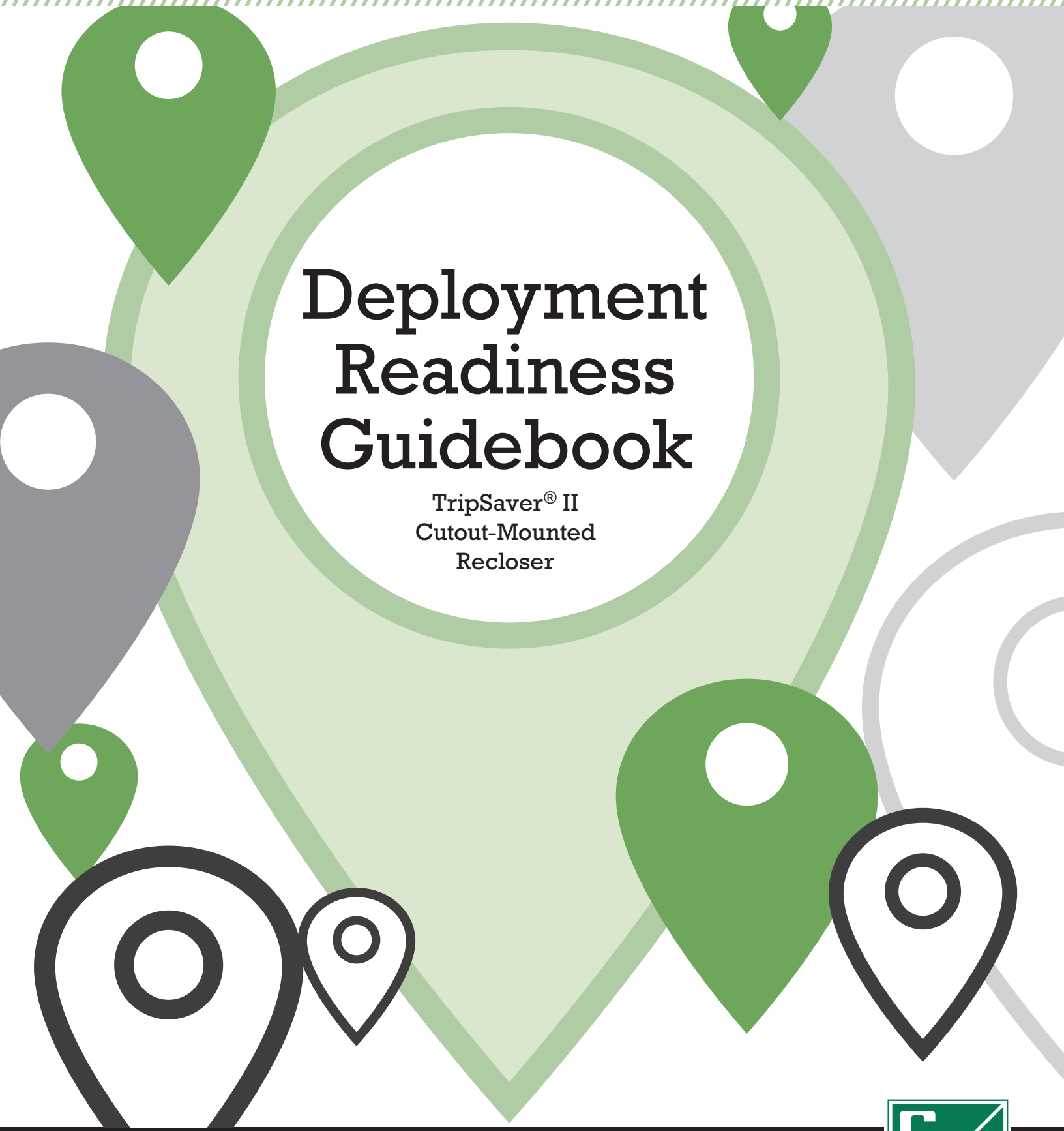
Deployment Readiness Guidebook

TripSaver® II
Cutout-Mounted
Recloser



Excellence Through Innovation

Congratulations! You've successfully run a TripSaver® II Cutout-Mounted Recloser pilot and have used the data to build a business case for widescale deployment. Now what? Installing reclosers across your system is no small feat. This guidebook will help you think through each step to ensure the process goes smoothly.

Contents

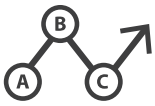
1 Your Deployment Snapshot

Every utility is different simply because its system is unique. For that reason, there's no "one-size-fits-all" approach when it comes to widescale equipment deployment. To help navigate the process, here's a typical project outline, though you may have to adapt these steps to your utility:

1. Form deployment team. A critical and often-overlooked step, forming a team of diverse, cross-departmental team members will enable you to formulate and execute a well-thought-out and researched plan.

2. Revisit protection settings. Your TripSaver II recloser pilot was a representative subset of the system. The goal of this stage is to widen out the view and estimate the maximum positive effect lateral reclosing can have on your entire system. Think forward to what your future protection strategy could be and have your coordination, protection, and control teams extend that strategy down to every lateral possible.

3. Research and analyze data. Pull together additional data sources, layering information on top of your pilot analysis, such as geographic information system (GIS) data and asset mapping. Tie these data sources to your future protection state to arrive at a recommended number of reclosers for your system.



4. Develop deployment plan. Based on your recommended number of reclosers, prioritize your feeders based on the ones that need the most improvement. Write down your plan to summarize the benefits, goals, timelines, and costs. This should include the locations where the reclosers should be installed and phases of the rollout.

5. Achieve plan endorsement. Present your plan to decision-makers and influencers within your company. Painting a vision of your system's future is critical to gain support for change throughout your organization. After receiving their approval, inform affected teams at all levels of the company, aiming for complete buy-in from all groups.

6. Establish standards and procedures. Connect with your utility's standards, operations, and procurement departments to determine how this widescale deployment will change day-to-day processes. Combing through details and lining up logistics as soon as possible primes your deployment so it runs smoothly.

7. Train team members. Train, train, and train again. This includes team members at your headquarters as well as those in regional service centers and mutual aid support. Most people need repetition of new information to turn theoretical understanding into confident action.

8. Execute plan. While your plan helped you gain approval of the project, it also is your guide throughout deployment execution. It's best to check and adjust along to the way to keep your rollout on track.

PRO TIP: Just as the process may be unique to the utility, so is the timing. Most widescale deployments typically span 2-3 years, but deployment time depends on the size of the utility.

Who Makes Up an All-Star Deployment Team?

2

Choosing the right people for deployment is a critical step and one often overlooked. Assemble a small, dedicated team that can focus on your deployment project full time—or at least most of their time. This focus eliminates other projects competing for your team members' attention and ultimately speeds up the deployment process.

Recruiting a cross-functional, diverse team ensures you will have considered multiple departments' perspectives and will be ready for the subsequent steps of pitching and executing your plan. Here are the core skill sets you should look for in your team:

The project manager. Like all big projects, defining someone to take point on coordinating team activities, staying on schedule, and demonstrating what needs to be done to achieve objectives will smooth the process to help the team run efficiently.

The technical expert. Your electrical engineers are your subject matter experts for how the TripSaver II reclosers will interact with your specific system and existing devices.

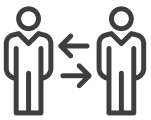
The big-picture visionary. Widescale deployment means thinking beyond how one device will affect one location on your system. Bringing in someone who thinks from a systemwide perspective can broaden your team's thinking.

The efficiency consultant. Transformative change opens opportunities to eliminate wasteful methods carried over from years of using older technologies. Some utilities have brought in process or industrial engineers to streamline business processes and operations.

The data miner. Because your plan needs to have a solid proof of concept, you require team members who can interpret data and your system to come up with new ways of looking at them and solving problems.

The number cruncher. A financially minded team member will help you determine what's a go or a no-go based on your budget and the organization's financials.

The polished communicator. Even the best comprehensive deployment plan won't move forward without the ability to capture it effectively on paper and sell the idea internally. Look for a team member who's a solid writer, can help you message your plan, and convince others.



The outside perspective. Everyone has experienced what it's like to be too close to a project and overlook the obvious. Including an expert from outside your utility can bring a set of fresh eyes and ideas to your mission.

Did you know?

S&C has a deep bench of team members who have helped utilities plan their TripSaver II recloser deployments. They can coach you on developing your plan and provide additional technical expertise.

PRO TIP: As important as it is for your team to decide what to do, it's just as important for them to decide what NOT to do. Defining a feasible and efficient deployment plan relies on determining which activities should be in and which are out of scope or are simply too expensive. Choosing what NOT to tackle will give your deployment plan credibility when you need to convince others.

3 Resetting Your Settings

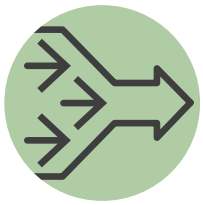
Deciding to move forward with a TripSaver II recloser deployment means you're fundamentally changing your lateral-protection strategy. The old, fuse-based protection characteristic can now be adjusted to function similar to relay or recloser styles. While this may sound like a labor-intensive overhaul, the end result typically simplifies your protection schemes. Use these three steps to guide you through the process:

Step 1.
Remind your teams how reclosers benefit customers and your reliability.

Not every utility has reclosers on their system, and while teams may have a conceptual understanding of reclosers, they may not be accustomed to planning for and operating them, especially at the lateral level. Aligning on the basics at the beginning will set everyone off on the right foot.

Step 2.
Analyze your protection settings from an unconstrained vantage point.

Your pilot should serve as a baseline to build standard protection settings. Although no feeder is identical, usually you can group them (e.g., by load, length, terrain) and develop standards for like feeders. This will help facilitate deployment across your system.



Step 3.
Simplify where you can.

Years may have gone by since you evaluated your protection settings. Use your TripSaver II recloser deployment to accommodate changes in your load and operations and simplify to the fewest number of curves used systemwide. The fewer the settings, the easier deployment and inventory management will be.

Why should you reinvent the status quo?

Although your system may operate effectively today, your protection and coordination "rules" are likely based on older technology. TripSaver II reclosers are microprocessor-based devices not influenced greatly by temperature, maintenance, or the environment. Their flexibility opens up new opportunities to improve coordination and standardize on protection speeds across your system—versus reusing curves that may be based on information that is decades old. This deployment provides an opportunity to revisit and standardize on speeds across your entire system.

Informing Your Decisions

4

Imagine no limitations exist. This is your chance to harness the systemwide benefits your pilot predicted. Ultimately, your plan will need to recommend the number of TripSaver II reclosers your system needs, so start by building a database to inform your decision. While you have proof-of-concept information from your TripSaver II recloser pilot, you can build off that baseline analysis by triangulating from three data sources:

Pilot data and business case

Your pilot data serve as the backbone of your analysis because the information shows exactly how these reclosers will mitigate faults at specific locations on your system. Go one step further and predict how you could save more truck rolls by potentially changing the devices' settings.

GIS and OMS mapping

Choosing the best locations, even if it means changing old ones, ultimately optimizes your system and improves its performance. These tools will allow you to see the big picture of areas that need TripSaver II reclosers. And sometimes the reverse is true: if a feeder is short and without many customers or outages, it may not need a TripSaver II recloser.

Financials and costs

Costs can help you determine where TripSaver II reclosers are an absolute must. First, look at the cost of labor and truck rolls to repair faults in areas with frequent outages or long travel times. Second, use the Department of Energy's ICE Calculator (**icecalculator.com**) to determine the cost of outages to customers. The impact on your customers matters greatly to your regulators.

Haven't built your TripSaver II recloser business case yet?

Check out our "How to Get the Most Out of Your Pilot" guidebook for tips.

5 Developing Deployment Phases

Especially for large utilities, a widescale TripSaver II recloser deployment will likely need to be executed in phases, typically based on priority. Where to start is determined by where you benefit the most. To help you work through this prioritization, look first at your data and your most frequent outage areas.

Rank the common issues below from 1 (greatest) to 6 (least) based on priority or pain point to your utility. Then, take a map of your system, analyze your feeders, and label each feeder with the number corresponding to the issue that best matches the feeder. By classifying your feeders by problem area, you can bucket the same-numbered feeders together and develop deployment phases around your priority rankings.

ISSUE	RANK
Higher-than-system-average fault frequency. Note especially the areas subject to temporary faults, such as lines in the way of dense foliage or heavy winds. TARGET BENEFITS: Reliability, O&M costs, safety	
Long line lengths. Longer lines mean more exposure, and more exposure means a greater likelihood faults will occur. The longer the lines, the longer it takes to patrol the line—and the costlier the truck roll. TARGET BENEFITS: Reliability, O&M costs	
Number of customers or customers per mile. Improvements in these areas will positively affect the SAIDI and SAIFI calculations because the greatest number of customers will benefit. TARGET BENEFITS: Customer satisfaction, reliability	
Critical or vocal customers. You may have certain customers who are critical loads or who vocalize their expectation for higher reliability. TARGET BENEFITS: Customer satisfaction, mitigated grid defectors	
Expensive customer outage costs. Using the Department of Energy's ICE Calculator (**icecalculator.com**) or your own internal models if you have them, you can monetize the cost of an outage. Especially with commercial and industrial customers in the mix, the cost of an outage might be greater than you think and can help justify feeder upgrades and set priorities. TARGET BENEFITS: Customer satisfaction, customer cost savings, reliability, mitigated grid defectors	
Pockets of distributed energy resources. Even a momentary outage will kick renewables offline, which can cause frustration for you and your customers. TARGET BENEFITS: Reliability, customer satisfaction, mitigated grid defectors	
Other. Write in issues unique to your grid, such as difficult terrain or other company objectives: TARGET BENEFITS: _____	

PRO TIP:

If you end up with too many islands or pockets of priority improvements, you can modify this practice by starting with the largest pocket of high-priority feeders and sweep across your system geographically—if this method is easier to manage change across your company. Or, if you have separate operating districts, it might be best to tackle one district at a time. The team members in one district can then become well-versed with the TripSaver II recloser and serve as trainers or champions for other districts.

The Key Elements of a Successful Plan

6

After you've formulated your plan, it's time to put it down on paper. It's essential to accurately convey goals, logistics, and most importantly, the benefits to the company in writing. Even if you developed the best widescale deployment plan in history, your ideas can get stuck in your mind or lost in translation if you don't develop a well-written plan you can present to your company's decision-makers.

While you should demonstrate data-backed planning, keep in mind that longer isn't always better. Creating a clear and concise document will make your plan easily digestible and will be an easier message for others to retell and spread within your company. If you don't know where to start, here's a brief template to outline your plan. Check the "Covered" box to be sure you've addressed critical information. Use this checklist to confirm you're ready to move forward with the pilot:

OUTLINE	COVERED
1. Benefits. From the business case you developed in your pilot, you should be able to extrapolate from this data the systemwide reliability improvements and O&M savings from a widescale deployment. This is critical for leaders at your company who are focused on metrics and the bottom line.	
Your plan explains the reliability or O&M challenges your company faces today.	
Your plan outlines predicted system reliability improvements and target metrics.	
Your plan outlines predicted O&M savings and target metrics.	
Your plan outlines how the TripSaver II reclosers will benefit your customers in reduced outages, outage minutes, or costs.	
2. Goals and Measurement. Part of gaining support for a plan is demonstrating ownership of the project and a commitment to achieving results. This shows accountability for a project of this size and acknowledgment that decision-makers will be questioned on the ROI of the deployment.	
Your plan defines end results for your project.	
Your plan explains how you will track success.	
Your plan shows accountability for who will be measuring key performance indicators.	
Your plan addresses training and how you will facilitate change in the organization.	
3. Project Timeline and Logistics. As important as it was for your deployment team to define the timing and phases of your project, decision-makers also need visibility to the parts of the system that will be affected and when. Additionally, defining an agreed-upon end date becomes your company's commitment to accomplish the benefits proven in the TripSaver II recloser pilot.	
Your plan recommends the total number of reclosers your system needs.	
Your plan has a project beginning and end date.	
Your plan includes key milestones throughout the project life cycle.	
Your plan shows how many phases your deployment will take and how long they will last.	
Your plan explains why you prioritized project phases as you did.	
Your plan explains logistics and key changes in teams' practices.	
4. Financials. Arguably one of the most scrutinized parts of your plan, showing you know your numbers confirms you developed a solid plan and have considered the financial implications to the company throughout the process.	
Your plan calculates the cost of the total number of reclosers you need.	
Your plan calculates the cost of labor for your team members working on each phase.	
Your plan calculates the cost of any outside labor you may need to execute the plan.	
Your plan shows how you can divide the entire cost into installments according to the phases in your installation plan.	
Your plan concludes by reminding decision-makers of the value of the project and how quickly they can recoup the costs.	

PRO TIP:

Calculate how long big tasks will take. Then, work backward from the project end date to plot out where milestones should fall.

PRO TIP:

There is no universal formula for every utility to determine how many phases are needed or how long the total deployment will take, but the goal is to balance the number of reclosers, labor hours (yours and supplemental external teams), and your budget.

Now what? Share your draft with peers and critics who will provide valuable feedback. Be open to changes and modifications based on the insights you gain from their input.

7 Who Do You Need to Convince for Scaling Deployment?

Managing change is not for the timid, and every team member within your company has different motivations and potential concerns. Widescale TripSaver II recloser deployment will be easier if you achieve buy-in across the company as soon as possible. Here are a few individuals and groups you will likely need to convince and their common hesitations:

CEO

- **Role:** Consider long-term strategies for the company and approve decisions in support of them
- **Motivation:** Improve shareholder value, customer service, and brand reputation, as well as build culture of productivity, safety, and continuous improvement
- **Hesitation:** Is a new technology worth the risk? Will this disrupt our business model?
- **Persuasion:** Competitive utilities are recognized for embracing new technologies. TripSaver II reclosers are proven to increase reliability and decrease O&M expenses, which makes your shareholders happy.

CHIEF FINANCIAL OFFICER

- **Role:** Manage finances
- **Motivation:** Maximize revenue and minimize expenses
- **Hesitation:** Will this project be too expensive? Are there better ways to spend this money?
- **Persuasion:** These distribution projects are small in comparison to other major capital projects, yet payback is generally much quicker. The data extracted from the pilot provide a sound financial case for long-term O&M savings and show that every day of delay has real costs to the company.

OPERATIONS

- **Role:** Operate system, develop work procedures, and ensure customers stay powered up safely and reliably
- **Motivation:** Maximize uptime and operational efficiency and minimize outage restoration time
- **Hesitation:** Will this mean an exhausting amount of time training teams on a new device requiring comprehensive operational understanding?
- **Persuasion:** Time and training invested up front will mitigate issues and headaches in the long run. S&C can help conduct training sessions, build operational understanding, and help create standards documentation. Fewer truck rolls means fewer times your crews are exposed to risk.

ENGINEERING / RELAY TECHNICIANS

- **Role:** Analyze data and determine methods for improving system reliability and operational efficiency
- **Motivation:** Design coordination of protection devices to reach reliability-improvement goals
- **Hesitation:** Will these reclosers really work? Will they coordinate with existing system devices? Are settings difficult to apply? How will I convince others at my company?
- **Persuasion:** Industry testing and pilot data will illuminate future benefits. You can determine settings so the reclosers can be placed on any lateral and coordinate with devices already on your system. S&C can help or train teams on setting and device configuration.

LINE CREWS

- **Role:** Install devices and operate, maintain, and repair grid, often during off-hours with limited support for questions
- **Motivation:** Operate and repair faults on the grid safely, using equipment they're confident operating
- **Hesitation:** Will this be a new and complicated device to learn and remember? Will it be too heavy and difficult to operate? Will this automated device take away my overtime pay?
- **Persuasion:** Reclosing is a technology you've likely learned about at some point, and these reclosers swing open just like a fuse—but they're safer because they do not need to be handled to reset. TripSaver II reclosers are roughly 24 pounds—heavier than a cutout but not unmanageable, and rarely need removal. The reclosers allow for repurposing wasteful driving time with more productive and satisfying work.

Establishing Standards and Practices

8

Many utilities make the mistake of beginning a widescale deployment with the standards team without realizing the importance of formulating a well-researched plan and achieving endorsement at all levels of the company. They end up force-fitting deployment with only a few standards in place, only to run up against logistical issues later.

While your standards and operations teams are well-versed in specifying and customizing new equipment for your system, think through each phase of the TripSaver II recloser commissioning journey to make sure you're not overlooking small details that can turn into big headaches later:

ARRIVAL TO STORAGE

Many utilities prefer to store incoming inventory outdoors to save warehousing costs and space, but the TripSaver II reclosers' packaging is meant to protect during transport and does not hold up well outdoors. It's best to store the reclosers indoors away from weather and moisture until they are ready to be programmed and commissioned for years of service on the line.

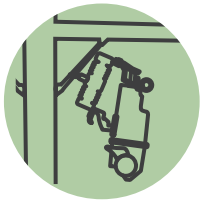
STORAGE TO SETTINGS

To configure TripSaver II reclosers, you can likely repurpose procedures for similar devices such as line controls (e.g., regulators, capacitors, reclosers) or relays. Once settings are loaded, consider placing a temporary tag or other label to help identify the proper location for each recloser to coincide with the settings. Then, document your settings in your operations technology systems and provide easily accessible reference materials to your teams. Word-of-mouth explanations and tribal knowledge about specific location settings introduces risk for variation in your teams' practices, especially over the long term. Appoint an owner of these settings and their documentation requirements to account for team turnover and retirements.

SETTINGS TO POLE

Reclosers configured for specific locations on specific feeders and physically tagged with their curve settings will help line crews select the correct reclosers for installation and replacement. Consider how the devices will be stored on your trucks (e.g., crates, hooks) and how many should be on each truck.

ON THE POLE



Include reclosers' serial numbers, settings, and ratings on your system maps and models. This will make it easier to identify specific units for servicing, monitoring, and for collecting metrics to show how your devices are performing. Serial number records also help locate reclosers for upgrades and enhancements.

9 Options for Managing Inventory

Managing inventory is an intrinsic task for any utility. But what you may not have expected is that TripSaver II reclosers can dramatically reduce common inventory concerns. Unlike hydraulic reclosers, electronic reclosers, and other alternatives that require extra space and unique SKUs for accompanying parts (e.g., controls, cables), TripSaver II reclosers are a complete, self-contained package. If you followed the recommendation to simplify and standardize on fewer curves for your system, you'll need to keep fewer devices on hand. All in all, that makes for more space in your warehouse and less time spent juggling outgoing and incoming inventory.

Although TripSaver II devices enable you to reduce the sheer volume of devices you need in stock, you'll still need to determine, and potentially simplify, your inventory strategy for the devices you do need to have in reserve. Solidify your approach well in advance of the first shipment, which will save you time and money:

MANAGED INVENTORY (WAREHOUSING)	JUST-IN-TIME DELIVERY
Spare reclosers on hand when you need them.	Reclosers sent to you when you need them.
PROS: Ready access to spare reclosers at your facility	**PROS:** No cost of warehousing
CONS: Carrying costs tied to paying for the space housing the inventory	**CONS:** Requires oversight to manage inventory that's continually in flux, which risks delays in receiving resupply
Questions to consider: • Have we secured space in our warehouses for these reclosers? • Have we assigned SKUs/stock codes to these reclosers? • Do our SKUs/stock codes account for future device variations we may purchase? • Will we be able to turn over inventory frequently enough?	**Questions to consider:** • Have we built this service into our contract? • Have we developed demand forecasting to predict when we will need shipments? • Have we outlined our ordering process so we're not trying to figure it out when the need is urgent?

PRO TIP:

Carrying costs, or holding and storing your inventory, underscore the urgency of installing your TripSaver II reclosers as soon as they're delivered. Otherwise, you're paying an unnecessary cost of having your reclosers sitting around in addition to what you paid for the reclosers themselves.

Can't decide?

You can combine both strategies, but be sure you have addressed all considerations for each approach.

What happens if you don't have a TripSaver II recloser inventory?

If there's an outage or if something happens to the recloser, you can temporarily replace it with a standard fuse barrel. When your replacement TripSaver II recloser arrives, you'll have to revisit the site and potentially take an outage to remove the fuse barrel—doubling your repair costs and customer interruptions for a single issue.

Training Best Practices

10

Recognize that implementing widescale deployment affects a number of teams within your utility and introducing new devices can change their day-to-day tasks. Providing robust training is critical to ensuring your teams know how to work with the TripSaver II reclosers. Keep these overarching training best practices in mind for developing a comprehensive training program at your utility:

Keep it simple.

It may be tempting to dive into the details of a product's functionality, but especially as teams are beginning to learn about a new device, focus only on the most critical information first and explain it in simple and relatable terminology. You can always provide additional details once teams have grasped the big concepts and their new responsibilities.

Keep it short.

Even the most engaged team members have limits to their attention spans and the amount of information they can absorb in one sitting. Break up a curriculum by themes, provide frequent breaks, and incorporate variations in teaching methods and activities.

Make it tailored.

There are many facets to every product, but not all topics apply to every team. It is better to divide groups and tailor applicable information to the applicable group. Otherwise, you might flood your teams with too much irrelevant information.

Make it cyclical.

Don't assume every team member who leaves a training class will be able to commit everything taught to them to memory. Set up your teams for widescale deployment success by scheduling routine, short refresher courses.

11 The Stages of a Solid Training Program

Training is more than a one-time classroom course. See where you are in the maturity of your training program by placing an "X" in the "We're Here" boxes. If you have not checked some of these stages, these are the gaps in your training program you should work on filling.

STAGE ONE

WE'RE HERE

STAGE TWO

WE'RE HERE

STAGE THREE

WE'RE HERE

STAGE FOUR

WE'RE HERE

STAGE FIVE

WE'RE HERE

STAGE SIX

WE'RE HERE

HOST INITIAL OVERVIEW TRAINING AS SOON AS YOU DECIDE TO PURCHASE TRIPSAVER II RECLOSERS.

WHY? The sooner groups become familiar with the devices, the easier rollout will become. Early introduction means teams have a basic understanding even before the devices arrive onsite and will be aware of the installation timeline.

WHAT SHOULD IT INVOLVE? A classroom overview course, hands-on operation for line crews, and settings programming and event-log analysis for relay techs and engineers

HOLD AN IN-DEPTH TRAINING SESSION WHEN THE RECLOSERS ARE DELIVERED TO YOUR MAIN FACILITY.

WHY? By the time the reclosers arrive, time may have elapsed since the first overview training. Time device delivery with an in-depth, comprehensive course ranging from installation to operation.

WHAT SHOULD IT INVOLVE? A comprehensive course with a focus on installation, hands-on operation for line crews, and settings programming and event-log analysis for relay techs and engineers

PRO TIP:

Especially for in-depth classes, it's ideal to be able to bring in an actual TripSaver II recloser and hang it in a training yard or even on warehouse shelving (safely). It's even better to run cables and energize the device so teams can experience how it operates in the field.

TRAVEL TO ALL SERVICE CENTERS IN YOUR TERRITORY TO CONDUCT AN OVERVIEW.

WHY? Conducting training at the utility's main location only covers a portion of your workforce. Visit all your service centers to ensure everyone has been trained adequately. You can also use this time to assess stocking, logistics, equipping service vehicles, and other needs.

WHAT SHOULD IT INVOLVE? A comprehensive course with a focus on installation, hands-on operation for line crews, and settings programming and event log analysis for relay techs and engineers

SCHEDULE REFRESHER COURSES EVERY 6-12 MONTHS.

WHY? Refresher training sessions not only keep information fresh for all crews, but it accounts for retirements and turnover within the company, as well as TripSaver II recloser feature upgrades. Most utilities conduct their own continuing education classes, so you can schedule these refresher courses in conjunction with existing classes.

WHAT SHOULD IT INVOLVE? A video refresher, tips and tricks, and a Q&A session

PLANT RESOURCES FOR IN-THE-MOMENT REFERENCE.

WHY? As with learning anything new, it's not uncommon to understand in the classroom, but then second-guess in the field. Provide or inform your teams of in-the-moment resources they can access independently, especially in outage scenarios, severe weather, and other emergencies.

WHAT SHOULD IT INVOLVE? Easy-to-access resources, such as S&C's training (**sandc.com/en/videos**)

Did you know?

S&C can conduct or co-conduct your training courses.

BUILD A ROBUST TRAINING PROGRAM FOR NEW HIRES.

WHY? New hires need the same comprehensive training you gave your teams when the TripSaver II reclosers were first installed.

WHAT SHOULD IT INVOLVE? A comprehensive classroom overview course, hands-on operation for line crews, and hands-on settings practice with relay techs and engineers

Mitigating Misconceptions: True or False?

12

Many teams have misconceptions about TripSaver II reclosers, mostly due to older, legacy technologies that breed them. Because TripSaver II reclosers are a different, more modern technology, you need to reframe how your teams approach new devices such as these. Here are a few common misconceptions and how to dispel them:

TRUE.

TripSaver II reclosers are safer to place in more urban or grassy areas than fuses.

Unlike fuses that can expel gases or metal components from fuse links when they interrupt faults, TripSaver II reclosers use vacuum interrupters, which eliminate expulsions and make them safer to place in densely populated areas, in grassy or lush terrains, and even near working line crews.

FALSE.

TripSaver II reclosers might be locked out, even when they appear closed.

TripSaver II reclosers' unique drop-out feature means the devices are ONLY open when they're visibly hanging open. Other reclosers indicate open conditions with handles or semaphores, which can be unreliable. With TripSaver II reclosers, there are no exceptions or interpretation: open is open, and closed is closed.

TRUE.

Installing TripSaver II reclosers gives you a chance to declutter your poles.

Your construction practices can change with newer technologies such as TripSaver II reclosers. For example, oil reclosing technologies need maintenance and, therefore, usually require bypass switches on the same pole that aren't needed for TripSaver II reclosers. Think through how more modern technologies can influence where you place arresters, clearances, cluster-mounting brackets, and more to simplify construction.

FALSE.

Blank displays on TripSaver II reclosers are a problem.

TripSaver II reclosers are powered by load current and don't rely on batteries to protect the system. To conserve energy, the reclosers will power down their display when load current it low. However, if there's a fault, the displays will wake from hibernation while the device protects your system.

13

How Can You Offload Tasks from Your Team?

Every utility deals with the reality of competing projects and unplanned urgencies, but you shouldn't have to sacrifice your grid-modernization initiatives for other, often-unexpected priorities. You can outsource some installation tasks to quicken your TripSaver II recloser installation and free up your teams' time.

Coordination studies

Although you have your own talented engineers, qualified external teams can step in to determine the settings you'll need for your TripSaver II reclosers. Some major utilities have found they only need two different configuration options to cover all applications on their system, which reduces confusion in the field and the amount of inventory they need to keep.

PRO TIP:
Determining the correct TripSaver II recloser settings is critical to operational success. If your teams are crunched for time, this should be where you seek support from external resources to ensure thorough analysis. Proper planning saves time and money in the long run.

Device configuration

After you've determined your settings, these need to be configured into your reclosers. You can contract out this relatively straightforward task, which saves you time and allows your teams to work on other projects.

Did you know?

S&C can preconfigure your reclosers at a Regional Service Center so they're ready to install when delivered.

This shortens your installation timeline and reduces the carrying costs compared to holding reclosers in your warehouse while your teams configure them.

Training

Proper, comprehensive training has proven to reduce service calls by 50%. While you may be accustomed to running training courses for your teams, it still takes time to prepare a curriculum for a new device and coordinate classes. Others who have a knack for teaching can plan and train (or co-train) for you.

Installation

The installation phase requires dedicated time from your line crews, and extra sets of hands can help quicken the process. Or, if your installation plan is phased over time, you may want extra teams to step in for the short-term, particularly during seasons that may be busier for your utility.

Did you know?

S&C has all these services in-house and is ready to help you prepare and execute your installation plan. As the manufacturer of the reclosers, S&C knows the ins and outs of the product best.

Common Missteps and Mistakes

14

In hindsight, mistakes often seem so avoidable or the result of a simple oversight. Beware of these common issues so you can avoid them:

Not assembling a full-time team for the project

Many utilities approach installation as a part-time project, but because widescale deployment may span years, part-time team members can easily be pulled in other directions or be reassigned to other projects. Compiling a full-time team with representatives from departments interacting with TripSaver II reclosers ensures installation will move forward steadily.

Waiting to engage line crews

If you don't gain early buy-in from line crews, device deployment will become challenging. Start involving line crews in conversations and in training sessions as soon as you decide to deploy the reclosers—or earlier.

Breezing over settings

If the TripSaver II reclosers are installed with improper settings, they won't work as designed and will cause operational issues for your teams. It is critical to take the time to test and review settings thoroughly to avoid later issues.

Not thoroughly educating emergency crews

Crews who come to aid emergency-restoration efforts after major storms may be unfamiliar with TripSaver II reclosers. Be sure you provide thorough training on reclosers they might be unaccustomed to so they know how to work on them in the field.

Did you know?

S&C's Regional Service Centers can provide mutual-aid support for storm or disaster restoration.

Forgetting to keep your stakeholders informed

You worked hard to gain approval from decision-makers, some of whom are ultimately accountable for your utility's performance and business health. Reporting to or meeting with them routinely mitigates potential communications issues and keeps them as deployment advocates.

15 Deployment Readiness Self-Assessment

There are many considerations and steps in a widescale device deployment, and even the most experienced teams can overlook details that can cause potential issues down the line. Take this self-assessment to ensure you've covered the basics for your TripSaver II recloser deployment. If you place checkmarks in the "Work on It" column, you have questions you need to answer before moving forward.

WORK ON IT	DEPLOYMENT READINESS SELF-ASSESSMENT	COMPLETED
	STEP 1: FORM A DEPLOYMENT TEAM	
	You've formed a cross-functional team with varying skill sets.	
	Your team is dedicated full time to the deployment project.	
	You've considered whether you need outside support.	
	STEP 2: REVISIT YOUR SETTINGS	
	You've widened your view to consider every place a TripSaver II recloser could go.	
	You've considered what your future protection strategies could be.	
	STEP 3: RESEARCH AND ANALYZE DATA	
	You've gathered multiple data sources to analyze as a whole.	
	You've determined the number of reclosers you'd recommend for your system.	
	STEP 4: DEVELOP DEPLOYMENT PLAN	
	You've prioritized feeders and determined phases for your deployment.	
	You've written a clear, concise plan to present to decision-makers.	
	STEP 5: ACHIEVE PLAN ENDORSEMENT	
	Your leadership understands the reliability improvements and O&M savings resulting from TripSaver II reclosers.	
	You have informed every team that will be involved with TripSaver II reclosers about the widescale deployment.	
	You have identified champions for teams that seem hesitant about device adoption.	
	You have secured the budget for the duration of the rollout.	
	You have divided your budget according to installation phases that may carry over into future years.	
	STEP 6: ESTABLISH STANDARDS AND PROCEDURES	
	You have determined who owns the settings and where they are stored.	
	You have determined how you will handle inventory.	
	You have outfitted your bucket trucks to securely store the number of reclosers you need and their operational apparatus.	
	You've identified needed ancillary items (e.g., tap leads, cutouts, brackets).	
	STEP 7: TRAIN TEAM MEMBERS	
	You have trained all team members at your main facility and regional service centers.	
	You have scheduled refresher courses for your teams.	
	You have created quick reference guides and other supplemental educational materials.	
	STEP 8: EXECUTE PLAN	
	You have assigned team members for the breadth of installation tasks.	
	You have determined whether you need preparation and installation support from external resources.	
	You have scheduled installation and team member workloads around predictably difficult seasons.	
	You have established the requirements for field device data and have a plan for how to collect the information.	
	You have scheduled routine data analysis to evaluate the performance of your reclosers.	

PRO TIP:
Especially if your utility is large, it's likely your TripSaver II recloser deployment will need to be conducted in phases or span across years. Divide the whole budget into installments according to the phases in your installation plan.

Remember: widescale deployment is the first step toward sustainable, repeatable reliability performance.

You extrapolated the findings from your pilot, formed a deployment plan, and calculated the long-term benefits to your entire system, crews, and company. Yet these are the *minimum* benefits you'll experience. Every day that goes by is one more day your system ages—and most systems are aging faster than utilities can upgrade them. Grid-modernization investments represent a race today against declining infrastructure and the reliability performance it threatens to bring down with it.

If you're sensing that urgency or have the forethought to plan for the challenges that will inevitably come, contact us with questions or for support. Widescale deployment may seem intimidating or complicated to you, but we've already helped hundreds of utilities who have come before you. Even though it may be new to you, it's not to us.

And we'll be here every step of the way.

Tackle Your TripSaver® II Recloser Deployment

at **sandc.com/tripsaver**

461-4502 • *November 19, 2018*