COMMERCE DEPARTMENT

Solar Energy Production and Prime Farmland

Guidance for Evaluating Prudent and Feasible Alternatives

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Introduction

The growth of solar, combined with the requirement for relatively large, flat parcels needed to install large solar facilities, is highlighting the issue of the potential repurposing of agricultural land in Minnesota. Ground-mounted solar energy production uses significantly more land than other types of electric generation. Solar photovoltaic facilities require approximately seven to 10 acres per megawatt (MW) as opposed to less than an acre per MW for wind projects. In addition, wind projects allow shared land use with agriculture, while solar production removes the entire area of the facility from agricultural production. Though many entities are developing agricultural models to co-locate agricultural uses with community-level solar facilities, work remains to scale those uses to utility scale installations.

Since the best solar resources are generally coterminous with some of Minnesota's most productive farmland, the expansion of solar development frequently conflicts with the Public Utilities Commission (Commission) Rule to exclude energy generating installations from prime farmland (a federal designation of a quality soil type[i]). Specifically, no such installation may be permitted that includes more than 0.5 acres of prime farmland per MW of net generating capacity.[ii]

The only exception to the Rule is if there is no "feasible and prudent" alternative.[iii] Since the State of Minnesota has dual mandates to advance solar energy production and protect prime farmland, and due to the inherent difficulties in avoiding prime farmland, this guidance is meant to assist developers in defining feasible and prudent in relation to siting alternatives and encourage them to build a record early in the site selection process showing whether or not an exception to the prime farmland exclusion is warranted. There are a series of factors that should be considered. This guidance document attempts to help define those factors and describes steps a developer should take in developing a permittable solar site.

Siting Constraints

The Commission requested input from both the Minnesota Department of Agriculture (MDA) and Department of Commerce (EERA) on the issue of solar siting and agricultural land use, to assist them in making solar siting decisions. MDA and EERA convened a study group in the summer of 2019 to gather information and identify the interests and priorities of a wide range of stakeholders. In particular, these stakeholders included utility and smaller scale solar developers, farmers' organizations, energy nonprofits, local governments, and academic planners. Minnesota Management and Budget facilitated the study group and prepared a report detailing those meetings and stakeholders' interests.[iv] See that report for a better understanding of the siting constraints leading to conflicts between solar development and farmland preservation.

Generally, siting on farmland is going to be the most favorable option for developers because it often meets the primary siting factors considered in a siting a solar facility. The primary siting factors for developers are 1) best available source (Where is the most productive solar resource?); 2) access to the grid (Is there access to

transmission or reasonably affordable interconnection?); 3) a developable site (Does the site offer favorable ground slope and limited environmental liability?); and 4) willing participants (Are there landowners willing to lease or sell the land or energy rights?). When considering the difficulty of meeting these factors, if a site effectively checks off all four, and is the only site the developer has been able to ascertain that does so, it may well be the only feasible and prudent alternative.

Of course, that means the developer should show their work: how was it determined that the site meets all the requirements; and what other sites were evaluated that failed to do so (and why)?

Factors driving choice of region

The first guidance provided herein is that the developer should offer an explanation of the particular constraints driving them to build a facility in a region of the state that may conflict with the prime farmland exclusion as opposed to a non-conflicting site (i.e., they must show that alternatives are not feasible or prudent). When submitting an application for a site permit to the Commission, developers should describe the following assessment of prime farmland use in detail:

1. Describe the solar resource in the proposed region vs. otherwise compliant areas[v] reviewed;
2. Describe the process of determining available interconnection points;
3. Describe efforts in investigating developable sites (sites with appropriate topography and willing participants) in otherwise compliant areas.

These elements need to be examined and explained, as the Rule states explicitly that "Economic considerations alone do not justify the use of more prime farmland."[vi]

Factors to consider when prime farmland is present

If the previous assessment results in a determination that the facility is justifiably located within a region of the state that may conflict with the prime farmland exclusion, further explanation should be presented for the location within that region. Proximity to interconnection is likely the primary consideration for siting on prime farmland. However, there are precedents for LEPGFs located several miles from interconnects, typically making that connection through high voltage transmission line (HVTL) construction. The developer should make the case why, for example, distance, required transmission upgrades, or required buried power lines among other matters, to a particular interconnection point makes alternative construction sites neither feasible nor prudent.

1. If there are areas of nonprime farmland within a chosen radius of an interconnection site, demonstrate a good faith consideration of those sites.
2. Describe how avoidance of other prohibited areas influenced site selection.
3. Demonstrate a good faith consideration of alternative site configurations or technologies:

    a. Explain why, in addition to economic reasons, an alternate configuration such as transmission to an alternate, compliant site or the use of multiple dispersed sites is not feasible and prudent.
    b. Demonstrate how alternative technologies, such as panel/rack designs that allow siting on steeper slopes, or any other alternative technologies reviewed are not feasible and prudent.

Scoping Alternatives

Solar generating facilities permitted by the Public Utilities Commission (facilities of at least 50 MW) require the preparation of an Environmental Assessment (EA). EERA is responsible for scoping and preparing this document. It is one more opportunity to identify and evaluate potentially feasible and prudent alternatives.

Scoping alternatives may be identified by the developer, EERA, MDA, the public or even the Commission during the review process. It would be up to EERA to recommend which alternatives warranted further study or inclusion in the EA; it would be up to the Commission to make a final determination of which alternatives are considered. For those alternatives forwarded for review in the EA, EERA would pursue essentially the same review requirements noted above, with the same goal of establishing their prudence and feasibility.

The scoping process is also critical as a test in the Commission's review of the outcomes. If there is substantial review of potential alternatives in the application, and a robust scoping process does not identify any feasible and prudent alternatives, the Commission should reasonably be able to say the test has been adequately met.

Exemption or Variance Determination

In the end, the review in the application and the scoping process should provide the Commission the necessary information to decide if its exemption criteria have been satisfied. In certain cases, where the record does not support an exemption, the Commission could still vary its own Rule. The Commission has the authority to do so under Minn. Rule 7829.3200 under certain restrictions, particularly if the exclusion were to "impose an excessive burden upon the applicant."[vii] The onus to define and defend an "excessive burden" would be on the developer. However, if the above reviews have developed a satisfactory record, a variance should not be necessary.

Mitigations and Offsetting Benefits

A separate but important consideration in using farmland for solar facilities is the implementation of mitigations and offsetting benefits. Participants discussed several possibilities in the stakeholder process for solar sites generally. While these alone do not constitute an excuse for exemption or variance, a critical determination could be any mitigations employed by the developer or any offsetting benefits inherent in the location or installation of a particular facility. These could include:

- Locating on areas of vulnerable groundwater, protecting aquifer from nitrates.
- Perennial vegetation which would preserve or improve the current soil quality over time.
- Pollinator habitat preserved or developed.
- Co-locating with agricultural uses, such as grazing or harvesting forage.

The developer should describe the above or any other offsets and delineate any mitigations considered or being employed, such as an Agricultural Impact Mitigation Plan (AIMP) or any vegetation management plans.

[i] C.F.R. 657.5(a) provides, in part,

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses . . . . It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

[ii] Minn. Rule 7850.4400, subpart 4,

No large electric power generating plant site may be permitted where the developed portion of the plant site, excluding water storage reservoirs and cooling ponds, includes more than 0.5 acres of prime farmland per megawatt of net generating capacity, or where makeup water storage reservoir or cooling pond facilities include more than 0.5 acres of prime farmland per megawatt of net generating capacity, unless there is no feasible and prudent alternative. Economic considerations alone do not justify the use of more prime farmland. "Prime farmland" means those soils that meet the specifications of Code of Federal Regulations 1980, title 7, section 657.5, paragraph (a). These provisions do not apply to areas located within home rule charter or statutory cities; areas located within two miles of home rule charter or statutory cities of the first, second, and third class; or areas designated for orderly annexation under Minnesota Statutes, section 414.0325.

[iii] ID

[iv] "Solar Siting in Agricultural Landscapes: Stakeholder Input Summary," September 16, 2019, MN Management and Budget, Management Analysis and Development, https://mn.gov/eera/web/doc/13928

[v] Otherwise compliant areas refers to areas not specifically prohibited (subpart 1) or generally excluded (subpart 3) for energy development as enumerated in Minn. Rule 7850.4400, including subpart 1.

[vi] Minn. Rule 7850.4400, subpart 4

[vii] Minn. Rule 7829.3200, subpart 1

The commission shall grant a variance to its rules when it determines that the following requirements are met:

A. enforcement of the rule would impose an excessive burden upon the applicant or others affected by the rule;
B. granting the variance would not adversely affect the public interest; and
C. granting the variance would not conflict with standards imposed by law.