



State of Vermont Property Tax Valuation Analysis for  
Distributed Generation Renewable Energy Systems

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## Introduction

Encore Redevelopment has completed a preliminary study of methodologies used by various States and the Federal government in taxing renewable energy (RE) projects as property. The purpose of this study is to provide some useful benchmarks to the Vermont Department of Tax and Department of Public Service (DPS) as they evaluate the question of how to assess property taxes on renewable energy generation facilities in Vermont. With the exception of large-scale wind projects (>5MW), Vermont RE developers, owners and investors currently face significant uncertainty about what rates and methods of taxation will be applied to renewable energy generation facilities. This risk has had a deterrent effect and contributed to the slow pace of project development to date. In our view, the property tax uncertainty represents a significant barrier to the SPEED program meeting the legislative intent of Act 45 for rapid deployment of renewable energy projects in Vermont.

Vermont has the opportunity in setting policy on property taxes to accomplish two key objectives at once: 1) increase overall tax revenues; and 2) promote the development of local, distributed renewable energy projects. There are some important lessons that Vermont policy-makers can draw from approaches taken in other states, in terms of the effective rate of taxation and the approach to valuing RE systems as property. While variation exists between state policies and programs, a consensus is beginning to emerge, especially in states with significant renewable energy infrastructure. Typical per-megawatt (MW) tax rates in the US range from \$4,000 - \$8,000 annually, with property tax exemptions for projects below a certain threshold, generally 250kW or less. Methodologies for assessing the value of RE projects vary widely; this report reviews the most commonly used methodologies, and we conclude that there are distinct advantages in a capacity-based approach. Based on these initial findings, Encore Redevelopment would respectfully encourage consideration of a capacity-based tax approach that is consistent with effective rates established in other states, with a tax exemption for small projects below a threshold of 500kW. It is our belief that such a policy would allow for and encourage continued development of small and medium scale, distributed generation renewable energy projects.

## Methodology

In completing this study Encore Redevelopment contacted the Departments of Revenue of several states and spoke with several Vermont property assessors with whom we have worked. We have also received information from the U.S. Department of Energy, the America Wind Energy Association, and the Department of State Incentives for Renewables & Efficiency (DSIRE). In this report, we have included descriptive tax policies for individual states with definitive tax policies, as well as annual tax revenue generated from specific projects in states that create policy on a case to case basis.

## Findings

Our research shows a range of tax rates and methodologies, which result in some variation in effective per-MW annual tax collections across different states and local jurisdictions, but generally within a range of \$4,000-\$10,000 per MW. For states that do have defined renewable energy tax policies, assessment methodologies fall predominantly into three broad categories: production (income)-based; capacity based; or assessed value. Descriptions of these methodologies and specific examples of policies that utilize them are included below.

### 1. **Production (income) Based:** production-based methodologies use either output (in kWh) or income (in dollars) as the basis for levying tax.

- a. Minnesota<sup>i</sup>: Imposes a production tax on the production of electricity from wind energy conversion systems that were installed after January 1, 1991. Rates of tax are established based on the size of the wind energy conversion system.
  - i. Large Scale Wind Energy Conversion System - nameplate capacity of more than 12 megawatts. Payment of \$0.0012 per kilowatt hour.
  - ii. Medium Scale Wind Energy Conversion System - nameplate capacity of between two and 12 megawatts. Payment of \$0.00036 per kilowatt hour.
  - iii. Small scale Wind Energy Conversion System - nameplate capacity of between two megawatts and more than 250 kilowatts. Payment of \$0.00012 per kilowatt hour.
- b. West Virginia<sup>ii</sup>: In May, 2001, West Virginia passed legislation authorizing two tax adjustments for wind energy generation.
  - i. The legislation, which amends Chapter 11 of West Virginia Code, designates wind turbines for property tax purposes as "pollution control facilities," which are taxed at a lower rate than electric generation equipment, setting the property tax on utility-owned wind turbines at five percent of assessed value.
  - ii. The B&O (business & occupation) tax is five percent of a turbine's capacity if that turbine is powered primarily by wind. For a 1.5 MW turbine, the average tax burden is around \$5,800 a year.
- c. Iowa<sup>iii</sup>: Iowa imposes a replacement generation tax of 0.06 cents (\$0.0006) per kilowatt-hour (kWh) on various forms of electricity generated within the state. This tax is imposed in lieu of a property tax on generation facilities.
- d. Idaho: In 2007, Idaho enacted a bill that restructured the method of taxation for producers of wind energy from a property tax to a tax on production. Wind and geothermal energy producers must instead pay a tax of three percent (3%) of their gross energy earnings.

### 2. **Capacity Based:** Capacity-based methodologies use the installed nameplate capacity (in MW) as the basis for levying tax. Rates vary, and can be different for different technologies.

- a. Ohio<sup>iv</sup>: In Ohio, instead of property taxes, all renewable energy projects will pay fees of between \$6,000 and \$9,000 per year for each megawatt (MW) of nameplate capacity. The fee is scaled based on the proportion of Ohio workers on the project; those employing 75%

of workers from Ohio will pay \$6,000, while those employing less than 50% will pay \$9,000. The elimination of property taxes reflects Ohio's intention to improve competitiveness and spur local job creation in the energy production industry.

- b. New Jersey<sup>v</sup>: The owner of real property on which a certified commercial renewable energy system is located shall pay an additional renewable energy tax of \$7,000 for each MW of direct current capacity. This amount will increase by 1% each year of operation until the system is decommissioned.
- c. Nebraska<sup>vi</sup>: A legislative bill created a nameplate capacity tax of \$3,518 per installed MW that replaced the Nebraska Department of Revenue's central assessment and taxation of the tangible personal property associated with wind energy generation facilities. However, systems are exempt from this capacity tax if they are owned by the federal government, the State of Nebraska, a public power district, a public power and irrigation district, a municipality, a registered group of municipalities, an electric membership association, a cooperative, or an electricity customer who installs a wind turbine on their side of the meter.

**3. Assessed Value** Assessed value methodologies treat energy generation as conventional property, applying a standard tax rate to the project based on some defined portion (often less than 50%) of the depreciated cost or other fair market value.

- a. Illinois<sup>vii</sup>: In 2007, the Illinois legislature passed Public Act 095-0644, which standardized the way wind turbines are assessed for property taxes throughout the state of Illinois.
  - i. Beginning in 2007, the fair cash value for a utility-scale wind turbine in Illinois is \$360,000 per MW and is annually adjusted for inflation and depreciation.
  - ii. The assessed value of the turbine will then be taxed based on local property tax rates, which we have found to be approximately 3% when analyzing specific projects.
  - iii. Streator Cayuga Ridge South Wind Farm, a wind farm that has a 300 MW expects to bring in about \$3.3 million a year in tax revenue.<sup>viii</sup>
- b. North Dakota<sup>ix</sup>: There is a property tax reduction that applies to a centrally assessed wind turbine electric generation unit (produces energy for public use) with a nameplate generation capacity of 100 kilowatts or more.
  - i. For an eligible wind turbine on which construction is completed before January 1, 2015, the taxable value is calculated at 3% of assessed value.
- c. North Carolina<sup>x</sup>: Photovoltaic systems that are taxable are subject to an 80% exclusion of the appraised value of the system. The remaining value of the system is taxed at county rates which range from .002% to .008%.
- d. Arizona<sup>xi</sup>: Renewable energy equipment owned by utilities and other entities operating in Arizona is assessed at 20% of its depreciated cost for the purpose of determining property tax.
- e. Tennessee<sup>xii</sup>: States that wind energy systems operated by public utilities, businesses or industrial facilities shall not be taxed at more than 1/3<sup>rd</sup> of their total installed cost.

#### 4. Individual Projects

Encore Redevelopment has included tax revenues associated with specific projects in states that do not have a definitive renewable energy tax policy.

- a. Tessera Solar North America installed a 709 MW solar dish in California that generates \$840,000 in annual property taxes. \$1,185 per MW of installed capacity.<sup>xiii</sup>
- b. CSOLAR Development, LLC installed a 200 MW project in Imperial County California. The project is expected to generate \$38,000 to \$80,000 in annual property taxes to Imperial County. \$190 - \$400 per MW.<sup>xiv</sup>
- c. West Butte Wind Energy Project is a 104 MW project in Oregon. The project will pay about \$1 million annually to Crook County in property taxes. \$9,615 per MW.<sup>xv</sup>
- d. Caney River Wind Project in Kansas<sup>xvi</sup> has offered to pay \$4,500 per MW for its utility sized wind project to the county.
- e. A 20 MW wind farm in Kewaunee County, Wisconsin, will result in annual property tax payments of \$200,000 to the county. \$10,000 per MW.<sup>xvii</sup>

#### 5. Renewable Energy Tax Exemptions

Encore Redevelopment has found that almost every state allows full property tax exemption for residential properties. The following states also exempt medium to larger scale renewable energy projects.

- a. Texas<sup>xviii</sup>: Exempts all wind-powered energy devices generating electricity for on-site use from the property tax.
  - i. The 2001 Legislature authorized school boards to reduce the property value of large renewable electric energy projects such as wind farms. Since this incentive became law, Texas school districts have approved more than 70 wind energy projects for reduced property values.
  - ii. Property tax breaks for wind projects in Texas have contributed to the industry's growth.
- b. Kansas: Kansas exempts renewable energy property from the state property tax.
- c. New York<sup>xix</sup>: The New York Wind Energy System Exemption provides a 15 year real property tax exemption for wind projects. The intent of the law is to assure property owners that their real property taxes will not increase as a result of the installation of wind turbines. The amount of the exemption is equal to the increase in assessed value attributable to the wind energy system.
- d. Ohio<sup>xx</sup>: In Ohio, qualified energy systems of 250 kilowatts or less will not be subject to a personal property tax, real property tax, or the payment in lieu of property tax.
- e. Alaska: Alaska enacted legislation in June 2010 to authorize municipalities to pass ordinances that exempt residential renewable energy systems from taxation. Residential renewable energy systems are defined as systems, including wind, hydro and solar, that use an energy source other than fossil or nuclear fuel.

- f. California: California Revenue and Taxation Code excludes all solar energy systems for property tax purposes.
- g. Colorado: Colorado enacted legislation to authorize counties and municipalities to offer property or sales tax rebates or credits to residential and commercial property owners who install renewable energy systems (less than 2MW) on their property.
- h. Montana: New electricity generating facilities built in Montana with a capacity of up to one megawatt (MW) that use an alternative renewable energy source are exempt from property taxes for five years after operation begins.

### **Advantages of Capacity Based Tax**

Encore Redevelopment evaluated state policies that use a range of methodologies to determine the taxable value of renewable energy projects. Based on this research, we would recommend that Vermont strongly consider alternatives to the proposed income (production) based approach, for reasons outlined below. Additional benefits to the Vermont economy could be attained by implementing a program similar to that of Ohio, where tax rates incent the utilization of local labor for the design, development and construction of renewable energy systems within their state.

For example, with a capacity-based approach:

- The State of Vermont can accurately forecast tax revenues over the project life.
- Town assessors will not have to evaluate site wind speed, elevation, solar gain, manufacturer viability, etc., when projecting annual tax revenue.
- The Vermont Department of Taxes can easily compare Vermont's renewable energy tax level to other states and adjust policy over time.
- Developers can implement known tax figures into financial models, allowing investors to accurately assess annual cash flows and project returns, resulting in safer investments.
- A capacity-based system will encourage the most efficient projects, as poorly sited and/or designed projects will effectively pay a higher tax rate in comparison with those that are designed to maximize the nameplate capacity of the system.
- Project owners will have a strong financial incentive to remove obsolete systems, as they would be taxed on capacity, regardless of whether or not the system is operating.
- Income-shielding and other creative accounting has no impact.

### **Putting Vermont in Context**

An income based valuation of (\$.003 + town municipal tax) per kWh equates to approximately \$.0166 per kWh or 10% of revenue for smaller, community scale (<5MW) projects. Using a 1 MW project as an example, the income based valuation amounts to an annual tax of approximately \$52,500 per MW. The American Wind Energy Association (AWEA) estimates that every 100 MW of wind development generates about \$500,000 in local property tax revenue<sup>xxi</sup>, making \$5,000 per MW a reasonable benchmark.

## Conclusion

How to best tax renewable energy is a question that many states are taking up as more plants come online. Specific approaches and policies vary widely, but some overall themes have emerged about what makes for effective policy. Several states have eliminated both property and production taxes for renewable energy projects to encourage investment in renewable energy and to create jobs. Others have sought a middle ground, by setting property taxation rates that reflect the importance of developing renewable energy now for the inherent environmental and economic benefits, when compared with traditional energy generation and other commercial property use. In our view, a capacity-based method has some distinct advantages, most notably providing a reasonable and predictable model such that the best projects can be financed and thus deployed to meet Vermont's renewable energy goals. Encore Redevelopment would advocate that the DPS and the Department of Taxes consider a capacity based approach to the taxation of renewable energy projects that is consistent with the effective per MW rates seen in other states, typically less than \$7000/MW. Careful consideration is required to strike a balance between generating sufficient tax revenues from a particular project and creating the type of program that leads to a more robust renewable energy sector and, hence, a wider renewable energy tax base.. As a baseline, tax policy for small-scale renewable energy systems below 5MW should create a level playing field between these important sources of clean, local, distributed power, commercial wind projects, and other conventional sources of energy in Vermont.

**Table 1: Levelized Property Tax Rates for selected states**

State	Rate	Annual Tax Revenue per MW
Minnesota	\$.00012 per kWh	\$ 380
Iowa	\$.006 per kWh	\$ 1,900
Nebraska	\$3518 per MW	\$ 3,518
West Virginia	5% of Assessed Value	\$ 3,867
Ohio	\$6000 to \$8000 per MW	\$ 7,000
New Jersey	\$7000 per MW	\$ 7,000
Illinois	\$360K per MW assessed value	\$ 11,000
Idaho	3% of earnings	

**Table 2: Sample projects for in states without broadly applicable property tax rules**

Individual Projects	Tax Revenue per MW
CSOLAR Development in California	\$ 400
Teressera Solar in California	\$ 1,185
Caney River Wind in Kansas	\$ 4,500
West Butte Wind in Oregon	\$ 9,615
Kewaunee County Wisconsin	\$ 10,000

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