

# Preparing wind projects for the PTC bubble

BY Aaron Anderson AND Ella Rose

As the wind industry rapidly approaches the inevitable end of the Production Tax Credit, a significant backlog of projects is expected to come online in rapid succession. Developing, designing and building these projects will pose a major challenge to the industry.



Since its inception alongside the Energy Policy Act of 1992, the Production Tax Credit (PTC) for wind energy projects has come and gone in various forms. In 2012, for example — when the PTC last expired — the phaseout caused major disruptions in the industry. Now, the PTC is being phased out again. This time, however, the phaseout plan is taking a staircase approach where the PTC value applied to a project is tied to the year in which an owner commences construction and subsequently brings the project online.

The intent of this approach is to give wind energy project owners a clear understanding of what to expect when it comes to tax incentives. Unfortunately, this also means that many will rush to begin their projects within the phaseout time frame.

As a result, more than 25 gigawatts of wind energy is projected to come online in 2020 and 2021 alone. Of those projects, nearly 60% are expected to come online in the fourth quarter of those years. This will create a giant bubble of sorts, made up of project owners attempting to complete their projects before the end of 2021.

In this environment, skilled, qualified resources such as contractors, suppliers, engineers, skilled tradespeople and other essential personnel are in short supply. Maintaining quality and reliability in such a resource-constrained industry requires that owners build critical strategies that will contribute to the creation of investment-grade assets.

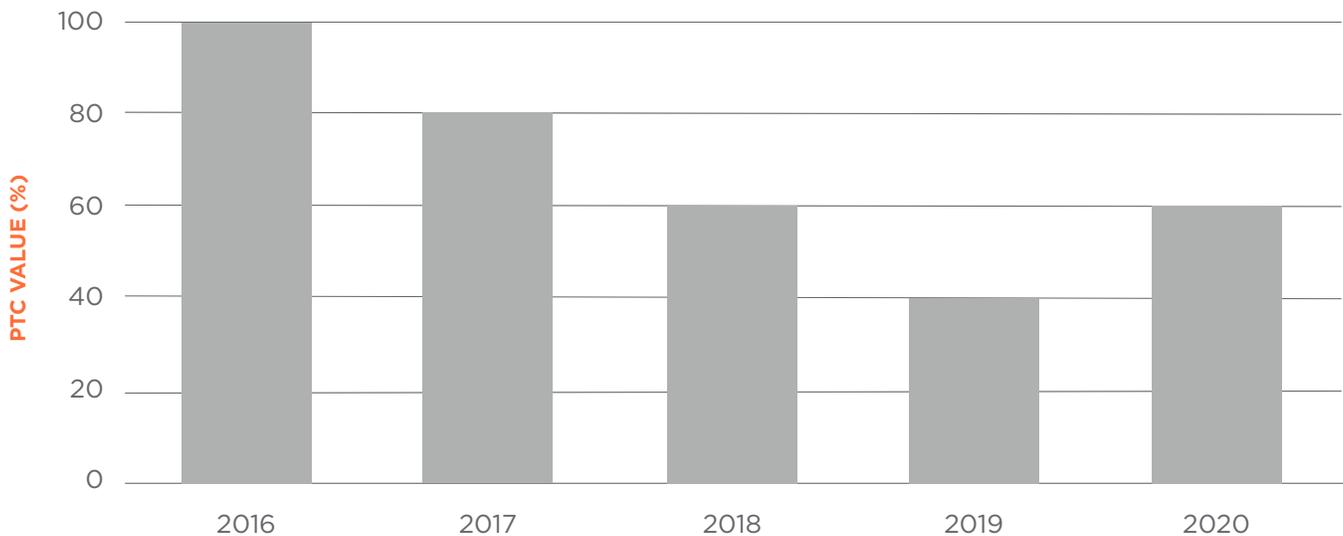
### 10 questions to consider

Considering the following questions can help owners deliver a successful wind energy project in this constrained environment. Asking these questions early on in the process will allow owners to be better prepared to take on the PTC bubble.

#### Will the turbines be manufactured on time?

This may seem like a given, but because so many wind turbines are being manufactured to meet rising demand, many suppliers are already turning down orders. As the industry quickly approaches a period when manufacturers will not be able to complete new orders in time to meet the PTC phaseout, it becomes imperative that owners take steps to order the necessary equipment for their projects.

To get ahead of this, owners should be prepared to buy early — don't wait until the last minute to sign the contract. Seeking out suppliers earlier than usual will help prepare projects during the PTC bubble. Once equipment is purchased, factory visits will also verify that manufacturing is on schedule. After all, vendors will likely fall behind in the coming project boom, but the only thing worse than being late will be not knowing about it until it is too late to do anything about it.



**Figure 1:** Production tax credit phaseout plan. Owners have four years from the date in which the project commences construction or acquires Safe Harbor components to place the facility in service and receive certain PTC values.

### Is the project using Safe Harbor turbines?

The design of the current PTC phaseout requires owners to place their project in service within four years of starting construction in order to lock in certain tax values. This means that the owner must either perform certain construction activities to begin the four-year timeline or expend a minimum of 5% of the project's capital cost before the end of the year during which construction on the project is begun.

For this reason, many owners have chosen to "Safe Harbor" their projects by spending the 5% capital upfront and then storing the purchased equipment while the remainder of a project is developed over the next several years. Buying turbines is one of the most common options for Safe Harbor equipment.

This scenario means that an owner's turbines may have been left to sit idle for four years, often exposed to the elements and with varying (and often minimal) levels of service. If owners are facing this situation, the question they must then ask is whether those turbines will still function after sitting for so long. Proper storage and routine checks and maintenance make it more likely that this equipment will function as it should when it is finally installed.

### Can the turbines get to the site unimpeded?

Delivering turbines to a project site is nearly always a difficult process. Wind energy project sites are often remote, in most situations with little more than gravel roads for access.

What's important to remember during the PTC bubble is that delivery access to these areas will be made even more complicated by clogged delivery routes. This has the potential to cause extended delays relative to normal delivery lead times. To mitigate this, project owners must plan their logistics earlier, including more thoroughly evaluating all the access constraints outside the site that could restrict the delivery process.

Consider the turning radius of delivery vehicles in relation to the roads in a project area and note the weight constraints of any bridges and height constraints of any overpasses on the delivery route. Understand supplier delivery responsibilities — whether it ends at the last state highway or the nearest interstate offramp — so there are no surprises in what entity owns what part of the delivery process. Look for alternative or multiple routes of delivery to keep things moving in the event of a delay or inaccessible route, especially if a project is later in the year when there is no room for error.



### In what season is the construction taking place?

Wind energy projects are, understandably, built in windy locations. Owners must consider the project schedule and determine in what season the installation will take place. It is commonly most windy during the winter months, so attempting to wrap up a project in the first or second week of December can cause delays at a time when there is no room to slip. Conversely, if installation takes place in the least windy part of the year, owners could have difficulty getting enough wind to support turbine commissioning.

Weather should always be an expected challenge. It needs to be planned for and reflected in the project schedule. Lightning and storms — from rain and tornadoes to hurricanes on the coasts — will adversely affect the outcome of a project. Scheduling should build in time for the unexpected, and flexibility is key.

Project owners should review contractors' schedules and note any places where processes don't align or delays haven't been contemplated. Precommissioning can also be done to enhance scheduling by completing certain steps on a supplier's commissioning checklist early in the project. This typically accelerates the schedule by about a week per turbine, significantly improving a project's chances of hitting the in-service date.

### Can turbines be received early?

The wind market has often fallen back on a "just in time" delivery model in which turbines arrive, are offloaded and immediately installed. But to make this work during the coming PTC bubble, owners may need to shift their mindset. Receiving turbines in this manner requires owners to make moves to accelerate some parts of the project process.

It is also possible to get turbines delivered early, making it important that a site is prepared to receive them. This means working ahead on roads and foundations and preparing the equipment laydown area for receiving the turbines. While just-in-time deliveries are also typical, in an environment such as the PTC bubble — with turbines being installed in abundance — not all turbines can arrive just in time. Flexibility around schedule and the ability to take equipment as early as possible will facilitate success.

### **What are my long lead times?**

Lead times affect everything on a project. An owner might place an order for equipment with a lead time of two weeks and another order with a lead time of 12 months. Making sure those things line up and arrive when they are needed requires owners to understand their needs upfront and work backward to hit those deadlines.

Often, procurement on a project isn't completed until 30% or 60% design, so if there are changes at this point owners will have difficulty optimizing since the order has already been put in.

Getting in earlier means better pricing and fewer change orders. All parts and pieces of the project should be connected as early as possible so that focus can be given to processes that have the biggest impact on the project. Finding opportunities to work ahead and determine alternative designs and equipment where applicable, as well as working with contractors to identify long lead times and placing orders earlier, can help.

### **Is my site team qualified?**

This may seem rhetorical, but owners must understand that nearly every contractor is at or near capacity for next year already and skilled worker and labor shortages are already impacting the workforce. Unfortunately, not all teams are created equal — there are only so many “A teams” around. Lower-tier teams might provide a fundamentally flawed schedule or plan, and do so without even realizing it.

Owners should know the experience and knowledge level of the team early. This way, a plan can be developed that builds in extra reviews or closer monitoring of on-site activities where needed.

As a project owner, requesting extra staffing on things that cannot be easily uncovered later — such as rebar prior to concrete pours — can help locate defects quickly and early. Applying a risk-focused mindset to the overall project will help quickly identify areas that could be of concern.

### **Can I get the tools I need?**

The installation of wind turbines requires special tooling — equipment that will be in exceptionally short supply and high demand in the coming PTC bubble. Cranes for turbine erection will also be in high demand, with many contracts requiring a deposit a year in advance of construction, and most cranes already spoken for during the coming year.

Project owners who plan further ahead have a better chance of acquiring the equipment and tools needed to complete a project, from signing a contract for a crane on time to being ready to use special tooling when turbines arrive on-site. Assume that earlier projects will run behind, meaning that the crane is also behind, impacting overall scheduling. Special tools will break, so owners can spend a little extra capital upfront for extra sets, providing inexpensive insurance to a project.

### **What happens when the unexpected happens?**

Tight schedules and limited resources often result in unexpected outcomes. Unfortunately, the usual answer to fixing these problems is money. It is a lot easier to get money early on when setting up financing than at the end of a project or when problems arise.

Owners must expect the unexpected, including weather impacts, an order that does not arrive, a turbine that arrives broken or a broken crane. It takes time and resources to get additional funding for a project, which is much more difficult when approaching the end of the year or the end of a project. When setting up a budget at the beginning of a project, owners should consider building in finances for contingency to mitigate the unexpected before it happens.

### **What is the critical path?**

A project's critical path includes all the pieces of a project that an owner cannot fall behind on without affecting the endpoint. Owners can most effectively plan their schedules by finding the things that will cause that schedule to disintegrate. For example, if a three-week delay during road construction will add three weeks of time to the end of the project, focus must be made to plan around that potential delay.

For owners, it's important to understand how everything fits together on the overall project schedule. This provides clarity in seeing where attention is needed and where extra finances should be allotted, helping to allocate finances and determine areas where the critical path will be impacted by delays.

## Be prepared

As the PTC phaseout moves into the next few years, more and more wind energy projects will come online. The bubble this creates will cause issues across the board for owners of wind projects who plan to place their projects into service in 2020 and 2021. To get the most value out of a project in this environment, it's important to be as prepared as possible.

To develop high-quality projects on time and within budget, owners should consider early planning of resources. Hiring experienced staff that can become an extension of a team is one way to move a project in a positive direction, allowing the team to get ahead of potential issues and design changes. This can save schedule, investment dollars, production losses and various other potential issues.

An owner's engineer can be that resource. Early engagement of an owner's engineer can help take into account the above questions to strengthen project schedule and return a higher rate of success through the consideration of various project factors. Rather than simply building a wind farm that operates and generates, an owner's engineer can provide project owners not only with a project that meets needs and is producing electricity, but one that fits budget constraints, offers the most value and is online within the PTC window.

## Biographies

**Aaron Anderson** is director of renewable energy at 1898 & Co., part of Burns & McDonnell. Bringing nearly 15 years of experience providing financial and engineering analyses, his focus is on offering renewable energy solutions to clients. Responsible for setting the vision and guiding the direction of our team, Aaron has directly managed thousands of megawatts of renewable energy development throughout the world and relies on this experience to help clients minimize project challenges.

**Ella Rose** is a technical advisory consultant at 1898 & Co. Her extensive project experience includes working in wind, solar and gas power plant development and evaluation, siting studies, decommissioning studies, due diligence assessments, contract negotiation support, wind turbine warranty management, balance of plant and turbine supply procurement, request for proposal services and bid evaluation. With a passion for sustainable practices, Ella brings new solutions to clients to get wind projects off the ground.

## About 1898 & Co.

1898 & Co. is a business, technology and security solutions consultancy where experience and foresight come together to unlock lasting advancements. We innovate today to fuel your future growth, catalyzing insights that drive smarter decisions, improve performance and maximize value. As part of Burns & McDonnell, we draw on more than 120 years of deep and broad experience in complex industries as we envision and enable the future for our clients. For more information, visit [1898andCo.com](http://1898andCo.com).

