

Project construction safety in utility-scale solar

Safety | Construction trades are among the most dangerous, and solar is no exception. Matthew Skidmore of CS Energy explains why safety is paramount for solar project developers, project owners, financiers and EPCs

Construction trades rank in the top 20 most dangerous jobs in the United States [1]. Construction safety on solar project sites is an important underpinning of the project's success for all stakeholders, from solar project developers, project owners, financiers and engineering, procurement and construction firms (EPCs), to the subcontractors and labour force that execute field work. As the solar industry grows and advances, so does attention to the safety of the workers building these immense power generation giants.

A solar EPC company's safety record plays an undeniable role in the success of the company. The gravitas of a strong safety record builds reputations that enable companies to grow and prosper. Having a positive safety record is a qualification factor in many project bidding processes and can open the doors to opportunities not available to lesser ranked competitors. A strong safety record impacts a solar project's bottom line by reducing liabilities and insurance claims which ultimately increases profitability for all stakeholders. It also means a lower experience modification rate (EMR) that translates to a discounted insurance premium. A safety record is an important factor in solar project financing as stakeholders seek to reduce construction risks. A culture of safety enhances the welfare of employees, supports recruitment and contributes to the growth of the organisation.

Accidents and injuries can weigh on companies' track records in addition to workers' compensation claims and lawsuits that can linger long term.

Top five best practices

As safety standards for solar construction evolve to meet industry demands, it is crucial that we establish consistent, sustainable, long-term safety programmes. Here, we share our top five best practices for safety:



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1. Make training a top priority

Safety training is our number one priority. A robust training programme with a dedicated budget is worth the investment. That investment is directly related to the success of a company. Ensuring safety means that staff understand and follow company protocols. They have the knowledge to use company resources properly and to execute job directives and activities effectively. Training is also a factor in employee retention. In a recent survey of 10,000 workers conducted by Price Waterhouse Cooper, 35% of those surveyed believe in the value of training and development programmes and consider them an important factor in employment [2].

The first day that employees and subcontractors join CS Energy, they attend a training programme, which includes a site safety orientation and is followed with monthly

Safety is as much of a concern on solar project sites as any other construction site

educational sessions and regular online trainings. Additionally, the team is able to leverage the experience and resources of the safety team, who spend 75% of their time in the field executing trainings and managing safety-related activities.

CS Energy continuously improves its training programme through the regular reports that the Safety Department receives. After analysing the data, the Safety Department identifies training gaps and is able to close those gaps by further utilising the various educational channels already in place.

CS Energy also integrates seasoned senior-level managers into every team. As a valuable resource and training asset for team members, the team leaders provide beneficial coaching to all employees. Their knowledge and experience keep projects on track and provide safeguards for lesser experienced staff.

Benefits of a strong safety record

1. Ensures that everyone goes home to their families at the end of the day
2. Supports the growth of the company through employee welfare and enhanced recruitment
3. Opens the door to project bidding opportunities
4. Reduces liabilities and insurance premiums
5. Is a factor in solar project financing

2. Actively support a company culture of safety

To effectively maintain a culture of safety, safety needs to be a top priority of the executive leadership team driven by supportive actions. The Safety Department should report to top level management and safety policies should flow back through the entire organisation. Our executive manage-

ment team supports the Safety Department by participating in activities centered around the programme. We regularly visit active sites, participate in safety meetings and site audits, and quickly respond to all reported safety issues.

CS Energy's Safety Department is staffed by experienced and credentialed professionals in the safety field who report directly to the CEO. The Safety Department manages a full programme with regular meetings across the organisation to ensure consistency. The safety team also leads a monthly cross-departmental committee to discuss the programme and evaluate its effectiveness.

A culture of safety is driven by a programme of proactive and well-planned and executed activities, which focuses on leading indicators to consistently keep safety in the foreground and a priority for all employees.

Active support of a culture of safety means the status quo is never enough; we must always be looking for improvements. We consistently evaluate and adapt our programme to keep it fresh and fight complacency. Improvements and updates continuously engage and challenge the staff.

As an example of a direct result from the review and improvement our safety programme, CS Energy has implemented an above industry standard with regard to pre-commissioning procedures for solar systems. Prior to electrical commissioning of a project, we require live testing using the best and latest technology to ensure polarity as well as the integrity of connections, terminations, wiring and the system. This process remedies issues ahead of time, minimising the risk of failure in combiner boxes, inverters and medium voltage equipment. Wiring issues can cause fires, arc-flashing or other extensive damage. By implementing this additional safety procedure, we've created a safer environment that can literally save lives.

3. Develop a consistent, standardised safety programme with regular reviews

Having a safety programme is number one, but the best practice piece is to regularly review, assess and update the programme. This is how companies identify new risks and deviations of previously documented risks.

Our safety programme promotes daily communication with field teams by sharing information, circulating daily reporting and capturing those findings in dashboard reports. Regular feedback is shared with a cross-departmental committee and the executive management team. Action items

from these reports can result in new or updated hazard reports, alerts to the field, new procedures and/or other activities designed to improve the safety of staff.

Standardising the practices of the safety programme across your organisation and your projects ensures that employees have the same experience – no matter which project they are working on or what locations they are working in.

Regular reviews drive a safer environment in the field. For example, after analysing reports over several years, our safety team identified a larger percentage of slips and falls happening in the early morning after winter storms when temperatures were lower because of the presence of ice on sites. We provided cleats for our teams working in those areas during those timeframes and significantly reduced slips, trips and falls.

4. Incorporate safety awareness with technology

With today's technology, it is easier than ever to quickly distribute critical information across organisations. It is monumental that we can reach in-the-field personnel instantly with sophisticated reports and images that better enable clear communication.

Thanks to devices such as tablets and smartphones, we can now accomplish portions of our work faster and ensure that employees have the right information available to them when they need it. Technology enables project managers and field staff to receive regular email safety reports, review and post information to their own team web pages, and access libraries of information online. Through technological advances, employees can see issues other teams have experienced and use lessons learned in real-time. They can post happenings on site and keep their team members looped in. They can more rapidly gain information on changing conditions that may affect their daily activities and act accordingly.

For example, our safety manager used technology to convert a tedious compliance process into a fast and easy activity. Field staff are required to complete a report at the beginning of any new onsite activity. There is a significant amount of paperwork and time needed to meet this requirement, not to mention the lag in getting this info back to our offices to ensure compliance. Now, employees scan a bar code that instantly provides them with the necessary document. The form has now been streamlined with a simple set of questions

staff can easily complete and submit with the touch of a button. It is electronically sent and compiled with daily data and posted to a dashboard report available for the safety manager's review. This now simplified process more readily delivers timely information that is utilised to drive future improvements that safeguard our staff.

5. Engage subcontractors and drive safety through their organisations

While CS Energy itself performs a portion of our work, we rely on subcontractors to provide regional expertise and deliver a level of work that meets our quality and safety requirements. This begins with selecting the right subcontractors who have prioritised safety in their businesses. As a part of the diligence process, we review their safety records and their safety personnel. Active participation in our safety programme is required of them under our contract. From day one, we immerse subcontractors in our safety programme through orientation, continuing education and site-specific safety plans that meet CS Energy standards for every project. We work for buy-in and then audit for enforcement and compliance. This process further enables the standardisation of our safety programme and drives our safety-consciousness into the subcontractors' organisation.

Final thoughts

Site safety is not a reactive thing; it is a proactive thing – you want to manage the risk out of activities before they occur.

One of CS Energy's differentiators is that it has a larger on-site field presence than its competitors. This is an added expense; however, safety issues don't happen behind a computer screen. They happen in the field. This is how we proactively manage risk and, ultimately, that reduces cost. ■

References

- [1] <https://www.usatoday.com/story/money/2019/01/08/most-dangerous-jobs-us-where-fatal-injuries-happen-most-often/38832907/>
- [2] <https://www.pwc.com/gx/en/services/people-organisation/publications/workforce-of-the-future.html>

Author

Matthew Skidmore, CEO of CS Energy, has led the company's solar efforts since 2010. He spearheads operational improvements to drive productivity while reducing costs. With a track record of recruiting and retaining top talent, and the ability to discern and nurture strategic relationships into a reliable, repeat customer base, Mr. Skidmore has advanced the organisation into a reputable, nationally recognised solar development and EPC firm. He has a BS in Civil Engineering from Bucknell University in Pennsylvania.

