



Lightspring, LLC  
1341 South 20th Street  
Suite 10  
Bismarck, ND 58504

STATE OF NORTH DAKOTA  
PUBLIC SERVICE COMMISSION

Public Service Commission  
Solar Decommissioning Rulemaking  
RE: PU-19-122

COMMENTS OF LIGHTSPRING, LLC

The North Dakota Public Service Commission (“PSC”) has proposed rule makings in regard to solar decommissioning. Lightspring, LLC, (“Lightspring”) commends the Commission on its forward thinking stance toward solar development rule making and respectfully submits these comments in response to those proposed rules as well as previously submitted public testimony.

Lightspring is a local technology company and solar developer based in Bismarck, North Dakota. Lightspring has several residential, commercial, and utility projects in motion within the state.

**PU-19-122: Chapter 69-09-10 Solar Facility Decommissioning**

***Size Threshold***

Lightspring believes consistency among various governmental rule making bodies creates certainty upon which individuals and business may rely upon as they go about their business. As such, we support limiting the proposed rule to solar projects of 50 MW or higher, so as to maintain consistency with North Dakota Century Code, Chapter 49-22.

***Definition of Project Abandonment***

The proposed definition of project abandonment states that “A facility is presumed to be at the end of its useful life if its annual capacity factor is less than ten percent for two consecutive years”. According to the proposed rule in Chapter 69-09-10, capacity factor means “the ratio of the actual output generated by a facility for a period of time, to the output that could be produced at the nameplate generating capacity of that facility.”

Lightspring believes this language is imprecise and that the standard is unrealistic. Current solar technology using fixed mountings and monofacial panels in North Dakota has a net capacity value between 20-25%. In practice, this means that the solar farm will only reach or exceed its nameplate generating capacity under ideal sunlight conditions for approximately four (4) to six (6) hours a day for about five (5) to six (6) months of the year. On average, today’s solar panels typically lose 0.5% efficiency per year, so the capacity factor will degrade over time. If a solar installation started with a 20% capacity factor, that installation could theoretically be considered “abandoned” by the proposed rules in as little as 22 years, even though it may be capable of producing electricity for an additional 20 years.

In their written testimony, Apex Clean Energy suggested tying the definition of abandonment to lease payments. This is also problematic. Solar farm lease arrangements make the most financial sense in states that incentivize solar energy production through net metering rates at or near the local retail electricity rate. In states like North Dakota, whose net metering legislation does not apply to most of the state’s electric utilities, the calculation is quite different. For smaller community scale solar installations between 1 to 10 MW in rural North Dakota, the calculation revolves around using distributed energy resources like solar to offset local, onsite electrical demand. In these scenarios, the entity attempting to use solar to offset their electricity consumption is likely to own the land on which the solar is situated, and use most of the electricity onsite to meet their consumption profile.

In fact, for smaller solar farms, there are several innovative ways for small business and farming operations to use solar to diversify their portfolio. For example, in Minnesota, solar developers and landowners have created a business arrangement that is known colloquially as the “Minnesota flip”. In this financing structure, landowners with low tax appetite and high electricity demands are paired with financial partners with larger tax appetites in a 99% to 1% ownership structure. In this scenario, the financing entity with tax appetite will assume 99% of the ownership of the solar farm for as long as they can harvest federal and local tax incentives and use accelerated depreciation tax accounting to maximize the short term profitability of their investments. After these incentives are harvested, ownership will “flip” and the landowner will assume majority ownership in the farm and electricity.

Given these and other factors, Lightspring supports alteration of the current definition of “abandonment” to the following: “A facility is presumed to be at the end of its useful life if its annual capacity factor is less than ten percent *of its original capacity factor* for two consecutive years”.

### ***Alternative Agricultural Uses for Land Beneath Solar Farms***

Lightspring disagrees with the oral and written testimony of Apex Clean Energy that “there are no alternative agricultural uses for land beneath a solar plant.” This is not correct. In addition to the grazing of sheep and the planting of pollinator plants and siting of bee colonies in and around solar farms, there are several ways to incorporate solar farm design into sustainable land management practices.

Bulldozing or land leveling is sometimes used to facilitate the construction of solar farms on agricultural land. Lightspring believes the benefits from this sort of industrial activity do not outweigh the impact on the watershed and ecosystem in the short term. Water management is likely to be the defining public policy issue of the 21st century and it would behoove the Commission to stay in front of all water-related management issues from a rule-making perspective.

Newer panel technology on the market today also gives landowners more opportunity to find alternative agricultural uses for land beneath solar farms. For example, bifacial solar panels are panels that produce solar power from both sides of the panel. In snowy climates like North Dakota, bifacial panels are uniquely suited to use snow’s reflectivity as a way to increase solar energy yield in the winter. Additionally, bifacial panel arrays can be used in the summer to create agrivoltaic farming practices where shade crops are co-located beneath solar panels in a mutually beneficial manner. Some studies indicate that bifacial solar panels and agrivoltaic farming can increase land use efficiency by 60%. Shaded growing areas under solar panels reduce evaporation, lessen soil erosion caused by wind, and thus require less irrigation or water management intervention.

### ***Piling***

During oral testimony, questions arose about pilings and industry standards. According to Lightspring’s research and industry experience, there are three main pilings: wood, metal, and helical. These pilings are inserted into the ground ten (10) to twenty (20) feet depending on soil composition, water table, and frost line. Wood and metal pilings are driven into the ground with a pile driver at a depth approximately five (5) to ten (10) feet beyond the frost line. Helical pilings are like giant screws, and are screwed into the earth, typically with less overall depth than driven pilings.

Industry standards are not uniform at the moment, but all three piling methods are very difficult to fully remove from the earth after the life of a typical solar farm. Some industry experts from Canada believe helical piles are the most resilient against the northern climate’s frost and thaw cycles. They also believe helical piles can be “unscrewed” after solar farm decommission. Other industry experts believe exposure to the elements over twenty five (25) to forty (40) years will

create so much structural degradation and loss of integrity that helical piles will be just as immovable as wooden or metal pilings. Wooden and metal piles are likewise susceptible to exposure to the elements and will likely need to be excavated to be fully removed.

Ballasted racking or cement foundations are also used throughout the industry depending on the project. These solutions do not require penetrating the earth to a depth of ten (10) to twenty (20) feet. Large cement foundations present different land reclamation challenges and potential water table imbalances. Ballasted racks are often more expensive and labor intensive to install, but are sometimes the best option for certain soils, topography, and geographic areas.

Given the lack of clarity, Lightspring urges the Commission to allow for the industry to continue to determine best practices over the next 3 years and then implement piling removal guidelines at a later date with more comprehensive data.

Thank you for the opportunity to provide comment.