LINCOLN INSTITUTE
OF LAND POLICY

# Renewable Energy Projects

National Conference of State Tax Judges, October 27-29, 2022 | Angela Adolph | Catherine Collins | Victoria Enyart | Robert Manicke

Note: For a comprehensive valuation analysis of a large wind farm, see *DTE Electric Co v. Bloomfield & Sigel Townships,* Docket No. 16-003995 (Michigan Tax Tribunal June 11, 2021)

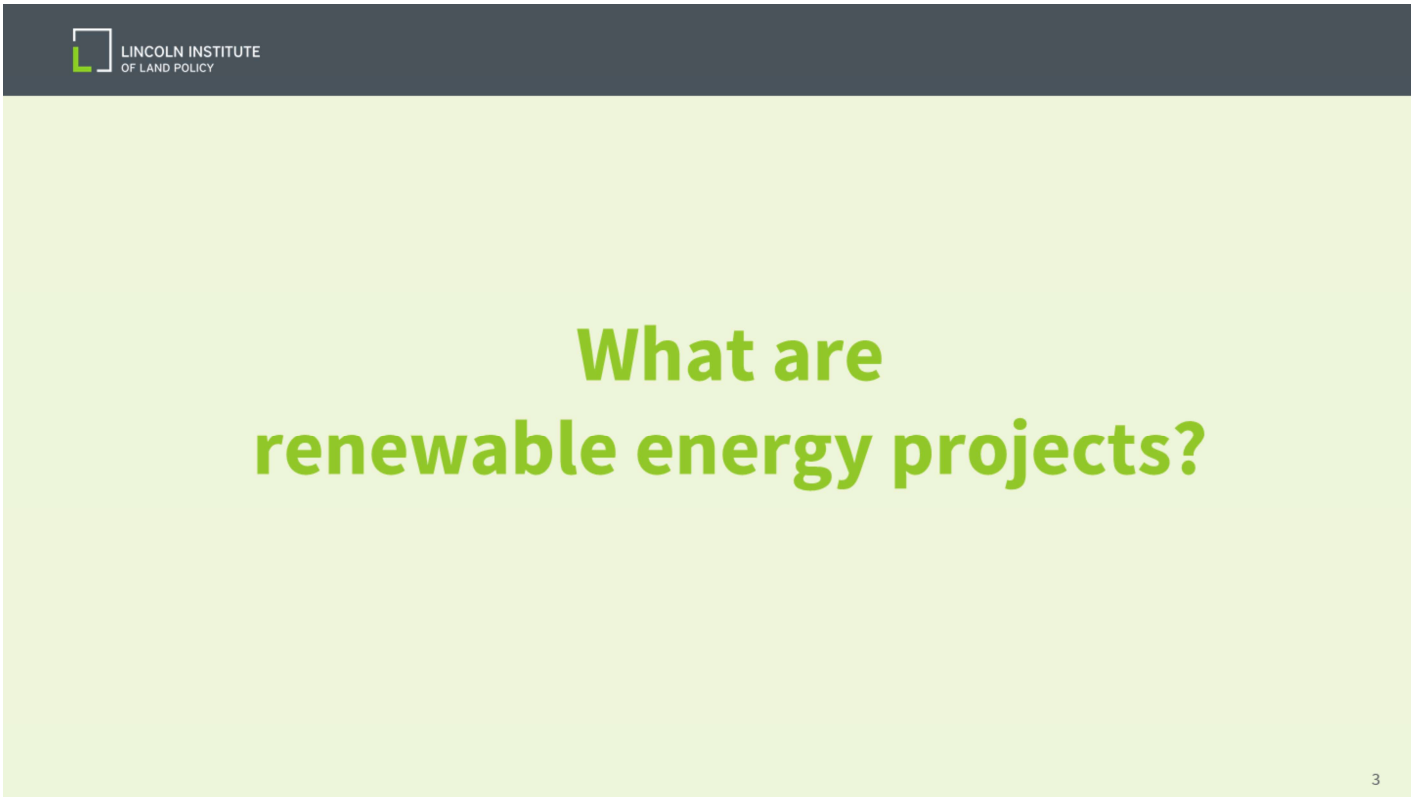
The methodology in the case has been applied in subsequent Michigan cases.

Full opinion available here: https://www.michigan.gov/-/media/Project/Websites/taxtrib/Folder8/DTE_16-003995_FOJ_with_calculations-Combined.pdf?rev=e85657542fa94725b9817c9b3229576b

See page 107 for findings of fact. See page 111 for analysis and conclusions of law.

## Introduction

- What are renewable energy projects?
- Why are we talking about them?
- Economics (follow the money)
- Valuation issues
- Future topics




What are renewable energy projects?

Renewable energy 101: Renewable energy is energy produced from sources like the sun and wind that are naturally replenished and do not run out. Non-renewable energy comes from finite sources that could get used up, such as fossil fuels like coal and oil.

Projections: 60 years of current consumption for oil and natural gas, about 140 for coal. Compare this to 5 billion years for our sun, regardless of consumption.

Advantages of renewable energy:

- Enhanced reliability, security, and resilience of the nation's power grid
- Job creation throughout renewable energy industries and in manufacturing, which is especially important in rural areas where most of these projects tend to be located
- Reduced carbon emissions and air pollution from energy production
- Increased U.S. energy independence
- Increased affordability, since many types of renewable energy are cost-competitive with traditional energy sources
- Expanded access for folks off the grid, such as in remote, coastal, or island communities
- Synergies – technology spun off from these types of developments may spur innovation in other technologies

Disadvantages of renewable energy:

- Not available around the clock
- Efficiencies still rather low
- Initial costs are high
- Requires lots and lots of space
- Devices must be recycled
- Zoning, NIMBY issues; can often have lots of organized resistance to these sites

LINCOLN INSTITUTE
OF LAND POLICY

## *Today's Focus*

Wind and solar facilities that **generate** electricity

- Wind farms
- Solar farms
- Residential rooftop and other "distributed" solar (nearly 20% of all solar generation)

**Future topics:** Tell us your ideas at the end (carbon sequestration and ***hot sauce***)



How is renewable energy turned into electricity? How is it captured?

What do these slides show you?

- Vast amounts of land are required
- Terrain and topography
- Technologies

## *Nuts and Bolts*

Equipment

- **Solar**: steel pilings, racking systems, solar panels (often called modules), inverters, DC and AC cabling, generator step-up units, computer (SCADA) systems and substations

- **Wind**: foundations (gravity, monopod, tripod, jacket and floating), turbines, cables, substations, grid, vessels (if offshore)

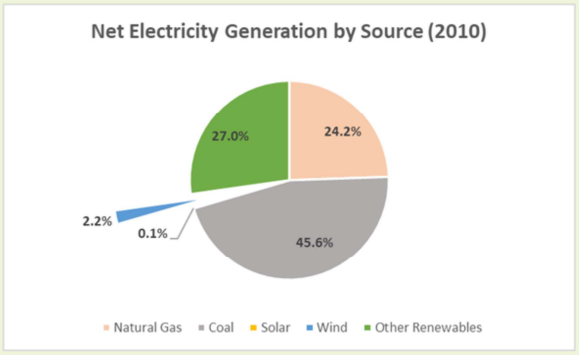
Fencing, landscaping, operations and maintenance building

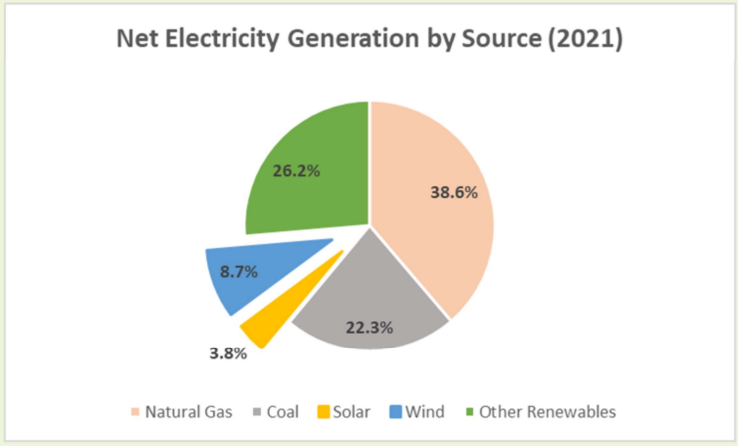
Intellectual or other intangible property

# Why talk about renewable energy projects?

LINCOLN INSTITUTE
OF LAND POLICY

## *Still Small Today, But Growing Fast*




Source: U.S. Energy Information Administration, *Monthly Energy Review* (August 2022)

*Pie chart data sources*: U.S. Energy Information Administration. Table 7.2a: Electricity New Generation: Total (All Sectors) and Table 10.6: Solar Electricity New Generation; *Preliminary Month Electric Generator Inventory*.

Question: Why talk about renewable energy projects?

Answer: While wind and especially solar have contributed only a small share of generation, their importance is growing, and is likely to be more significant over the next decade.

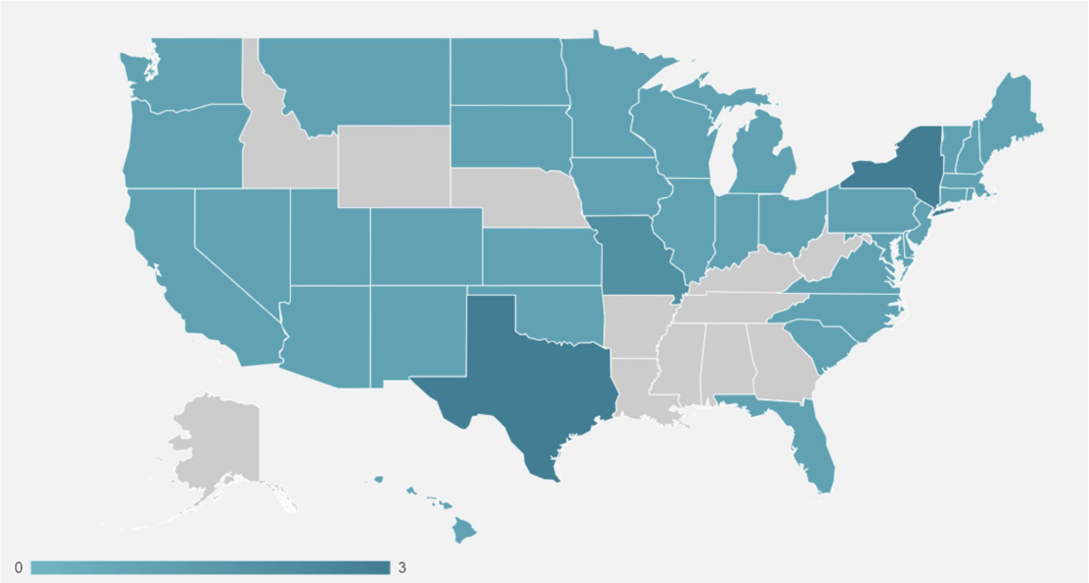
As shown here, in 2010, wind and solar were a very small slice of energy generation in the United States. Last year, they accounted for almost 15%. Together with "other renewables"
(hydro, nuclear, biomass, and wood), the share of energy generated by wind and solar matched that of natural gas. The shift toward renewable energy is fast approaching. 27% of
utility solar capacity and 10% of all wind capacity was installed last year (June 2021 to June 2022). However:

- Almost half of the solar electricity is generated from facilities that have a nameplate capacity of less than 1 megawatt.
- Part of the growth of solar and wind can be attributed to states adopting renewable portfolio or clean energy standards, in response to the federal

mandate.

LINCOLN INSTITUTE
OF LAND POLICY

## Growth Driven By State Renewable Portfolio Standards




Source: DSIRE, Database of State Incentives for Renewables & Efficiency (2022)

10

*Source*: https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx

States have created these standards to diversify their energy resources, promote domestic energy production, and encourage economic development. The mandate places an obligation on electricity supply companies to produce a specified fraction of their electricity from renewable energy sources. Renewable portfolio standards, unsurprisingly, vary greatly between states. Some states (shown in the gray in the above map), have not adopted such standards. Renewable portfolio standards have been enacted by 39 states and the District of Columbia (the three darker states—Texas, Missouri and New York—have additional standards for specific areas).

While the premise is to increase production from renewable energy sources in light of federal mandates, state policies may vary widely on several elements, including:

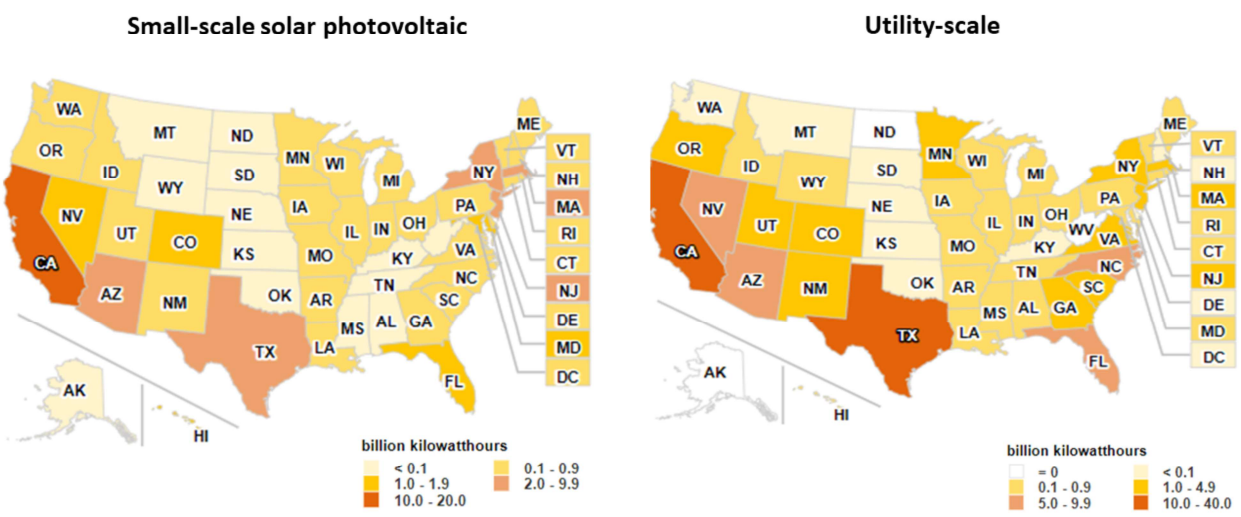
- targets and the timing of achieving those targets;
- entities they include, whether it is all utilities that generate, including municipal-owned and cooperatives, or just regulated utilities;
- resources eligible to meet requirements set by several states, including offshore wind; and
- cost caps—how much of the costs that can be passed on to ratepayers.

In many states, standards are measured by the percentage of retail electric sales. Iowa and

Texas, however, require specific amounts of renewable energy capacity rather than percentages, and Kansas requires a percentage of peak demand.

LINCOLN INSTITUTE
OF LAND POLICY

# Solar Widely Used




Source: U.S. Energy Information Administration, *Electric Power Monthly* (February 2022)

1

**Statistics on growth in U.S. renewable power industries**

The deployment of small-scale solar is widespread, as is utility generation. The mandate, or lack of mandates, is reflected in the deployment of solar (as shown in slide 11, some of the gray states have little solar).

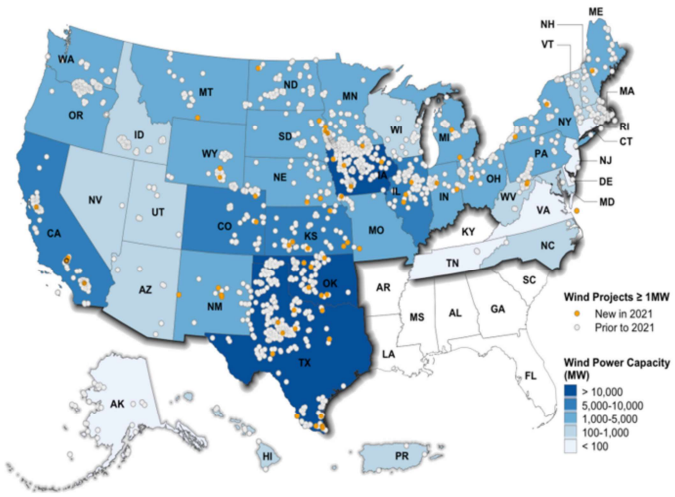
For 2021, residential solar facilities (primarily photovoltaic) accounted for 60% of small-scale deployment (nameplate capacity less than 1 megawatt) and the electric power sector dominated solar generation.

2021 Annual Totals:
Generation at Utility Scale Facilities – Solar: 114,678
Net Generation From Utility and Small-Scale Facilities: 163,703

Ultimately, both small-scale and utility-scale solar are growing at record rates with residential solar facilities dominating the majority of small-scale solar production.

# Wind Is Coming Right Down the Plains

## 2021 Utility-scale Wind Electricity Generation By State and Project




Source: U.S. Energy Information Administration, *Electric Power Monthly* (February 2022)



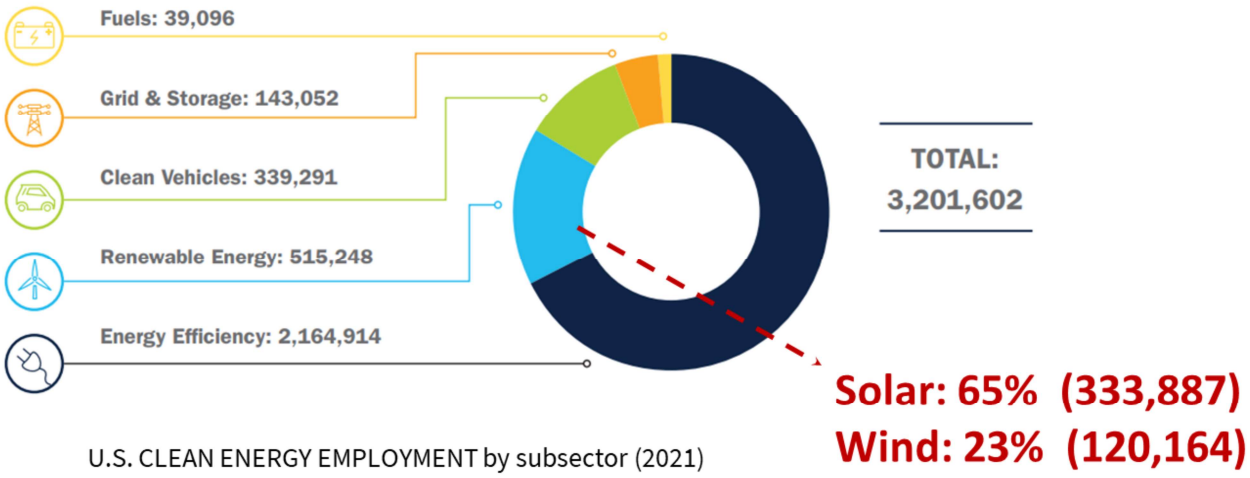
*Sources*: https://www.energy.gov/eere/wind/history-us-wind-energy; https://www.nrel.gov/docs/fy22osti/81486.pdf

Unlike solar, with wind, location is key. Siting wind is more difficult than solar. The above map shows that the presence of renewable standards is clearer. Each dot represents an installation—the white dots represent projects that were in place prior to 2021 and the orange dots represent projects completed in 2021.

Wind accounted for 31% of all new generation capacity added in 2020 (EIA 2021b) and now represents 8% of the country's electricity supply.

LINCOLN INSTITUTE
OF LAND POLICY

## Clean Energy Employment and Other Benefits




U.S. CLEAN ENERGY EMPLOYMENT by subsector (2021)

13

*Sources*: State-level Employment Projections for Four Clean Energy Technologies in 2025 and 2030. NREL. https://www.nrel.gov/docs/fy22osti/81486.pdf; Clean Jobs America 2022: A return to
rapid growth, with clean vehicle jobs driving ahead. August 2022.
https://e2.org/reports/clean-jobs-america-2022

In addition to clean, and in some states cheaper, energy, solar and wind has impacted local job markets. Job growth has been strong in 2020, with many jobs restored to pre-Covid levels, accompanied by strong wage growth, with jobs paying 25% more than the national median wage in 2019 and more likely to include medical and retirement benefits.

Expectations are that job growth will be strong, with solar jobs potentially nearly doubling by 2025. According to the National Renewable Energy Laboratory, both the job and wage growth trend is expected to continue.

In addition to the impact on employment, solar and wind facilities can have an economic impact on a community. For rural communities, the impact may also extend to the landowner where
facilities are sited, as landlords may receive payment for leases on the land or royalty payments.
https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Siting-Resources/Wind-Guidebook

Developers may also be affected by wind projects in particular, which require transportation of heavy equipment to the site. In such cases, a Road Use Agreement

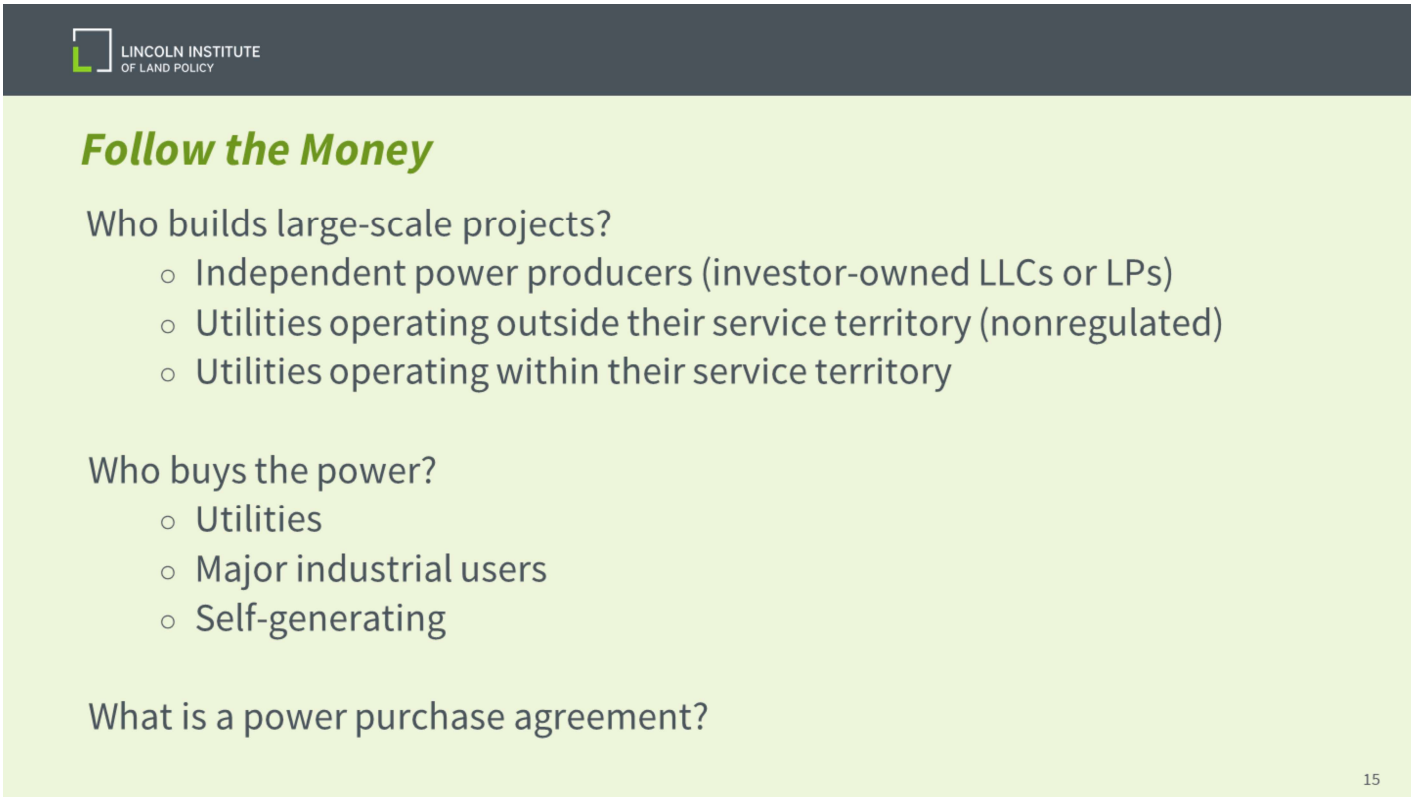
between the local jurisdictions and the developer may assign the developer responsibility for road upgrades, repairs, or post-construction restoration.
https://emp.lbl.gov/sites/default/files/utility_scale_solar_2021_edition_slides.pdf

A study of the impact of wind facilities on housing prices found that prices dropped by 8% after the wind project announcement but before construction. They subsequently returned to normal after the wind project was constructed and commenced normal operations. Lawrence Berkeley National Laboratory's (LBNL) 2013 study examined home sales from more than 50,000 homes near 67 wind facilities across nine states.
https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Siting-Resources/Wind-Guidebook

Additionally, wind facilities have health and climate benefits. Wind generation reduces power-sector emissions of carbon dioxide, nitrogen oxides, and sulfur dioxide. These reductions, in turn, provide public health and climate benefits that vary regionally, but together are economically valued at an average of over $90/MWh-wind for plants built in 2021.
*Source*:
https://static1.squarespace.com/static/5a4cfbfe18b27d4da21c9361/t/5fd108e7dae93b303af879f0/1607534830035/USCA+2020+Clean+Jobs+Report_Final.pdf

While there are economic gains for the community, it is the economics of the project that drive the development.

# Economics of Renewable Energy Projects




Who builds these utility-scale projects? Independent developers and utilities.

- Independent companies develop the sites and enter into power purchase agreements with utilities or municipal systems to provide power. They may also partner with an industrial manufacturing site to generate onsite.
- Utilities often have acreage around their power plants that can be utilized for solar or wind facilities.
- What is driving all this? RPSs and now the IRA make these projects financially feasible.

What are factors to start a project in a state?

- Suitable climate and conditions
- Scale-sized, large tracts of land that can be bought or leased for long term
- Previous development of some sort
- Transmission lines
- Zoning/permitting
- Power purchasers

How do power purchase agreements work? Typically, the price is in MW or KW hours and would be fixed with some escalations and adjustments baked in, just like any other PPA. Special tweaks for renewables PPAs are:

- longer term, at least 25 years to finance the project;
- the purchaser might be purchasing all electricity generated at the site or might be purchasing an allocated capacity;
- but solar capacity is intermittent, so the price per hour must account for the

fact that renewables power is not always available.

LINCOLN INSTITUTE
OF LAND POLICY

## *Keep Following the Money*

Who pays for the projects?

- Ratepayers
- Taxpayers through incentives



Ratepayers are the ultimate payors, but taxpayers pay through incentives. States offer income tax, sales tax, and property tax incentives.

LINCOLN INSTITUTE
OF LAND POLICY

## *Who Gets the Rest of the Money?*

Local governments

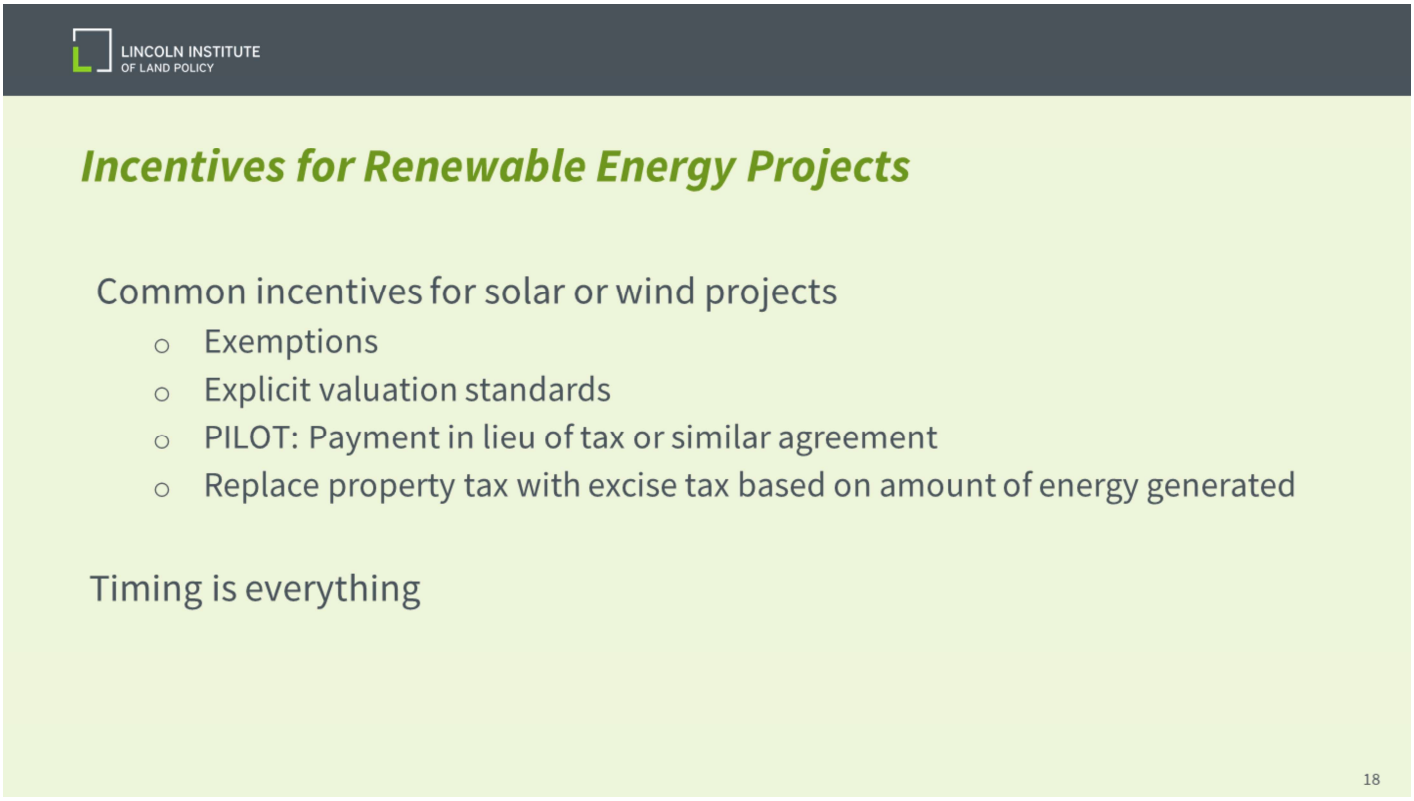
- Property tax based on value of improvements
- Incentive payments (PILOT or statutory fees)

Farmers, other private or public landowners

Construction and maintenance providers



Payments to local governments, including local PILOTs, fees and penalties, and franchise payments.




Two categories: General and Renewables (solar and wind only)

**Incentives vary significantly from state to state**

- There maybe differences in available incentives for:
  - Regulated utilities vs. independent power producers
  - Locally assessed vs. centrally assessed projects
  - Wind vs. solar
  - Utility scale vs. behind the meter/on-site use

**Timing is everything**

- Special treatment may be in place for limited or defined period based on construction
- End dates are often extended…

**Generally, property tax incentives can be broken into five major categories:**

- Blanket Statutory Exemptions (either lifetime or for a limited period)
  - CA – 100% exemption on solar until there is a change in control (no exemption for wind). Cal Rev & Tax Code § 73 (Res) STATE-ASSESSED PROPERTY: State-assessed property is not subject to the provisions of article XIII A (Proposition 13), and, therefore, is assessed at fair

market value annually on the lien date. Generally, the State Board of Equalization assesses electric generation facilities with a generating capacity of 50 megawatts or more but excludes qualifying small power production facilities and qualifying cogeneration facilities.

- MO – 100% solar exemption (being challenged in court). 137.100 R.S. Mo. (court knocked it out)
- KS – 10-year 100% exemption on renewables (with accelerated depreciation so the project is fully depreciated by the end of the exemption period). Kansas Statutes 79-201.
- FL – 80% exemption on renewable energy property tax until the statute expires in 2037. Fl Stat. Section 193.624 (residential 100%)
- NC – 80% renewable exemption. N.C. Gen. Stat. § 105-275 (section 45)
- AZ – 20% renewable energy assessment ratio (effective 80% exemption) for renewables. Ariz. Rev. Stat. Ann. § 42-14155(B).
- NV – 55% exemption (RETA Program). NRS 701A.300-701A.450; NAC 701A.500-701A.660
- AL – Abatement of non-education tax rates for 10 years. Ala. Code Section 40-9B-1
- KY – renewable energy subject only to state tax rate of 0.15% as manufacturing property. KY Rev Stat Sec. 132.020
- SC Code § 4-1-175

- Payment in Lieu of Tax or other similar contractual agreements

  - TX – County abatements and school limitation agreements (sunset in 2022) available. Tex. Prop. Tax Code section 312 or 313
  - NY – RPTL 487 Program
  - LA – ITEP or local abatement through port or IDB. La. Rev. Stat. Ann. §47:1703.
  - IN – Combination of accelerated depreciation, special year one renewable deduction, and PILOT. 50 IAC 5.1-6-7.
  - MS – potential PILOT/FILOT with local approval
  - OH – PILOT available with local option, $7,000/mW of capacity (assuming job requirements are met) with an additional optional local PILOT of up to $2,000/mW. OH Rev. Code Section 5727.75(B)(1)
  - OR – Strategic investment program (SIP) or PILOT. ORS 285C.600 to 285C.635 or ORS 307.175
  - SC – FILOT combined with special source revenue credits (SSRC). SC Code § 4-1-175.

    Are PILOT payments deductible?

    In PLR 200926023, the IRS held that a PILOT qualified as a deductible real property tax because it satisfied a three-prong test set forth in Revenue Ruling 71-49, dated January 1,1971, which provides that a PILOT will be treated as a real property tax if:

1. the payments are measured by and are equal to the amounts imposed by the regular taxing statutes;

2. the payments are imposed by a specific state statute (even though the vehicle of a lease agreement is used); and

3. the proceeds are designated for a public purpose rather than for some privilege, service, or regulatory function, or for some other local benefit tending to increase the value of the property upon which the payments are made.

- Industrial Revenue Bonds or other similar structures that transfer title to a tax-exempt entity

**IRB (Industrial Revenue Bond) or Similar Programs**

- GA – IRB program
- LA – IDB/Ports
- AR – IRB program. Ark. Code Ann. § 14-164.
- NY – IDA Abatement Program. Real Property Tax Law, § 412-a.
- NM – IRB program. NM Stat § 3-32-1 to 16

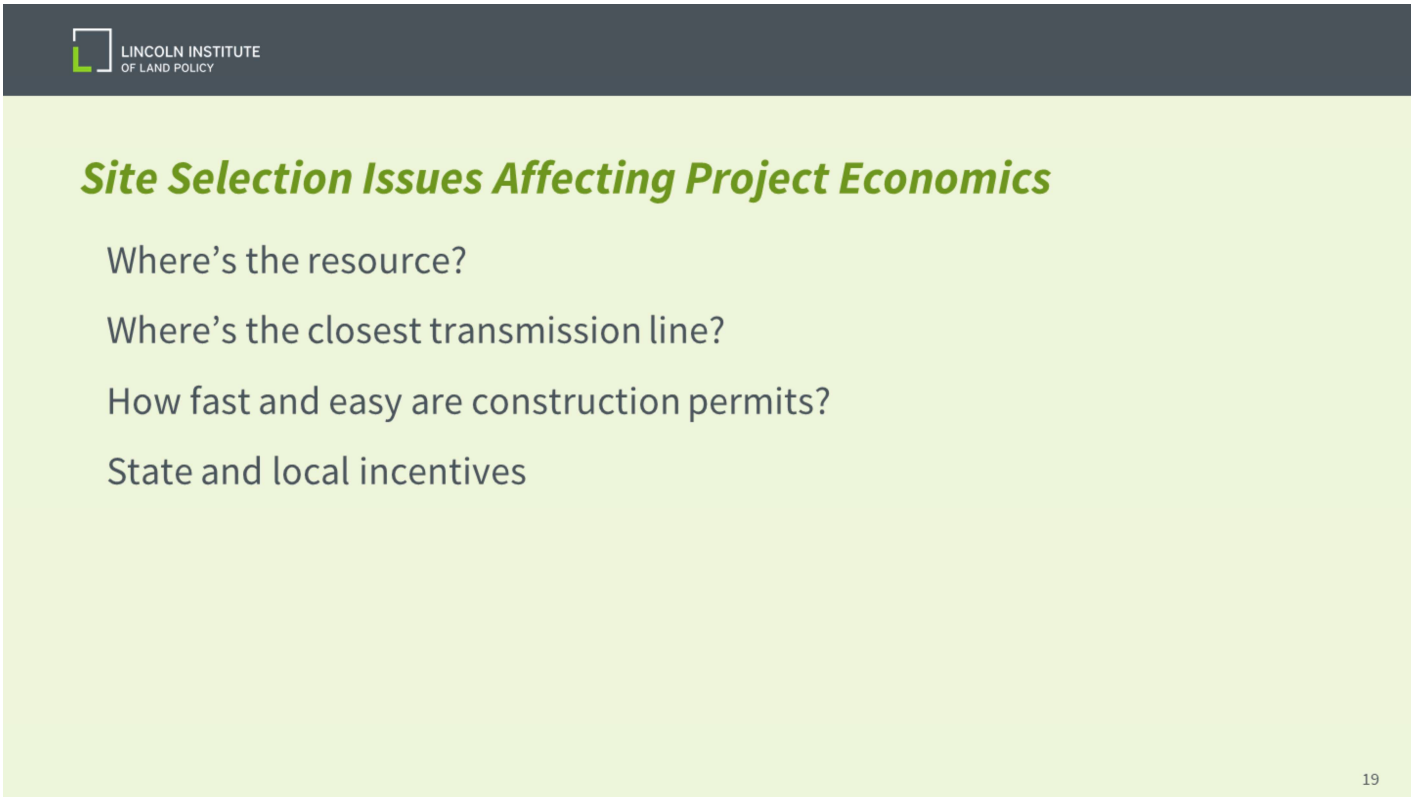
- Nameplate Capacity and/or Generation taxes in lieu of property tax
- Alternative or fixed valuation regimes

**Alternative/Fixed valuation programs**

- IL – fixed escalating cost per MW AC. § 35 ILCS 200/10-5 et seq.
- CO – Alternative calculation based on capacity. CRS § 39-4-102.
- NY – DCF model required under RPTL 575b
- IN – Solar land base rate value. Ind. Code § 6-1.1-8-2.
- TN – Value based on cost of renewable energy property (33% wind, 12.5% solar). Tenn. Code Ann.67-5-601 (e)-(f)

*Resource:* DSIRE. https://www.dsireusa.org

- Helpful database of state tax (and other) incentives for renewable energy projects
- Does include residential and other consumer-level exemptions




The state and local incentives piece is vital. In order for these deals to "pencil out," there must be lots of funds from lots of sources. State and local incentives:

- Statutory property tax abatements or PILOT arrangements
- Sales tax exemptions on the purchase of manufacturing machinery and equipment
- Workforce training
- Research and development tax credits
- Employment incentives for hiring from disadvantaged groups or from specific areas, like Enterprise Zones
- "Fast-tracking" state permitting


Property tax incentives vary state by state.

The biggest bucket where there is a consensus, is for homeowners and other small-scale facilities for on-site. While there may be differences based on who owns the panels, generally, the panels are deemed not to add value—at least until the property is sold (under Prop 13 in CA, property assessments are based on acquisition value).

In New York, whether to exempt the panels is left to the local taxing jurisdiction and if granted, the community may require a PILOT payment, of course, not to exceed the value of the exemption. RPTL 487 Program.

There is more variation in the treatment of utilities' solar facilities. In many cases, the consideration is between real and personal property, applying certain incentives to the personal property while leaving the valuing of the real property to the local assessors.

A few states also explicitly indicate which assessment method must be used. For example, in TN, value is based on cost of renewable energy property (33% wind, 12.5% solar). Tenn. Code Ann.67-5-601 (e)-(f). While in CA, where the state assesses utilities, the BOE suggests that of the three approaches to value, the income approach is generally thought to be the most reliable given the complexities related to the potential presence of additional obsolescence in wind energy properties.
https://www.boe.ca.gov/proptaxes/pdf/lta17020.pdf

A few states exempt these properties from the property tax entirely, and in lieu impose a

tax based on production or gross income from production. For example, in Idaho, 100% of property taxes, replaced with tax on gross earnings–3% for wind or 3.5% for solar.

One of the uncertainties is how long the special treatment will be available. While several states initially adopted incentives in the early 2010s with sunsets, many have extended the time frame for special treatment. Many states offered special treatment for facilities put in operation as of a certain date, but increasingly, those sunsets have been extended, allowing for more development. FL – 80% exemption on renewable energy property tax until the statute expires in 2037. Fl Stat. Section 193.624.

- CA – 100% exemption on solar until there is a change in control (no exemption for wind). Cal Rev & Tax Code § 73 (Res). KS: 10-year 100% exemption on renewables (with accelerated depreciation so the project is fully depreciated by the end of the exemption period. Kansas Statutes 79-201.
- (residential 100%)
- NC – 80% renewable exemption. N.C. Gen. Stat. § 105-275 (section 45)
- AZ – 20% renewable energy assessment ratio (effective 80% exemption) for renewables. Ariz. Rev. Stat. Ann. § 42-14155(B).
- NV – 55% exemption (RETA Program). NRS 701A.300-701A.450; NAC 701A.500-701A.660

- Payment in Lieu of Tax or other similar contractual agreements

  - **NY – RPTL 487 Program**
  - **OH – PILOT available with local option, $7,000/mW of capacity (assuming job requirements are met) with an additional optional local PILOT of up to $2,000/mW. OH Rev. Code Section 5727.75(B)(1)**

  **Alternative/Fixed Valuation Programs**
  - IL – fixed escalating cost per MW AC. § 35 ILCS 200/10-5 et seq.
  - CO – Alternative calculation based on capacity. CRS § 39-4-102
  - NY – DCF model required under RPTL 575b currently on hold
  - IN – Solar land base rate value. Ind. Code § 6-1.1-8-2
  - TN – Value based on cost renewable energy property (33% wind, 12.5% solar). Tenn. Code Ann.67-5-601 (e)-(f)

- Regarding renewable energy production, an exemption exists in Neb. Rev. Stat. § 77-6203 for any depreciable tangible personal property used directly in generating electricity using wind, solar, biomass, or landfill gas as the fuel source, if such depreciable tangible personal property was installed on or after January 1, 2016 and has a nameplate capacity of one hundred kilowatts or more. These renewable energy generation facilities instead pay a **nameplate capacity tax in place of the personal property tax and the real property is assessed locally** by the county assessor.

*Resource:* DSIRE. https://www.dsireusa.org

- Helpful database of state tax (and other) incentives for renewable energy projects
- Does include residential and other consumer-level exemptions

LINCOLN INSTITUTE
OF LAND POLICY

## They May Be Real Farms, Too

**Land planted to attract pollinators**

**Panels protect plants**



*Image source*: https://www.cesa.org/wp-content/uploads/State-Pollinator-Friendly-Solar-Initiatives.pdf

https://cals.cornell.edu/news/2022/06/solar-grazing-project-combines-renewable-energy-and-agriculture

https://www.cesa.org/wp-content/uploads/State-Pollinator-Friendly-Solar-Initiatives.pdf

Princeton University's Net Zero America study estimated that the area taken up by ground-mounted solar panels in the United States will have to increase by nine million acres by 2050 to reach carbon neutrality. That means that what's going in with the land underneath the panels, which solar companies typically haven't given much thought to, is starting to get more attention. This has popularized farming practices like Agrivoltaics, or agricultural production, such as crop production, livestock grazing, and pollinator habitat that exist underneath solar panels and/or in between rows of solar panels.

Over the past few years, solar farm developers have increasingly been encouraged to transform the space underneath their solar panels into a safe haven for bees, butterflies and other endangered pollinators.

While several states have established guidelines to encourage using pollinators in the development of the solar farm, a few have provided explicit incentives. The MA SMART program allows for an adder (higher rate) for such plantings; under its Farmland Open Space Program, MI allows farmlands that host solar farms and include pollination plantings to be assessed as farmland.

There are also “growing benefits” to farmers who use solar panels to improve their crops.

# Valuation Issues

LINCOLN INSTITUTE
OF LAND POLICY

## *Applying the Income Approach*

Factoring in incentives

PTC impact on income approach (federal "production tax credit")

- Does the PTC cash count?
  *e.g.*, PTC is an intangible *Kingfisher Wind, LLC v. Matt Wehmuller, et al.* (Memorandum Opinion, CV-2016-241)
- Potential obsolescence arguments
  *e.g.*, California Board of Equalization *Guidelines for the Assessment of Wind Energy Properties*, June 27, 2017

25

In valuing renewable energy projects, the typical three approaches are applied: income, cost, and sales.

Direct capitalization vs. discounted cash flow (DCF) method:

The DCF method involves projecting quantity, variability, timing, and duration of periodic income and the residual value, which are then discounted to present value using a discount rate. Projecting:

1. Power Generation:
   - Feasibility reports prior to construction
   - Historical generation
   - Operator's and third-party projections
   - Curtailment, which depends on supply and demand, market conditions, and transmission constraints
   - Faintenance problems.

2. Revenue:
   - Prices and PPAs (sources for information are company projections and third parties like S&P Global, Charles River, Wood McKenzie)
   - Capacity payments (depend on levelized cost of energy and issues with intermittent generation that affect payments)

3. Capital Expenditures:

- Company CAPEX plans/budgets

Incentives: It depends on what the incentive is and what state you're in. *Grand Lodge of KY Masons v. Kenton County Property Valuation Administrator*, KY Board of Tax Appeals, Nos. K20-S-94 through 137 (Jan 2022) (leasehold interest is taxable).

PTCs: The *Kingfisher Wind* case recently decided by OK Supreme Court. The Court found that production tax credits must be excluded from valuation of wind turbines because tax credits are intangible personal property and the right to tax credits was contractually committed to tax equity investor. Case No. 119837.

Other states: California guidelines direct assessors to exclude any tax credit in the valuation.

LINCOLN INSTITUTE OF LAND POLICY

## *Applying the Cost Approach*

Obsolescence

- Repair vs. replacement vs. upgrades vs. overhaul vs. new technology vs. "repowering"

ITC impact on cost approach (federal or state "investment tax credits")

- *e.g.*, ARS 42-13056 "…*'taxable original cost' means the* ***original cost minus the value of any investment tax credits****, production tax credits or cash grants in lieu of investment tax credits*"

Starting points: cost tables, state guidelines, environmental impact statement, construction cost sources

26

Steps to the cost approach:

1. Identify What Assets
   - Equipment and facilities
   - Real vs. personal property

2. Determine Replacement Cost New

The best source is the federal government right now:

- DOE market reports
- National Renewable Energy Lab annual technology baseline
- Energy Information Administration annual energy outlook

Effective age and average physical service life (about 25 years)

3. Functional Obsolescence

Greater efficiency means increased capacity factors (i.e., producing more electricity). Compare the subject facility's total generation to the increased generation by modern ideal replacement facility to calculate functional obsolescence.

4. Economic Obsolescence
   - Analysis of industry returns to subject property returns
   - Supply/demand relationship; competition
   - Gross margin past to present

- Raw material cost impacts
- Stock prices of industry to subject property
- Sales transactions
- RCN and cash flows hypothetical facility can generate
- Other economic evidence (inutility/intermittent use)

## *Example from Michigan*

*DTE Electric Co v. Bloomfield & Sigel Townships,* Docket No. 16-003995 (Michigan Tax Tribunal June 11, 2021)

Full opinion available here: https://www.michigan.gov/-/media/Project/Websites/taxtrib/Folder8/DTE_16-003995_FOJ_with_calculations-Combined.pdf?rev=e85657542fa94725b9817c9b3229576b

See page 107 for findings of fact
See page 111 for analysis and conclusions of law
Methodology has been applied in subsequent Michigan appeals

LINCOLN INSTITUTE
OF LAND POLICY

## Potential Future Topics

"Frequent flyer" tax litigation issues

- Deeper dive on valuation
- State tax incentives: disqualification and lurking legal issues

  *E.g., Pelleverde Cap., LLC v. Bd. of Assessors,* 101 Mass. App. Ct. 739 , ___ NE 3d ___ (Sept 21, 2022)

  *E.g., Johnson v. Springfield Solar 1, LLC,* 648 S.W.3d 101 (Mo Aug 11, 2022)

Other ideas

- Manufacturing of renewable energy equipment
- Energy storage ("pumped," "thermochemical," "compressed air")
- Carbon sequestration (don't forget ***hot sauce***!)
- "Stranded" assets (fossil fuel assets displaced by renewables)

Your ideas?

28

Additional considerations:

- Balance between conservation and renewables (brownfields vs. greenfields)
- Valuing land when energy benefits the crops and when crops improve conservation

# Conclusion: Other Cool Stuff



*Image source*: https://www.boem.gov/renewable-energy/renewable-energy-program-overview

Different types not considered:

1. Offshore wind
2. Hydrokinetic (Both types: waves and currents)
3. Offshore solar
4. Alternative uses for existing oil and gas platforms (i.e., research, education, recreation, op support, telecom, aquaculture)

Industry development:

1. Statistics on growth in U.S. renewable power industries