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Center for Agricultural
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Carbon Contracts and Markets & Grid-Scale Solar Project Siting Controls



2nd Annual PA Farm Show

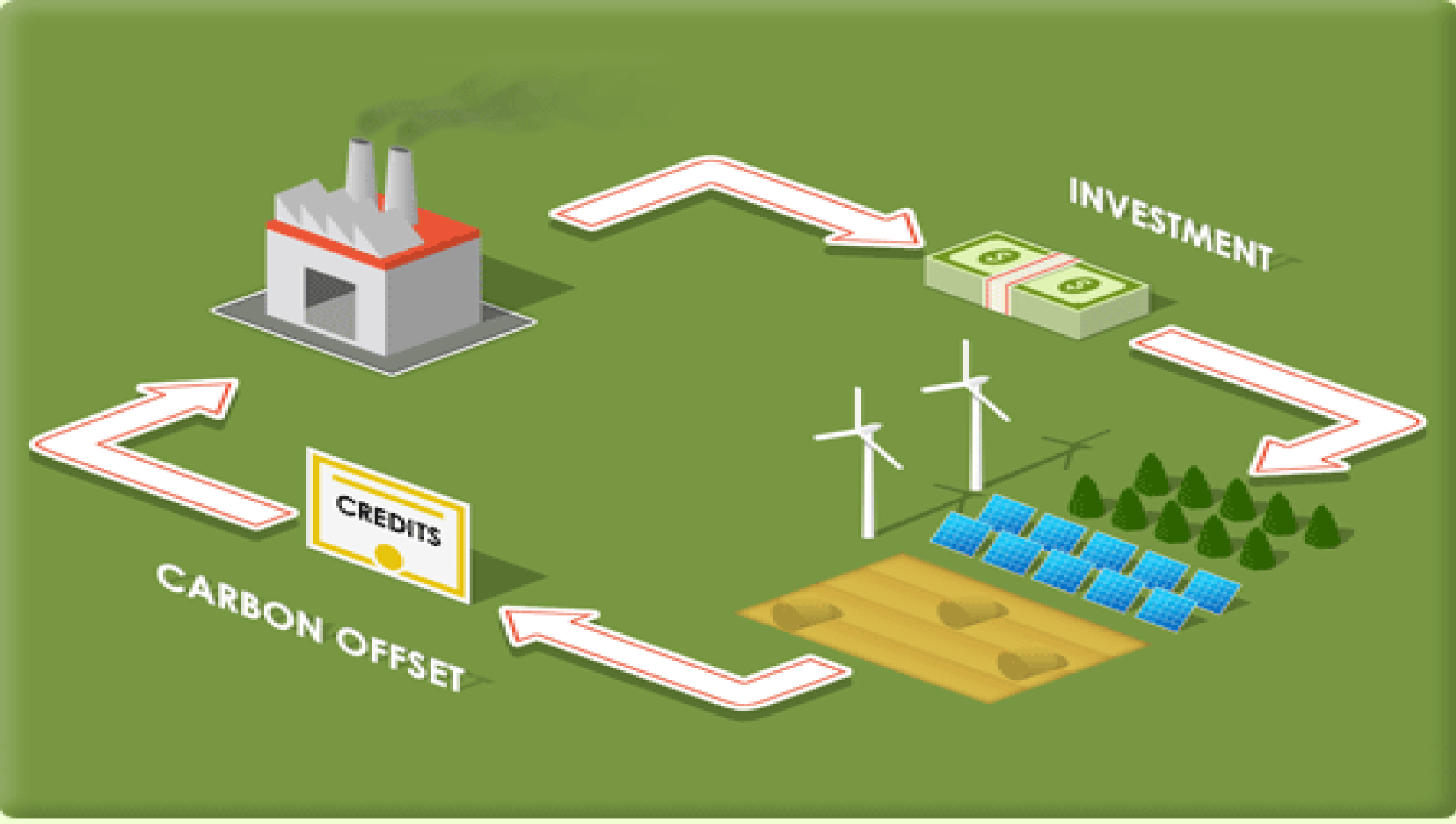
Agricultural Law Symposium

Hour 3: Legal Issues in Diversification of Farm Income

Thursday, January 13, 2022

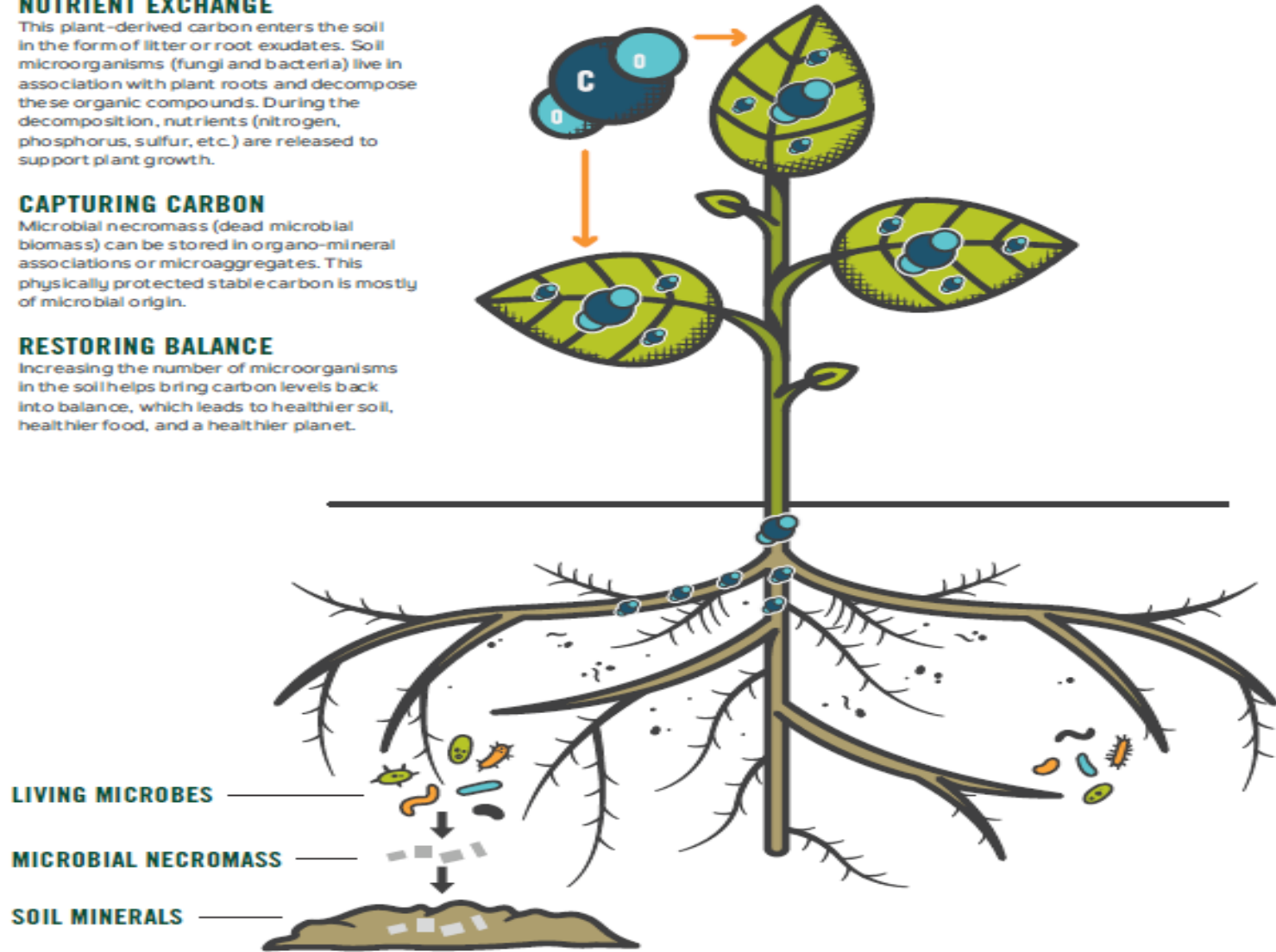


Carbon Contracts and Markets



CARBON SEQUESTRATION - HOW IT WORKS

- ① **PHOTOSYNTHESIS**
During photosynthesis, plants convert carbon dioxide (a gas) into sugar (carbohydrate molecules).
- ② **NUTRIENT EXCHANGE**
This plant-derived carbon enters the soil in the form of litter or root exudates. Soil microorganisms (fungi and bacteria) live in association with plant roots and decompose these organic compounds. During the decomposition, nutrients (nitrogen, phosphorus, sulfur, etc.) are released to support plant growth.
- ③ **CAPTURING CARBON**
Microbial necromass (dead microbial biomass) can be stored in organo-mineral associations or microaggregates. This physically protected stable carbon is mostly of microbial origin.
- ④ **RESTORING BALANCE**
Increasing the number of microorganisms in the soil helps bring carbon levels back into balance, which leads to healthier soil, healthier food, and a healthier planet.



Moyer, J., Smith, A., Rui, Y., Hayden, J. (2020). Regenerative agriculture and the soil carbon solution [white paper]. (https://rodaleinstitute.org/wp-content/uploads/Rodale-Soil-Carbon-White-Paper_v11-compressed.pdf)



The Growing Climate Solutions Act of 2021

S. 1251 - U.S. Senate passed on 6/24/21 by vote of 92-8

USDA/EPA study of U.S. carbon markets:

- Seeks to make it easier for farmers to participate in voluntary carbon credit markets.
- Nothing is mandatory, completely voluntary.

1. Look at how voluntary carbon markets operated over the past four years, including supply of and demand for ag carbon credits.
2. Project supply and demand for ag carbon credits for the next four years.
3. Identify complications associated with measuring and verifying long term carbon sequestration and other activities that prevent, reduce or mitigate greenhouse gas (GHG) emissions in agriculture and forestry.
4. Identify complications for small, beginning and socially disadvantaged producers participating in carbon markets.
5. Evaluate the potential USDA role for improving carbon reduction measurement technologies.
6. Examine the extent to which existing carbon markets adequately consider unique challenges facing ag producers regarding carbon credit verification, additionality, permanence and reporting, given regional variations and different ag business arrangement.
7. Analyze whether current carbon markets have sufficient flexibility to deal with disrupting those agricultural practices generating carbon credits due to unavoidable events including production challenges and natural disasters.



Potential carbon credit generating activities:

1. Land or soil carbon sequestration.
2. Emissions reductions resulting from fuel choice or reduced fuel use.
3. Livestock emissions reductions, including emissions reductions achieved through (a) feeds, feed additives, and the use of byproducts as feed sources; or (b) manure management practices.
4. On-farm energy generation.
5. Energy feedstock production.
6. Fertilizer or nutrient use emissions reductions.
7. Reforestation.
8. Forest management, including improving harvesting practices and thinning diseased trees.
9. Preventing the conversion of forests, grasslands, and wetlands.
10. Restoring wetlands or grasslands.
11. Grassland management, including prescribed grazing.
12. Current practices associated with private land conservation programs administered by the USDA Secretary.
13. Other activities that the secretary, in consultation with the Advisory Council, determines to be appropriate.



What is in the proposed Act?

- Establish voluntary USDA carbon saving **measurement and verification protocols**.
- USDA also would establish an advisory committee to oversee operation of the USDA program to certify **GHG technical assistance providers** and **third-party verifiers**.
- Creation of a **USDA website** where certified technical assistance providers and third-party verifiers would be listed.
- **Producer protection requirements** that certified technical assistance providers and third-party verifiers would — “to the maximum extent feasible” — be required to follow.
 - The providers and verifiers would be required to act in good faith, and to provide realistic estimates of costs and revenues relating to carbon saving activities and verification.
 - Technical assistance providers would, in addition, be required to ensure — “to the maximum extent feasible” — that farmers and ranchers receive a fair distribution of revenues from the sale of ag carbon credits.



The questions to be asked with any carbon contract:

1. **What will you be required to do to generate the credit (practices, etc.)** – most will require new or different farming practices, such as no-till, cover crops, and replacing traditional fertilizer with soil amendments or the like. Other possibilities include transitioning to perennial crops or re-forestation.
2. **How long will the contract last** – these are likely to be long term, probably 10 years or much longer. The current marketplace is seeking long periods of carbon sequestration, some up to 100 years. The length of the contract will tie up the land's use for significant periods, and likely impact sale and leasing opportunities. It may also impact transfers of the land through estate planning.
3. **How much will you get paid** – this should be a function of how much carbon will be captured on the land. It is difficult to determine current prices for carbon credit prices, but some indicators suggest prices of \$5 to \$9/ per metric ton. It will be important to know how many acres will be required to capture one ton of carbon.

[Courtesy of Joel Cape](#), Cape Law Firm, PLC



4. **When will you get paid** – this is likely to be tied to the sale of the carbon credits by the aggregator and could be many months after the carbon-sequestering activities are completed. The practices required will probably incur some expense, or possibly a sacrifice in yield, so the payment will be used to counter the expense and hopefully result in profits. The landowner will also want to examine available options in the event of payment default.
5. **What are the consequences of getting out of the contract** – it is likely to be quite difficult to exit the contract since these are typically viewed as long-term arrangements. One comparable example would be early termination of a CRP contract – there the landowner is required to repay all of the CRP payments, plus interest and a penalty.
6. **Will liens or restrictive covenants be placed on the land** – the contract may allow the aggregator to place a lien or other restrictive covenant on the land to ensure compliance. This would greatly impact options for use and transfer of the encumbered acreage.
7. **Who owns and gets access to the data** – data regarding the land and practices will be collected by the aggregator to verify carbon storage. The data will also be communicated in some fashion to the marketplace to authenticate the carbon credit. The farmer will want to understand what data will be released and how.
8. **How will the carbon be verified** – the science of carbon verification is quite new, and its accuracy may be questionable. Current verification methods are time-consuming and expensive. This is likely to affect the value of the contract.



RESOURCES

Aiken, J.D. **"Ag Carbon Credits,"** Cornhusker Economics, UNL Department of Agricultural Economics. April 21, 2021. Overview of ag carbon market.

<https://agecon.unl.edu/ag-carbon-credits>

Aiken, J.D. **"Ag Carbon Offsets and the Carbon Bank"** FARM Series 21-0312, UNL Department of Agricultural Economics. April 2, 2021. Provides introduction to ag credits as pollution offsets and to a possible USDA carbon bank, which is not part of S. 1251.

<https://farm.unl.edu/policy-legal-finance/ag-carbon-offsets-and-carbon-bank/04022021-0956>

Crespi, John M. & Kristin A. Tidgren. **"The First Legal Step for an Agricultural Carbon Market is in the Growing Climate Solutions Act of 2021."** May 2021. Compares the proposed Growing Climate Solutions Act to USDA regulation of organic food. 5 page report.

<https://www.card.iastate.edu/products/publications/synopsis/?p=1325>

Plastina, Alejandro & Oranuch Wongpiyabovv. **"How to Grow and Sell Carbon Credits in US Agriculture."** Iowa State University Extension & Outreach, July 2021. Very helpful report comparing 11 private voluntary ag carbon programs across 26 factors.

<https://www.extension.iastate.edu/agdm/crops/pdf/a1-76.pdf>

Sellers, Sarah and others. **"What Questions Should Farmers Ask about Selling Carbon Credits?"** Farmdoc Daily (11):59, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 13, 2021. Excellent bulletin that estimates per acre revenue for several carbon saving ag activities.

<https://farmdocdaily.illinois.edu/2021/04/what-questions-should-farmers-ask-about-selling-carbon-credits.html>

Swanson, Krista and others. **"Growing Climate Solutions Act Impact on Farmers."** farmdoc daily (11):66, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 22, 2021. Overview of carbon markets; short discussion of the Growing Climate Solutions Act. 3 page newsletter.

<https://farmdocdaily.illinois.edu/2021/04/growing-climate-solutions-act-impact-on-farmers.html>

COMET-Farm – Whole Farm and Ranch Carbon and Greenhouse Gas Accounting System

COMET
Farm

USDA United States Department of Agriculture
Natural Resources Conservation Service

Colorado
State
University

Whole Farm and Ranch
Carbon and Greenhouse Gas
Accounting System.

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What is COMET-Farm?

COMET-Farm is a whole farm and ranch carbon and greenhouse gas accounting system.

The tool guides you through describing your farm and ranch management practices including alternative future management scenarios. Once complete, a report is generated comparing the carbon changes and greenhouse gas emissions between your current management practices and future scenarios.

[Start Using COMET-Farm](#)



Why should I use
COMET-Farm?



USDA GHG
methods



What information
do I need?



How are my
results calculated?



Is my information
safe?



How do I use
COMET-Farm?



Overview video



GRID-SCALE SOLAR PROJECT SITING CONTROLS

1. We are still looking at an industry in its infancy in Pennsylvania.
2. According to numbers obtained from the PJM Interconnect on July 2, 2021, only 7 of the 62 active projects approved to sell electricity to the grid in Pennsylvania are operational.
3. How are sites being selected?
4. Who has a hand in selecting them?
 - a. Solar developer ✓
 - b. Private landowner ✓
 - c. Government entity ?
 - i. Federal govt
 - ii. State
 - iii. Local



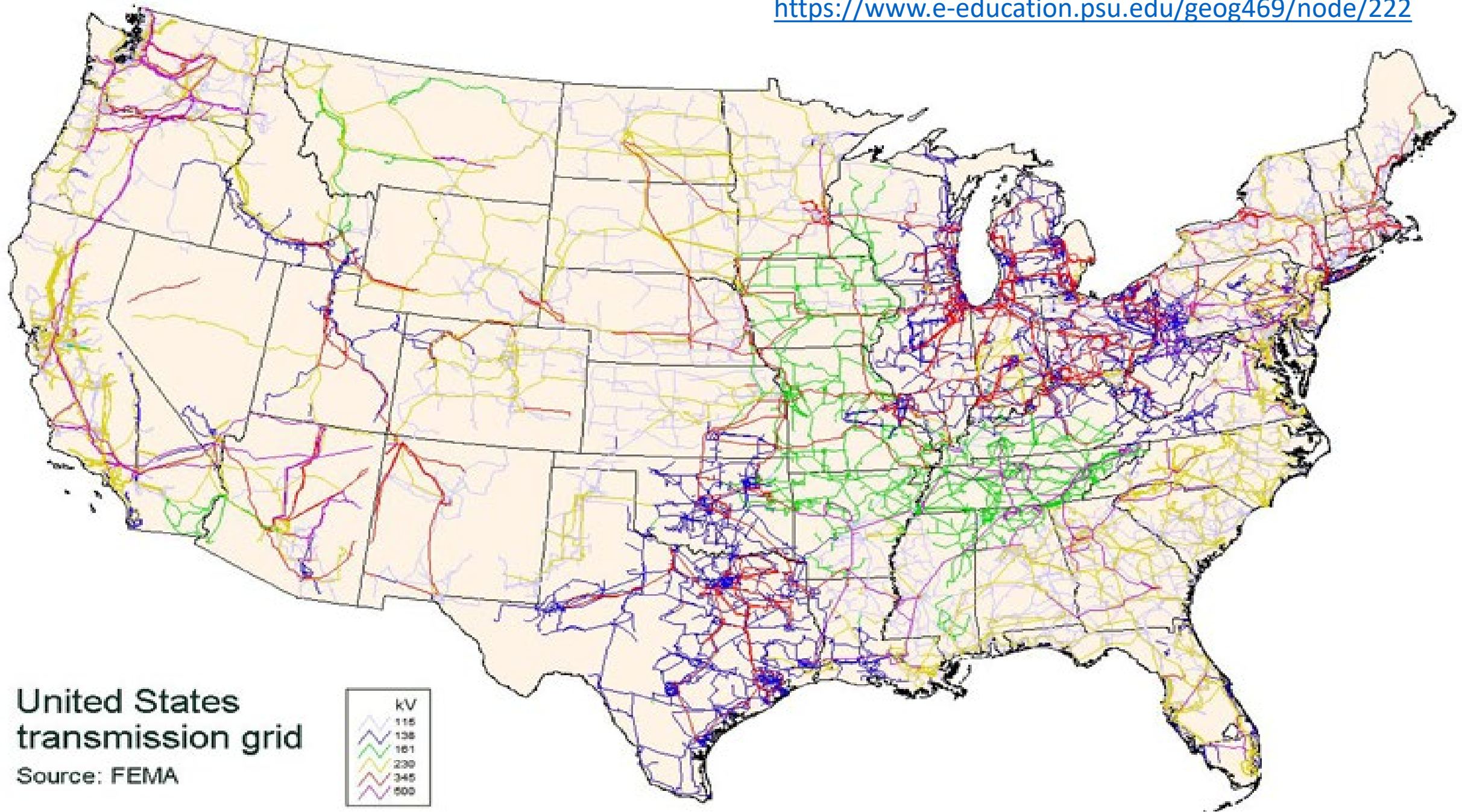
LEASING MODEL:

- Tens of millions of dollars are being proposed to be borrowed and invested to build and operate what is essentially a “power plant” on the surface of property that is simply leased.
- The property is not owned by, and therefore not under the complete control of, the party who borrows tens of millions to capitalize and operate the project.
- Moreover, the solar facilities on the surface will be pledged as collateral for that capital.
- That is a lot of risk resting on a fairly “thin” legal thread.
- Doesn’t seem like a good business model.

Q: *Why is this being done?*

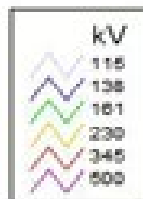
A: Because the regulatory environment is in flux. **In Pennsylvania’s case, it is virtually non-existent.**

- **PA → No PUC, no DEP, no other State Agency authority on siting.**
- **All authority in Pennsylvania rests with township governments’ local controls through zoning and land development ordinances.**



United States transmission grid

Source: FEMA





SOLAR DEVELOPMENT PRESSURE ON FARMLAND

- Unfortunately, the most attractive land to be developed for solar facilities, or most other uses for that matter, is land that is flat, level and cleared.
- Hence, **solar leasing is now another potential development pressure on farmland.**
- The Commonwealth of Pennsylvania has gone to very successful lengths, through various statutory measures like the Agricultural Area Security Law, the funding and purchase of agricultural conservation easements and the Clean and Green preferential tax assessment program, to **invest billions of dollars to counter development pressure on farmland.** Presently, all those incentives are available equally to alleviate this new development pressure and in the identical manner.
- But in the case of solar development pressure, **everything is being left to chance and to township zoning hearing boards and boards of supervisor, most of whom do not even have ordinances in place.** Even with ordinances in place, without state authority on siting, we will be left with a **patchwork of thousands of different sets of rules** on siting.
- Is that a good idea?



SOLAR SITING LAWS

- Surrounding state governments have taken recent legislative action to become more involved in siting decisions for utility scale solar development. The generic term “**Solar Siting Law**” appears to be the emerging terminology for these types of measures.
- **New York: Accelerated Renewable Growth and Community Benefit Act, effective April 3, 2020.**
 - It established an **Office of Renewable Energy Siting (ORES)** with whom an application must be filed, and approval obtained, for locating grid-scale solar developments within the state.
 - Regulations defining the process were proposed and adopted as final, **effective March 3, 2021**.
 - The law requires solar developers to conduct both public informational meetings and local government informational meetings at least 60 days before filing an application for approval.



SOLAR SITING LAWS

Ohio: Enacted amendments to existing law via “**Substitute Senate Bill 52**,” effective October 11, 2021.

- It revises approval procedures of the existing **Ohio Power Siting Board** for the construction of a “large solar facility,” defined as a single interconnect (i.e. not a community solar project) with ≥ 50 megawatt capacity.
- Counties may designate by voter referendum “restricted areas” where large solar facilities may not be constructed.
- Similar to New York, a public and County government informational meeting must be held at least 90 days before application, but Ohio includes a provision that the County Commissioners may thereafter by resolution prohibit or limit the size of a proposed project before application to the state siting board.



BONDING BY LAW

- ***Bonds payable to state government:*** It is important to point out such laws generally establish state government licensing and jurisdiction over, and bonding requirements for, decommissioning of a solar site, including the authority to step in and complete decommissioning upon default. Ohio's new law, for example, requires a decommissioning bond payable to the state, updated in amount every 5 years, and sets a 12-month decommissioning deadline.
- Requiring a decommissioning bond payable to the state or local government is not effective unless there is a government obligation to remediate the abandoned site.
- Presently in Pennsylvania, decommissioning is strictly a private contractual commitment by a tenant to a landlord under a lease.

Thanks to Our Partners

The Center for Agricultural and Shale Law is a partner of the National Agricultural Law Center (NALC) at the University of Arkansas System Division of Agriculture, which serves as the nation's leading source of agricultural and food law research and information. This material is provided as part of that partnership and is based upon work supported by the National Agricultural Library, Agricultural Research Service, U.S. Department of Agriculture.



Thank you!

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CENTER MISSION AND BACKGROUND

The Center for Agricultural and Shale Law conducts research and educational programs to serve a wide variety of stakeholders including agricultural producers, landowners, mineral interest and royalty owners, business professionals, judges, attorneys, legislators, government officials, community groups, and the general public. Center programs are funded in part by the Commonwealth of Pennsylvania through the Pennsylvania Department of Agriculture. The Center for Agricultural and Shale Law is a partner of the National Agricultural Law Center (NALC) at the University of Arkansas System Division of Agriculture, which serves as the nation's leading source of agricultural and food law research and information.

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