

Barriers to Entry for Wind Development Related to Interconnection and Cost Allocation

Wind developers face significant barriers to market entry, both generally in terms of the interconnection process, and specifically in terms of the cost allocation for transmission upgrades required for interconnection. These barriers may be categorized as follows:

1. Cost;
2. Risk or uncertainty; and
3. Timing.

These categories are explored in further detail below, along with possible strategies to help mitigate each.

1. Cost

The viability of any generation project depends on demonstrating that a desired return on investment will be achieved. Interconnection facilities and network upgrades are part of the initial investment necessary for project development, and therefore have a direct impact on a project's financial viability.

In many wind rich regions of the country, network upgrades are necessary to support the interconnection of low cost wind resources. Transmission providers treat cost allocation for network facilities in different ways. Some of these approaches are better designed than others to supporting the construction of new transmission capacity and the development of new energy resources.

For example, in the Tehachapi region in California, a large and long generator tie line will serve multiple interconnecting generators over a period of time, and the costs will be shared on a pro-rata basis based on capacity as additional generators begin to use the line. From inception the project was driven by two transmission owners in the Southern California with both significant load assets in CAISO and the leadership to facilitate renewable energy development in the state to satisfy renewable mandates. By not requiring initial generators to fund the project, this approach lowers entry barriers and results in a win-win situation from a market and policy standpoint.

However, in many other areas of the country, developers must assume that a significant percentage of the cost of facilities needed to interconnect into the transmission network will be charged to their project directly. Such rules function in stark contrast to the Tehachapi solution.

As the Midwest ISO works to analyze what is needed to support the interconnection of new wind resources primarily in the western part of the MISO footprint, higher voltage and longer lines are being identified, and will require significant expenditures. Proper cost allocation is essential to ensure that the anticipated cost of building these transmission resources doesn't halt the development of wind projects in the region.

Aside from the actual level of costs assigned to generators, another factor that can seriously hamper wind development is the “**first mover pays**” problem. This problem results in all the costs of a network upgrade that can serve multiple generators being charged to the first interconnection customer that triggers the need for the upgrade, thereby placing a disproportionate cost burden on this first generator. As a result of this disproportionate and inequitable allocation of costs, the upgrade may not be built at all, and the generation project will fail from the weight of the system upgrade cost burden. In some cases, small incremental network upgrades may be able to support one or two generators at a cost to developers that still maintains viable projects. Yet, this kind of piecemeal approach to building a transmission system is suboptimal for achieving the significant regional transmission expansion needed to support state, regional, and federal goals.

The Midwest ISO is moving beyond the first-mover pays approach toward the use of a cluster study and Multi-Party funding agreement approach that can bring several interconnection customers together to fund upgrades in parallel that will serve many parties. Nevertheless, generators may still be asked to fund upgrades that are larger than required to serve their collective needs, thereby resulting in excessive costs for the first projects developed in an area. This problem is further compounded when a mismatch occurs between excessive upgrade costs on one hand, and PPA or long-term prices for renewable energy that fail to reflect the embedded cost of the upgrades on the other hand.

Approaches to cost allocation that can help mitigate barriers to wind development include the following:

- Postage stamp cost allocation spreads part or all of the costs of upgrades across a wide region, and matches costs with the beneficiaries of high voltage additions in a network system. CREZ type process can balance generator need for cost sharing with ratepayer need to ensure that only the most cost effective transmission upgrades are built.
- Avoid penalizing “first cost causers” by saddling them with a disproportionate share of costs. Instead, allocate costs to *all* beneficiaries.
- Charge generation resources or other beneficiaries as they begin to use the transmission resources to minimize “free riders”.
- Prioritize regional transmission upgrades that have interconnection benefits by including them in the long-range planning process and analyzing their long-term benefits.

2. Risk / Uncertainty

Risk and uncertainty are inherent in project development, but they also increase development costs, primarily through higher costs of capital. Excessive levels of risk or uncertainty therefore become a barrier to entry.

In terms of interconnection, developers are faced with uncertainty regarding both the actual cost of interconnection, and also when they will have a reasonable estimate of the costs assigned to their project.

Furthermore, if upgrades are required, as is often the case in the Midwest ISO, there is uncertainty about when those upgrades will be completed and when the developer will be able to interconnect and begin delivering power.

The Midwest ISO is attempting to address the “first mover” problem by working with groups of generators to fund transmission upgrades that can serve all their interconnections. However, even in this case there is uncertainty around which of these generators / projects will ultimately move forward and help to fund the upgrade. When projects are withdrawn, each of the remaining generators must assume a higher portion of the costs to make up the difference. In order to make business decisions about whether a project is financially viable, developers need more certainty regarding the costs they will be responsible for at the time they sign contracts to fund upgrades.

Lastly, there is uncertainty in the stakeholder process within the Midwest ISO, as well as the related forums working to address cost allocation in the region, that impact infrastructure developments of all types, generation, transmission, and non-wires solutions like demand response. All these efforts are targeted at developing a revised cost allocation approach specifically for large regional and possibly inter-regional upgrades that can support the interconnection of multiple generators. However, thus far the Midwest ISO stakeholder process has not succeeded in creating a cost allocation methodology that supports greater wind development in the Midwest ISO footprint. And it is still unclear whether or not the RECBTF, OMS CARP and UMTDI forums will produce recommendations that are more supportive of wind development than the current Midwest ISO proposal. Given the potential change in future cost allocation as a result of these efforts, is challenging for even larger generators in the queue today to make the financial commitments necessary to move transmission upgrades forward.

Methods to mitigate the uncertainty and risk with regards to interconnection and cost allocation include:

- Establishment of federal policy on cost allocation for large regional transmission upgrades.
- Completion of the long term cost allocation changes currently being developed by OMS, UMTDI, and/or Midwest ISO.
- Provide developers with a modicum of certainty regarding network upgrades by committing to rules that would charge them only their share of the full capacity available on the line.

3. Timing

Arguably the greatest timing issue facing independent project developers is a version of the classic “chicken or the egg?” problem. Developers need both a power purchase agreement

(PPA) and an interconnection agreement to make a project financeable. It is difficult to secure a PPA without certainty on the availability, timing, and cost of an interconnection. At the same time, it is difficult for developers to obtain the financing necessary to complete an interconnection without the certainty of future revenue from a PPA. In addition to this, there are other more specific timing issues that create barriers for wind development.

Given that transmission construction, especially for larger lines that might serve multiple generators, can take several years, it is also challenging for a wind developer to invest in funding those lines when they will not be able to receive an interconnection and begin delivering power until years later. For most developers, capital is a limited and expensive resource, and not one that can be tied up in this way for such a long period of time.

Generators in the Midwest ISO are asked to provide 100% of the cost of upgrades for interconnection up front. Even in cases where the project economics are strong enough to support high upgrade costs, if these costs are piled on a project at the front end, an additional blow is dealt to the project's cash flow. In practice, financing is not available until shortly before a wind project comes on-line, which can be years after multi-million dollar network upgrades have commenced. To spread the costs over the life of the project, or to at least allow projects to begin generating income before requiring repayment of the costs, would be a significant improvement.

The Midwest ISO's work to solve the first mover problem by identifying and building upgrades that can serve multiple generators through the use of a multi-party facilities construction agreement is a positive move. But there will likely be a significant timing issue in bringing a large number of developers together to fund such lines when each of their projects is on a different schedule. Timing challenges will force some generators out of the queue, increasing both the risks and the costs already assigned to other generators.

Approaches to mitigate the timing barriers for wind development include:

- Provide greater certainty regarding the cost of needed upgrades by charging developers only their share of the full capacity available from upgrades.
- Build transmission proactively by identifying cost effective transmission projects that will benefit multiple generators.
- Allocate the cost of transmission upgrades that support renewable resources to load until such time as generators come on-line and begin using the transmission.
- Use postage stamp allocation to spread part or all of the costs of upgrades across a wide region to match the costs of high voltage additions in a network system to the many beneficiaries.

In conclusion, the Midwest ISO region has the best wind resource in the country, and a cost allocation methodology that more evenly distributes costs, reduces project risks, and addresses the timing needs of generation projects will help this region optimize the use of its wind energy.