

Craven County Center

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Considerations for Transferring Agricultural Land to Solar Panel Energy Production

— Written By [Mike Carroll](#)

The decision to transfer land use from agricultural production to solar panel electrical production (solar farms) should be made by careful examination of immediate and long-term potential risks and benefits. Currently, the transition seems a logical and profitable venture since payments made by contractors are much greater than revenue received from farmland rental. However, one must also consider that the transfer of land from agricultural use may also result in additional tax liability, greater insurance requirements, personal injury/liability issues, potential future environmental mitigation, and even the inability to transfer lands into other uses.

This article will briefly address: 1) General Economic & Resource Considerations; 2) General Land Maintenance; 3) Tax Implications; 4) Comparison of Commercial vs Agricultural Land Environmental Concerns; 5) Wildlife Impacts; 6) Proximity to Airports; 7) Fire Safety; 8) Drainage, Stormwater & Soil Quality Considerations; 9) Vegetative Buffer Zones; 10) Weed, Shrub & Tree Maintenance; 11) Evaluation of the Contract; 12) Farmland Preservation Programs; and, 13) Future Considerations.

GENERAL ECONOMIC & RESOURCE CONSIDERATIONS

Within Craven County, NC, agricultural farm sales since 2007 (field crop and livestock production only) ranged from \$40-\$70 million annually depending upon price of commodities and yield. According to an economic study by NCSU in 2008, jobs and services supporting this industry added over \$312 million to the local economy. However, the number of farmlands converted to other uses over the past 15 years has exceeded a twenty square mile area. This directly effects farmers and the local economy. Thus, any additional loss of farmland will adversely affect the agricultural economy.

In contrast, landowner income may be significantly higher from solar farm income compared to agricultural rental income. Additionally, transition of farmland to commercial property increases tax revenue for the county. Too, some increase in jobs is likely during construction and may remain for maintenance, depending upon contractual agreements. Assuming the solar farm's usefulness remains until full term of contract (usually 15-20 years), income and taxes generated could add value to the landowner and county.

In addition to personal and governmental revenue, one must also consider one of the goals for establishing solar panels is to provide energy production to lessen the reliance upon energy sources that are considered a negative impact upon the environment or are available in limited quantity. However, energy production from solar farms is not equal for all locations. Too, current federal or state mandates and tax incentives that make this technology feasible may not exist in the future. Lastly, technology changes rapidly. Thus, carefully examine the transition. Past solar and wind farm production has experienced this situation and many sites were abandoned rather than upgraded.

Also consider that the goal of those developing solar farms is to make a profit. Farmland within Craven County, NC is valued between \$2,500-\$4,000 per acre. Yet companies are willing to pay upward to \$800-\$1000/ac per year for twenty years. This is a much, much higher payment to the landowner than the company would make should they simply decide to purchase the farm. Thus, it begs the question as to why a company would choose to pay a much higher rate to a landowner rather than purchase the farm to realize a higher profit. Logically, this decision does not appear to be the most profitable choice for the developing company. As such, there is more than profit to consider when transitioning farmland to solar farms.

Perhaps the most troubling issue involving solar farm establishment is to consider the possibility that the solar farm is abandoned within the first few years. If this occurs, what risks or financial obligation will the landowner face? Can the solar farm actually be

decommissioned with ease and low cost? Will the farm be limited in use due to environmental, wetland or even contractual limitation? These types of consideration must be examined prior to converting land from agricultural use to solar farms.

TAX IMPLICATIONS

Under the current North Carolina tax system, agricultural land is eligible to be taxed based upon farm use. This system, known as Present Use Value (PUV), defers commercial tax rates on agricultural lands as long as the use of the land remains agricultural. This protects farmland by taxing the land at a lower rate rather than commercial/development value. However, when land enrolled in the PUV system is converted to non-agricultural uses, three years of taxes are due, with interest, based upon the commercial value of the land. Thus, one must be prepared to pay these taxes and interest should land be transferred from agricultural use.

Conversely, if the landowner wishes to maintain the land in the PUV system, then agricultural production and solar production must be maintained simultaneously. While this is permitted, to be done successfully requires establishment of some type of agricultural production that is compatible with solar farm use. Typically, development of a pasture production either for grazing or harvest has been established. However, this also adds additional management and costs. As such, depending upon the size of the parcel of land and the landowner's personal desires, this may or may not be a consideration. (Click [HERE](#) to read an editorial supporting this type of venture.

Additional tax implications, tax credits, estimated commercial values and information is available [HERE](#).

COMPARISON OF COMMERCIAL VERSES AGRICULTURAL ENVIRONMENTAL CONCERNS

Land classification may impact land use. Many current farms are lands that were considered wetlands that were cleared decades ago when this activity was allowed. As land currently in agricultural use, it is protected as a "previously cleared wetland" (PC) and farmers are allowed to continue farming the land. Under current regulations, PC farmland will be permitted to change from agricultural to commercial use. However, future conversion from a solar farm established on PC farmland to non-agricultural uses will be regulated by various agencies and environmental regulations. In worst case scenario, solar

farms established on PC farmland may not be permitted to other uses without wetland mitigation. PC farmlands, may, however, be eligible to convert back into agricultural production depending upon soil hydrology.

Conversion of PC farmlands may also impact farm program participation for the current tenant farmer. If an entire farm is not placed into solar energy production, then the remaining portion of the farm still in agricultural production must meet requirements set forth in the 2014 Farm Bill. Currently, a farmer tending any farm or portion of farm that is not in compliance with all wetland provisions jeopardizes federal farm support programs for all lands tended and may face fines and penalties. This could result in thousands to hundreds of thousands of dollars loss to the farmer, depending upon the size of the farming operation and value of crops produced. Currently, the USDA Farm Service Agency, the USDA Natural Resource and Conservation Service, and the Army Corps of Engineers coordinates to make these wetland and compliance determination. All landowners are encouraged to examine the land classification and status prior to conversion of land from agricultural production to avoid potential liability and regulatory actions.

In addition to potential wetland ramifications, some farms may be near rivers or streams with restrictive land uses. As example, the Neuse Rules and associated legislation established a 50-foot vegetative buffer requirement along the Neuse River and tributaries of the river (Blue line streams). If land currently utilized as agricultural production lies within this buffer, the land is allowed to continue in agricultural production. However, if removed from agricultural production, no alternative land use is permitted.

Another scenario, and admittedly perhaps the worst case scenario, involves abandonment of the solar farm. Solar farms left idle not only decrease land value, abandonment also subjects the land to provisions of the Clean Water Act. Thus, if land is left idle for long and the land also has a wetland hydrology, reclaiming the land may be difficult, if not impossible. Should this occur, within Eastern Coastal Carolina, land use would be regulated by the EPA, the Corps of Engineers and the Coastal Area Management Act.

These examples are provided to emphasize the need to examine environmental rules and regulations prior to establishment of a solar farm. Generally speaking, farmlands that are not classified as PC or do not have portions of the farmland with wetland hydrology do not fall under many regulations restricting land use. For these farmlands, simply consider that historically, environmental rules have not become less restrictive, but more restrictive.

GENERAL LAND MAINTENANCE

Often, with the inclusion of a land rental agreement, a farmer actively maintains ditch banks by removing unwanted vegetation or soil; grades roads or paths; mows near wooded areas; or, provides other general farm maintenance. As a solar farm, these tasks fall back to the landowner. If no equipment is owned to perform these tasks, equipment will need to be purchased to maintain the farm. Alternatively, these tasks may be contracted.

Farmland maintenance will especially be critical shortly after development or for land that has a permanent stream in order to protect against erosion or flooding concerns. Removal from agricultural land use does not exempt the landowner from soil or stream maintenance that might otherwise impact water flow or degrade soil or water quality.

Many soils within Craven County, NC are either very coarse sand or soils that drain poorly. Both of these situations may result in topsoil either shifting, sinking or eroding near the base of equipment. Slight shifts in solar panels will alter the degree of tilt required for the unit to function properly or even may cause a fire hazard (See Fire Safety). Thus, replacement of eroded topsoil should be a priority, especially between the time after completion of the construction and establishment of a permanent ground cover.

Flooding is another issue that should be examined. Storm events within this area historically cause flooding for some areas. Maps showing the flood plains are available for review at <http://www.ncfloodmaps.com/> . However, also consider that continued development and increased impervious surface modifies this map data. Thus, some variance is likely due to a changing environment, increased development and water management (or lack thereof).

One should also consider that Eastern NC is at risk for frequent tropical storm systems. Trees and debris will fall into the area. As farmland, the farmer tending the land normally assumes the responsibilities and cost of cleanup. In some cases, the farmer may qualify for financial assistance for cleaning up the debris. Commercial property may or may not qualify for such and it will be the responsibility of the landowner to clean up debris.

WEED, SHRUB & TREE MAINTENANCE

Left alone without cultivation and management, farmlands will progress from a mixture of weeds to small shrubs and eventually forest. Thus, weed, shrub and small tree maintenance must be considered. Either the landowner will need to provide for this effort or contract these tasks with a service provider. As a landowner, applying a non-restricted use herbicide does not require a license for pesticide applications to manage the lands. However, many of the shrubs and small trees are not easily controlled by these general

herbicides. Thus a license to purchase and use a restricted use herbicide may be necessary. Currently, this license can be obtained by passing an exam provided by the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) Pesticide Division. This license will require attending four hours of training in a three-year time period and a small fee to maintain this license. For more information pertaining to licensing, visit the web site <http://www.ncagr.gov/SPCAP/pesticides/index.htm>.

If the landowner chooses, a commercial applicator may be contracted to provide vegetative maintenance on the solar farm. Simply ensure that the person or company has the appropriate license(s). Within current legal structure, most commercial applicators are likely to have license permitting general weed control but one must be licensed in forestry to manage trees or shrubs. Thus, as a worst case scenario, it may be necessary to contract with more than one person/company. *(Note: Farmers are allowed to apply herbicides on farms they own or lease but are not permitted to apply on property of others. Such privilege is allowed only for commercial operators.)*

WILDLIFE IMPACTS

Aim to evaluate the potential impact this project might have upon wildlife. Consider both the good and unfavorable potential consequences. Small shrubs or tree borders may protect the investment as well as provide an aesthetically pleasing area. However, some plants will simply not tolerate the amplified light or heat if planted too close to the solar panels. Too, establishment of a border may increase activity of small birds, insects and small mammals. However, this also increases the chance of wildlife nesting. Removal of bird's nest or wasp nest should be a routine maintenance to prevent potential fires or permanent damage to equipment (See Fire Safety). For additional resources for those wishing to consider wildlife conservation and wildlife protection a priority during planning and development, visit <http://www.ncwildlife.org/Conserving/Programs/GreenGrowthToolbox.aspx>

DRAINAGE, STORMWATER & SOIL QUALITY CONSIDERATIONS

Currently solar farms are considered pervious structures by the State of North Carolina if positioned such that water does not pond on the panels. Even so, large systems may require inclusion of drainage and/or stormwater plans. Additionally, soil erosion and soil quality must be maintained, regardless of size. Both of these may require modification in layout. Due to the potential complexity of this issue based upon size, location and existing

structures, it is not possible to provide guidance for stormwater or all erosion control within this article. Planning should include discussion with appropriate planning departments (County or Municipal) depending upon jurisdiction as well as the local Soil & Water Conservation office.

In contrast to stormwater management, addressing soil management is a relatively simple process. Simply protect soil by planting a permanent ground cover. Many types of permitted grasses will qualify. Aim to provide proper fertilization to maintain growth. The NCDA & CS Agronomic Division provides soil testing for plant nutrients and lime. Soil testing and recommendations are free of charge from April 1st through the end of November. (There is a \$4 charge per sample for submission any other time). Sampling instructions, forms, boxes and other assistance is available from any local NC Cooperative Extension office. Additional information, payment for samples submitted (when appropriate), and instructions are also available at <http://www.ncagr.gov/agronomi/sthome.htm> . Note that some fertilizers may be corrosive to metals, plastics and glass used in the solar farms. Thus apply fertilizer with care to avoid damage to the panels or electrical conduits.

The goal of fertilization should be to provide adequate nutrients to establish the desired ground cover. Poor ground cover, in a worst case scenario, may result in sheet flow erosion as large quantities of water rush off of the solar panels during heavy storm events. Even frequent, yet less heavy rainfall events may create a dripline directly beneath the individual panels that may cause a shift in equipment angle. If this occurs, restoring the eroded land and prevention of runoff into surrounding surface waters will be the responsibility of the landowner or contractor/developer, depending upon the designation made within the contract.

Lastly, most solar farms are indeed safe to operate. However, potentially toxic heavy metals and silicone by-products are used in these projects. Damaged units or time may release these contaminants into the environment. As such, consider taking soil samples to monitor for potential contaminants. For additional information concerning potential contaminants as outlined by the EPA, visit <https://www.epa.gov/chemical-research/ecological-soil-screening-level-metal-contaminants> .

PROXIMITY TO AIRPORT

Establishment of solar farms has been noted as a potential hazard for airports and air traffic controllers. Generally, the requirements of notification are not necessary for solar panels established more than 5 nautical miles from an airport. According to their website, the Federal Aviation Administration (FAA) essentially has two objectives as follows:

1. No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab, and
2. No potential for glare or “low potential for after-image” along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP)¹⁷. The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glide path.

In most cases, solar farms do not emit frequencies that are not in compliance with the FAA Co-location Policy or other regulations that may impact flight paths. However, it is advisable to discuss potential solar farm issue with the FAA’s local Airport District Office (ADO) for civilian airports or the NC Commander’s Council for military facilities if this might be a concern.

Steps below can assist in evaluation of proper procedure should one question whether the solar farm might create a potential hazard for air traffic. Tools and steps that will assist in these evaluations are listed below.

1. Google Earth – Use this mapping tool (or similar program) to determine if the proposed facility is within 5 nautical miles of an airport as well as to gather the GIS coordinates and elevation of the field site.
2. Go to the FAA website, <https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp> and enter this data. If a report is required, it will be noted at this site.
3. Visit the website, <https://www.sghat.com/> to determine if glare or after-images might be a problem with major flight paths.
4. Take printed copies of the above data to the local airport for discussion.

FIRE SAFETY

Fire codes will apply to this structure, just as with any other commercial property. Thus, it is advisable to discuss the potential regulations prior to establishment. Having thus said, most solar farms can be established with minimum restrictions. Generally, clearly marking all direct-current conduits, conductors, enclosures, etc., as well as leaving a clear area (brush free) of at least 10 feet around the array is sufficient.

Another consideration for fire safety will be to discuss fire plans and facility layout with the appropriate Fire Marshal (county and/or city). These panels should always be considered as having maximum voltage and a potential electrical hazard. Nest from birds, insects and small animals may cause fires. Fires on site may place fire-fighters and others at risk of electrocution. As such, a pre-fire plan to determine a salvage treatment, if any, in case of a fire should be discussed with all contracting parties, fire departments and Fire Marshal.

VEGETATIVE BUFFER ZONES

Specific regulations or ordinances do not currently exist within the State of North Carolina to mandate a vegetative buffer zone. However, municipal or county ordinances may have these requirements. Even if no regulation requires a vegetative buffer zone, there are some reasonable functions that a vegetative buffer zone will serve. As example, a vegetative buffer zone may provide some protection against wind-blown objects from entering the area where panels are established, may provide some protection against intrusion of vehicles if the area is located on a major highway, or may provide some deflection of potential sunlight glare if the areas is located near neighborhoods or a major highway. Thus, not only will the vegetative border be pleasing, it may serve some practical functions. (See also Maintenance and Wildlife Sections)

EVALUATION OF THE CONTRACT

Care should be taken to examine all aspects of the contract. Typically, such contracts are written to protect the company, not the landowner. As such, the contract outlines responsibilities and rights of the two parties but are typically one-sided in that they protect the developer/contractor's rights but may greatly limit the landowner's rights. One must remember, the developer/contractor is approaching the agreement to protect himself from as much liability as possible and to make a profit.

It is not the intent of this article to outline all considerations of a contract. However, a few of the major issues that need to be considered are listed below. It is *highly recommended* to consult legal counsel prior to signing the contract.

Potential contractual considerations include:

- Can the contract or any agreement/obligation of the contract be sold, transferred or assigned to another party. If so, what are the terms? The ability to sell a contractual obligation may mean that the company or individual you contract with today is not the same tomorrow. Too, if allowed, the company/contractor to which the agreement is transferred may be limited in liability or simply not agree to all original terms. In some

cases, transferal of the agreement may be to a company/contractor that does not have the ability to provide adequate financial backing or proper authority to meet original obligations. Simply make sure that if this clause is included in the contract that the specific conditions, terms, liability and risks associated with such transferal are outlined.

- Easement, right of ways, permission to enter the farmland at will and/or right to work of other parties should be considered carefully. Leases allow a landowner to provide a tenant exclusive rights for a specific time period. They are easily terminated. An easement provides the owner the right to continue using his/her land but transfers an interest in the property, and associated rights, to a third party. They are often recorded with the deed. As such, they are not easily terminated.
- Does the contract allow the developer/contractor access to the land at any time? Some clauses allow entry, without notification, at any time during the term of the contract. Specifically outline who has access to property and under what terms or conditions. Failure to do so may allow the contractor, developer, sub lessee or others access at any time without notification to the landowner.
- Does the contract require the landowner to protect the developer/contractor's interest? If so, this broad term may imply legal fees, liability insurance or other matters. Avoid such clauses and terms and specify exactly what is needed by the contractor rather than a general, unclear clause that might increase the landowner's risks. Make sure these items are specifically outlined.
- Who is liable for injury of a person during establishment, operation or maintenance of the solar panels? In some cases, landowners may become entangled in legal disputes over worker injury. Make sure to protect yourself against such situation by specifically outlining such liability and responsibilities.
- Who is responsible for disputes with sub-contractors, sub lessee or others? As a landowner, it is especially critical to separate your responsibility from those of the contractors/developers. Otherwise, legal action for which you have no control over may result.
- Do both parties have the right to terminate the agreement without cause? If not, then what are the terms of termination? Solar farms do not generate power equally. In some cases, poor performance may result in an inactive site. If so, as a landowner, do you have the right to terminate the agreement? These issues need to be clearly defined in the contract.
- If there is a dispute or legal matter, what state determines the applicable laws. Some contracts specify that all legal matters be handled by arbitration in the state of the

contracting company's origin or operation. Insist that all legal matters and disputes follow local state laws and that disputes be settled within the state that the solar farm is located.

- Consider having the contract publicly recorded. Many contractors not only do not wish for this to occur, the contract may specifically have wording preventing disclosure of terms, operation or any business matters concerning the solar farms. Rather a "memorandum" is executed. Many states do not regard these memorandums as a binding legal agreement and thus are not as enforceable as publicly recorded contracts.
- Make sure that any changes to the contract or agreements is in writing and that the party representing the contract and work has the authority to make changes to the contract. In some cases, a third-party administrating company provides sales or initial contact. These individuals or companies may or may not have authority to accept changes to a contract.
- Many lending institutions, for various liability and risk concerns, will not allow solar farms to be placed onto farms with a lien. If the farm is not fully paid, check with the lending institution. Otherwise, full payment of the remaining balance may be due should the farm be placed into a solar farm.
- Evaluate the liability of injury to workers, visitors to the site, potential environmental damage, fire, vandalism, or other unintended consequences. Liability insurance costs and needs for commercial property may greatly differ from liability insurance for farmland. As such, make sure the contract clearly specifies who owns the equipment and liability of damage to equipment or personal injury.
- Avoid clauses or phrases that are vague such as allowing entry of the developer, contractors or assignee to "undertake any activities that are necessary, helpful, appropriate or convenient in connection with, incidental to, or for the benefit of one or more projects." Such statements give the contractor/developer or others open-ended rights and even the right for future development. Make sure to specifically outline all activities and responsibilities for all parties and specifically state that no others are implied.

Additional information on contract considerations is found at

<https://nccleantech.ncsu.edu/wp-content/uploads/Solar-Land-Lease-Issues.pdf> 

FARMLAND PRESERVATION PROGRAMS

Craven County, NC, as many counties within North Carolina has farmland preservation

programs such as the Voluntary Agricultural District (VAD) or Enhanced Agricultural District (EVAD). These programs identify farmland that the landowner has voluntarily committed to agricultural production and conservation practices to protect natural resources. As such, no commercial development is allowed.

The Craven County Agricultural Advisory Board administers these programs. If farmlands enrolled into a VAD are to be removed from agricultural production and placed into solar farms, a letter addressed to this board requesting removal is required (and payment for removal of the Conservation Agreement with the Register of Deeds). Once the Agricultural Advisory Board receives this letter, the process should take between 30-90 days.


Farmland enrolled in an EVAD are more secure and binding. These lands have been enrolled as land that will remain in agricultural use for a minimum of 10 years from the date of enrollment and the land is automatically renewed for three-year time periods thereafter. There are penalties for early removal. However, once the original term has expired, the process for removal of lands from an EVAD are identical to the VAD.

Contact and additional information for the Craven County Agricultural Board is found at <http://www.cravencountync.gov/boards/volunteer/vad.cfm> .

DECOMMISSIONING

Currently no ordinance or provision provides for mandatory decommissioning in North Carolina. However, decommissioning may be warranted should the contracting company choose not to utilize the site, the site becomes damaged beyond reasonable repair, as the equipment ages, or equipment becomes too inefficient to provide profit. At some point, whether by choice or by default, the solar panels and equipment will need to be removed.

One of the primary obstacles currently faced by solar farms is that many of the products used consist of heavy metals and contaminants that cannot be disposed within a landfill. Many of the products will need to be recycled. Some companies offer this service for free or a small charge. However, the current concern is that there are not enough decommissioned solar panels to justify recycling of the materials. Thus, it may be difficult and costly to decommission the site.

Guidelines for decommissioning as listed within the publication, ***Template Solar Energy Development Ordinance for North Carolina***  include:

Consider decommissioning under if any of the following conditions:

1. The land lease ends
2. The system does not produce power for 12 months
3. The system is damaged and will not be repaired or replaced

The owner/contractor of the solar farm, as provided for in its lease with the landowner, should do the following as a minimum to decommission the project.

1. Remove all non-utility owned equipment, conduits, structures, fencing, and foundations to a depth of at least three feet below grade.
2. Remove all graveled areas and access roads unless the owner of the leased real estate requests in writing for it to stay in place.
3. Restore the land to a condition reasonably similar to its condition before development, including replacement of top soil removed or eroded.
4. Revegetate any cleared areas with warm season grasses that are native to the region unless requested in writing by the owner of the real estate to not revegetate due to plans for agricultural planting.
5. Provide soil (and water if near a stream) sample reports from a private lab showing soil (water) on the location is free of heavy metals and contaminants and is suitable for agricultural production or desired use.

All removal and decommissioning shall occur within 12 months of the facility ceasing to produce power for sale. The owner/contractor of the solar farm should be responsible for this decommissioning. The owner/contractor of the solar farms should provide the Town/County planning departments, Register of Deeds and landowner a signed decommissioning plan within 30 days of change in the facility owner.

FUTURE CONSIDERATIONS

Within Craven County, NC there are currently no outlines, provisions or ordinances specifically regulating solar farm development. However, one should consider some guidelines that prevent future complications.

- Currently, development evaluates water quantity and quality impacts based upon the structures and property site alone. Increasingly more are supporting efforts to evaluate water impacts on a watershed scale. Thus, long-term plans should provide to protect against soil erosion, stream protection (if near a stream) and water quality.
- Across the state, evaluations are occurring to provide some insight into the potential impact of solar farms on wildlife. Loss of farmland, foods and shelter from farmlands will have an impact upon the environment. Whether or not the long-term impact is positive or negative is yet to be determined.
- What will the solar farm do to neighboring land values? Law suits alleging decline in value of homes or businesses due to construction of businesses or farms (swine operations, as example) are numerous. Currently, law protects the original land owner but no law currently addresses the specific glare, frequencies or unfavorable view of a functioning or non-functioning solar farms.

SUMMARY

Each landowner will need to determine whether or not the transition of agricultural land to solar energy production is feasible. Higher revenue on a per acre basis does not necessarily mean greater profit. Higher expenses, future land use and/or opportunity costs may negate profits. Secondly, many of the solar farm projects are established with financial tax incentives, government mandates for alternative energy sources and initial depreciation values anticipated. While these add immediate revenue, they also come at a cost to society and government. Too, they can disappear as quickly as initiated. Lastly, serious consideration of “best and worst case” scenarios should be evaluated. Solar farms providing 15-20 years of alternative energy, revenue to the landowner, and tax revenue to the county is beneficial. In contrast, abandoned solar farm production, excessive cost of decommission or loss of future land use is a detriment to the landowner and area.

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RESOURCES & REFERENCES

Template Solar Energy Development Ordinance for North Carolina

<https://nccleantech.ncsu.edu/wp-content/uploads/NC-Template-Solar-Ordinance.pdf> 

NC Clean Energy Technology Center – <https://nccleantech.ncsu.edu/about-ncsc/>

Solar Energy Tax Information – <https://www.ces.ncsu.edu/spotlight/solar-energy-property-tax-resources/>

Property Taxes and Solar PV Systems: Policies, Practices, and Issues – <https://nccleantech.ncsu.edu/wp-content/uploads/Property-Taxes-and-Solar-PV-Systems-2013.pdf> 

Cost of Solar Energy: Article with comments from John Morrison, chief operating officer of Strata Solar in Chapel Hill, <https://www.carolinajournal.com/news-article/n-c-state-prof-casts-shadows-on-solar-meeting/>

General Solar Energy Information and Data – <http://www.thesolarfoundation.org/>

NCSU Issues for Landowners – <http://content.ces.ncsu.edu/threshold-issues-for-landowner-solar-leasing>

One article with comments from John Morrison, chief operating officer of Strata Solar in Chapel Hill, outlines some thoughts on this topic at <https://www.carolinajournal.com/news-article/n-c-state-prof-casts-shadows-on-solar-meeting/> .

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