

# The Invenergy Services Blade Campaign

“Innovate in Everything” is something of a motto at Invenergy Services, and it extends to how we take care of our blades. As a wind O&M service provider for well over a decade, Invenergy Services has extensive knowledge & experience regarding blade maintenance and repair.

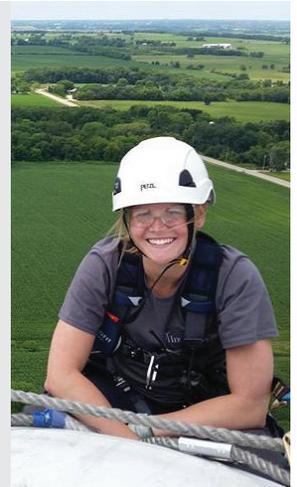
Invenergy Services operates more than 2,700 wind turbines across America, and therefore are responsible for the maintenance & repair of over 8,100 blades. Here’s what our experience has shown:

- Minor cracks and damages can intensify quickly if left unaddressed.
- Blade erosion can easily go undetected if not regularly inspected and can be costly to repair.
- Investments in proper blade maintenance and repair leads to increased availability and production as well as decreased, long term maintenance costs.

With an expanding fleet, the Invenergy Services Blade Campaign keeps turbines running and minimizes long-term costs and revenue losses through proactive blade maintenance and repair.

**“Improved data collection and analysis has allowed Invenergy Services to develop a greater understanding of repair expectations & associated costs to better plan for the future.”**

*Katelyn Reynolds*  
Senior Mechanical Engineer, Operations Engineering



The campaign is not just for projects Invenergy owns, it also includes projects owned by other companies that are making Invenergy Services’ expertise their advantage.

### The Invenergy Services Blade Campaign

The Invenergy Services Blade Campaign combines efforts from engineers, site staff, asset managers, and procurement specialists. Executing a successful repair campaign requires logistical precision and detailed documentation and, as a result, unlocks an opportunity for economies of scale that drive cost savings.

To estimate the scope of repairs needed each year, engineers combine known issues detected by the Invenergy Services routine blade inspection program with site-specific statistical projections based on lightning activity and blade type. This information, together with years of operating expertise, guide cost and standby time estimates associated with repairs at each site.

A competitive solicitation at the beginning of each year determines which vendors are awarded scopes of work within the campaign. Vendors are asked to quote the total number of crews they can commit for the repair season, which allows the Invenergy Services team to establish a campaign schedule.



Crew and site flexibility are considerable advantages for such a large logistical effort. Invenergy contracts with multiple blade vendors to maximize flexibility and accommodate schedule and scope changes. Vendors are matched with specific scopes of work based on Invenergy’s knowledge of the vendor’s core competencies.

**Tracking Results & Continual Improvement**

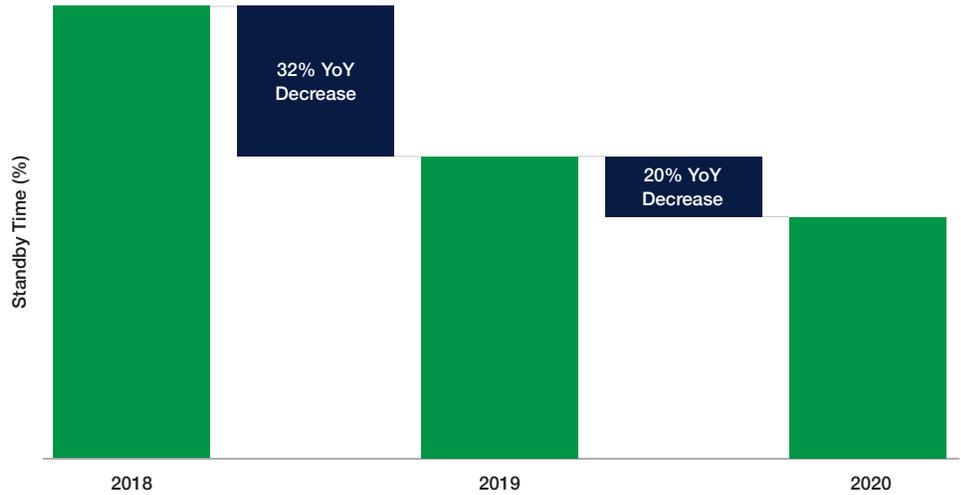
In the Summer of 2017, the first trial of the campaign model was deployed at a handful of Texas sites and proved successful. In 2018, the blade campaign was expanded to the entire Invenergy fleet, with over 400 repairs completed. Following the 2018 campaign, careful analysis of the existing processes and pain points brought upon new ideas for further improvement. In particular, Invenergy Services developed more sophisticated repair tracking tools to increase communication and collaboration with vendors. Refinements in vendor selection and scheduling also increased campaign efficiency. In 2019, the average repair cost decreased by 24% and the average time for major repair decreased by 37%, with over 360 repairs completed.

Today, even more refinements are in progress. Invenergy Services is applying lessons learned and capitalizing on deeper knowledge of vendor capabilities, which has led to substantial improvements each year.

**Latest Campaign Improvements**

The 2020 campaign brought about even more improvement opportunities, specifically with vendor accountability. A new workflow mandates that vendor technicians submit daily timesheets that are recorded, tracked, and sent directly to Invenergy Services site managers for verification. By increasing accountability through automation,

Decreasing Percentage of Standby Time per Repair Year Over Year



campaign managers now have a system that calculates the cost of repair while ensuring labor hours are not overcharged. The real-time cost tracking enables the team to make quick and informed decisions based on up-to-date information.

Further increasing efficiencies, the mechanical engineering team has designed a comprehensive damage severity matrix used for repair prioritization. This matrix guides decision-making when unexpected events occur, such as weather-related damages or cancellations. With the pandemic affecting day-to-day operations, this matrix streamlined the

ability to adapt and make the necessary changes to keep the campaign safely moving ahead. Following the phased COVID-19 response protocols put in place (Phase I & Phase II), the 2020 campaign commenced under key safety considerations and adjustments.

**Planning for the Future Starts Now**

If you want to learn more about the Invenergy Services Blade Campaign, please contact Brad Purtell, Director of Services Business Development, at [bpurtell@invenergy.com](mailto:bpurtell@invenergy.com). [Follow us on LinkedIn](#) for more updates of what is happening with Invenergy Services.



**About Invenergy**

We move projects from the drawing board to reality. Invenergy is the leading privately held developer and operator of sustainable energy solutions, powered by decades of entrepreneurial experience and unparalleled execution. Founder-led and globally focused, we solve the energy challenges facing our customers and our communities. We are innovators building a sustainable world.