

Testimony of Carl Wilcox, P.E., For

**LD 204 An Act to Reduce the Cost of Electricity by Removing the 100-megawatt
limit on Renewable Resources of Energy**

March 24, 2025

Senator Lawrence, Representative Sachs, honorable members of the Energy, Utilities and Technology Committee. My name is Carl Wilcox. I was born raised and lived the vast majority of my life in Maine with nearly all of it at one residence in New Gloucester. I am now a resident of Minot. I'm a practicing Maine licensed professional engineer with a masters degree in environmental engineering with 37-years of experience.

I'm For LD 204.

I installed heat pumps in my home in late 2023. While cheaper than oil heat, my electric bill is now more than \$200 a month, compared to about \$60. The cost of power seems to be on a forever rising trend. The price of power is set by the cost to generate it using natural gas which is a volatile market and predicted to increase in cost with the large number of LNG terminals being constructed on the Gulf Coast for natural gas export.

To break the back of the natural gas power generation industry that is setting the price of the standard offer, large renewable power facilities are needed. Maine is going the wrong direction with solar now promoting 1 or 2 MW community solar installations instead of grid scale systems that have economy of scale. Per Maine's Solar Dashboard in 2024, 446 MW of small-scale community solar was installed

while 172 MW of grid scale solar was installed. The ratio of small-scale community solar to grid solar was even worse in 2022 and 2023 during which 9 times the amount of community solar was installed than the less expensive grid scale solar power.

While writing this this past weekend, I went to a Maine Maple Sunday event. The event was held at an orchard which greatly downsized about 35-years ago. It has a climate control storage facility that the orchard's second-generation owner uses to store other orchard's apples and to chill and store wild blueberries before flash freezing at facilities Downeast. He said he wasn't going to power it up anymore because it costs \$6,000 per month for electricity to operate that the users can't afford. I ran into a former neighbor who manages a small hydroponic greenhouse it employees about 6 to 8 people and has been in business for about 20-years. She said the electric bill is now \$10,000 a month and suspects they will close.

Grid scale solar or wind projects that exceed 100 MW should not be penalized by being prevented from accessing renewable power standard credits. I personally do not think there will be 100 MW hydro power projects unless hydro power from Canada is included. The largest dams in the state are the Wyman and Harris dams on the upper Kennebec and both are around 80 MW. A 100 MW power system could be feasible if a pumped hydro-system between Wyman Reservoir and Flagstaff Lake were developed. Other than that site, I can't imagine where a 100-MW hydropower facility could be physically or politically located in Maine.

Recently, a 600-acre grid scale solar development project was proposed in Greene Maine. This solar farm would have been about 200 or more MW. At a 20% capacity factor (which is the current large scale solar capacity factor in Maine) it would have

produced about 40 MW of power on a continuous equivalent annual basis. That output is larger than all but the largest hydro dams in Maine. Per the 2015 Maine Hydro Power Study, by Kleinschmidt, New England run of the river hydro dams operate at an average annual 38% capacity factor. Based on that, none of Maine's many run of the river hydro dams produce 40 MW on an continuous equivalent annual basis.

The Greene solar developers stated the project would send power to the transmission grid at between 5 and 10 cents a kWhr. That is less than the standard offer. Its property tax payments would have equaled half of Greene's municipal budget. Approximately 400 of the 4,400 town residents voted to prevent it by limiting solar developments to 15-acres. There is a lot of talk currently that Maine's property taxes are too high. Apparently, that is not a concern of Greene residents. Or, at least for the 10% that showed up to vote down the solar project.

The Greene vote is the taking of property rights from the land owners on which the solar farm was to be built. I'm sure loss of the solar development has cost them dearly. When I owned my small farm, community solar developers were offering me as much as \$2,000 per acre per year for 30-years with an inflation adjustment factor. I suspect the 600-acre solar farm developer was offering less but I don't doubt that the solar payments would have been life changing for the property owners.

Having lived in the same family farmhouse nearly continuously for 61-years, I can say unequivocally there are a lot worse things that can move next door than a solar farm.

A solar farm does not make noise such as a wedding and events venue that moves into the next-door farm so you listen to someone else's musical selection wafting through your living room window every summer Saturday night and sometimes week nights as well.

A solar farm does not send kids to school that need to be educated. A solar farm pays property tax yet uses no public services. A solar farm does not fire off fireworks that scare your livestock.

A neighboring solar farm does not have bored teenagers who in summer cut your cattle fence for cheap entertainment requiring you to abruptly leave work to get the cattle back in their pasture.

For the owner of the property on which a solar farm will be located, they will actually get income off the land that exceeds the property tax payments. Owning forest land in southern Maine, even in tree growth, is a break-even proposition at best.

A solar farm as a neighbor is much better than having an old lady who buys a small, grandfathered lot down the road, moves in a mobile home, dies after a decade or so with the mobile home purchased by a landlord. Said landlord then leases it to DHHS who houses a sexual deviate in the trailer that was under 24-hour watch by state employees who of course were board stiff and routinely fell asleep. Then the sexual deviate would enter the neighbor's home across the street from my home which he could see from his bedroom window to steal the shoes of the four young girls who lived there. Sorry, I can't make this stuff up. Fortunately, there was a small hill in my cow pasture that prevented him from seeing my yard or I suppose he

would have stolen my young daughter's shoes when we left the farm. Subsequently, the trailer was sold and the present owner operates a wholesale used tire business from his small front yard.

Give me a 600-acre solar farm next door. They make for a nice quiet neighbor that reduces your property tax burden.

Instead in Maine, the town of Freedom, which is anything but a hot bed of wealth, has a draft solar ordinance requiring a 450-foot buffer between the solar security fence and the property line. Meanwhile houses in Freedom are required to only have a 20-foot setback from their property line, and Freedom is limiting the fenced area to 10 acres. That limits the solar farm size to less than 4 MW. So much for grid scale solar and economies of scale.

If Maine wants to get serious about lowering the cost of electricity it should enact a statewide solar development regulation putting a stop to the rampant town NIMBYism. Home rule has been trampled on before by the legislature and can be again. Shoreland zoning standards is legislative mandated regulation that over ruled home rule.

Until two years ago I owned 160-acres in New Gloucester. Between my father and I, we owned it for 64-years. A good 40 acres of it is river flood plain a mix of forest and hay land. With the passage of state mandated shoreland zoning, I was no longer allowed to leave slash from cutting my firewood on the flood plain. Unless slash is left on the riverbank, it does not move in a flood on a flood plain. It stays where it lays not floating down stream as some unknowledgeable DEP staffer imagined who wrote the shoreland zoning regulations. Fortunately, no one enforces the do not

leave slash on a river flood plain requirement. And then there is the 250-foot setback from a river flood plain requirement. Even though the flood plain on my former property extended a ¼ mile from the riverbank, shoreland zoning extends another 250 feet from the flood plain edged up into my hayfield. The resulting total set back distance from the river is nearly 1,600-feet. This setback requirement made this poor quality hay land which is pretty much completely hidden from sight from anyone, in this back field, unacceptable for solar developers. There was not enough width left in the field to make it worth their while. Instead, they wanted the good field right next to the state highway.

Also, as soon as a solar developer begins to consider a property, the town's response is to enact an illegal solar moratorium. It is illegal because per Maine state statute solar farms do not meet the necessity criteria of overburdening public facilities.

Maine Title 30-A §4356 Moratoria

1. Necessity. The moratorium must be needed:

A. To prevent a shortage or an overburden of public facilities that would otherwise occur during the effective period of the moratorium or that is reasonably foreseeable as a result of any proposed or anticipated development

Solar farms connect to the power distribution network which is a private business – not a public facility. Plus, you can't connect to the power distribution network until the project has an interconnection agreement with the private utility.

Solar farms do not send kids to school, don't generate trash that the municipality handles, and don't start fires. Except for the Tesla installed solar systems on Walmarts between 2012 and 2018 on which 7 fires of 240 installations occurred, to

which Walmart sued Tesla for negligence and Tesla settled out of court, PV solar system fires are very rare and when they do occur, they are not caused by the panels but the electrical support equipment such as the inverters. Firetrace.com reports that in Germany with 2 million installed solar systems, there has been a 0.006% fire incidence rate resulting in serious damage. For comparison, NFPA reports that in America 0.25% (1 in 400) dwelling units have a fire per year. NFPA reports that over a 5-year period, 2016-2020, 26% of reported fires occur in home structures. Most fires are backyard fires, campfires, car fires, brush fires, etc. Yet in my former hometown, New Gloucester, a minimum 15,000-gallon fire protection cistern was required for the sole solar farm installed to date. The logic being that town zoning requires a minor subdivision (a development of 4 homes or less) to have a 15,000-gallon cistern, or that the lots have deed restrictions requiring the homes to be sprinklered. Nearly all of New Gloucester is served by private wells. Requiring fire protection for single family homes that have a 50% probability they will have one dwelling unit fire in two-centuries is a separate issue about Maine housing affordability. By the way, 50% of home fires are kitchen fires. There is no discussion in local zoning regulations of limiting home fire protection to a Halon or carbon dioxide fire suppression system over the kitchen stove. No. That is too practical and economically efficient. Instead, a whole home sprinkler system on a well, with a sizeable pump, water storage tanks in the basement, larger electrical system to accommodate the large pump, and sprinklers throughout a house cost about \$25,000 for a modest home is required. A home building contractor told me that cost when I was considering a minor subdivision. Local zoning is generally designed to drive up the price of housing for the benefit of the current homeowners and special interest groups such as fire protection contractors and to prevent change for

the existing homeowners. Change is going to happen. In my living memory on the farm in New Gloucester, the eastern portion of New Gloucester has had a 600% increase in dwelling structures.

The New Gloucester planning board required a 15,000-gallon cistern for the approximate 16-acre solar development not because it was needed, solar farm fires are extremely rare, but because they could. I estimate that a 15,000-gallon cistern costs about \$75,000. Besides, the fact that these cisterns that won't be used for decades will be dry when needed. Town zoning standards unnecessarily drive-up solar power costs.

Also New Gloucester's solar ordinance for private residences allows 1,500 SF of solar panels to be installed in a wetland. However, for a solar farm zero installation in wetlands is allowed. In sections of Maine, unless you are on good farmland, you can't hit a baseball in some direction without it landing in a wetland by someone's opinion.

Case in point, my crappy hayfield out back that no one could see that shoreland zoning regulations had consumed 250 – feet of it for the setback from the ¼ mile wide flood plain had a broad shallow natural swale that had some wetland grasses in it because water seeped down from the nearby hillside. There was no stream feeding it, just a swale that was dry at all times except soon after a significant rain. So, this 60-foot wide swath that I could drive my tractor across without getting my tires damp is a state regulated wetland (since 2023 no longer a federal regulated wetland) that the solar panels had to stay out of. Again, the solar developer wanted the higher dryer and better farmland next to the state highway.

Throwing up a 180-day moratorium is a town's first defense against a solar farm. Followed by foot dragging in developing the zoning regulations so they add an additional 180-days to the moratorium which is allowed by state law. So, a year long delay is introduced with the intent that the solar developer will drop the project and move to another town. In the case of Freedom, Maine the draft solar ordinance has a 450-foot set back requirement of the solar fence line to the property line. It also limits the solar farm size to 10-acres. New Gloucester has its zero wetland impacts and unnecessary fire protection requirements.

As is the case with my former farm and the landowners in Greene on which the 600-acre solar farm was to be built, someone has been paying property taxes on that land since the 1780s, since Greene became a town. Otherwise, the land would have become tax acquired property until someone bought it off the town.

If people don't want a solar farm next door, they can buy the land, control what happens on it, or maybe not control what happens on it because open land unless tightly posted is generally used to some extent by the general public. Thus the new neighborhood land owners can have the pleasure of paying the property taxes on the land and being a part time Ranger Rick that come with owning raw land.

The result of the New Gloucester solar ordinance, and I suspect other community solar ordinances, is the one community solar project that has been built in New Gloucester was built on some of the very best farmland in town: high well drained flat ground, good soils, stone free, and located adjacent to a river for irrigation for vegetable farming.

If Maine wants to reduce the cost of electricity and reduce complaints about solar farms utilizing Maine farmland, adopt the federal wetland standard for solar developments. The old standard in use for several decades was overruled by the US Supreme Court (*Sackett v EPA*, 2023).

Before you think I'm a wacko, listen to what I have to say. How many acres of land have you owned that some government agency has declared is a wetland without ever even stepping foot on it? Out of my former 160-acres approximately 50-acres have been determined to be wetlands. My contention is out of that 50-acres there truly is less than 0.5 acres of real honest wetlands. The rest of the "wetlands" would be better termed damp lands. If you can walk through them with sneakers on in July, August, or September without getting your feet wet, they are not very wet. Or if wood can be harvested off the land with a feller buncher and a grapple skidder, the land is not very wet.

Per the Maine DEP website, about 25% of Maine is wetland. It goes on to say Maine has more wetlands than the rest of New England combined. That is due to underlying geology and topography. The glaciers ground up rock creating silt sized stone dust. The 2-miles of ice above for thousands of years compressed the stone dust and other rock debris into what is called a basal till. Basal till has very low permeability and is very difficult to dig or for roots to grow through. In the 12,000 to 15,000 years since the glaciers retreated, a veneer of top soil has developed covering the basal till. Not all Maine is underlain with basal till, but a lot of it is. A basal till on a hill side will be dry. A basal till in a low flat area that receives runoff from upland areas will retain water and be damp.

- The underlying basal till is very impermeable often resulting in a perched water table.
- It takes a long time for surface water on a flat forest floor to flow through the forest debris to reach a drainage channel. The distance may well be hundreds of yards distant.
- Trees grow slowly in low oxygen damp soils. So, the forest is thinner having less wood mass per acre and thus there is less evapotranspiration than in a dryer upland soil which contributes its dampness.
- For the above reasons the damp soils are less productive and the trees that do grow on them: soft maple, black ash, black spruce, basswood, grow slowly and are of low value. Maine has millions of acres of low value damp land that should be used for solar development and due to the US Supreme Court ruling can be and should be.

I have walked across a lot of phony “wetlands” and have never seen a duck, turtle, a tad pole, maybe an occasional frog traveling across it to find a real wetland to reside in.

Back to the 25% of Maine being wetlands:

- Maine is 23 million acres in size.
- 25% of Maine is wetlands which equals 5.75 million acres of “wetlands”.

- All of society's needs: housing, agriculture, roads, recreation, jobs, industry, solar and wind power production are currently confined to the 75% of Maine that is not a "wetland".
- For comparison, Vermont DEC reports Vermont has 230,000 acres of wetlands or 4% of the land area.
- New Hampshire is about 6 to 10 percent wetlands.
- Maine has no shortage of wetlands. There will be no loss if we have some less, winter berry, black spruce, and sphagnum moss.
- A solar farm installed on a "wetland" preserves if not enhances the underlying function of the "wetland" which is to retain water to reduce peak flood flows and recharge the groundwater. The cross-sectional area of a solar farm panel supports is insignificant and less in volume than the volume of tree trunks (below panel height) removed to construct the solar farm. Runoff from the surrounding uplands and panel runoff will spread out on the ground as it did before the solar farm was constructed. The runoff will be retained as it is now and infiltrate into the groundwater at a rate no less than before the solar farm. A solar farm on a previous forested "wetland" will result in more groundwater recharge. Solar panels shade the ground underneath them and the change in vegetation under and between the panels will result in a lower

evapotranspiration rate than the “wetland” woods removed to construct the solar farm.

- Per the Maine Department of Agriculture, Conservation, and Forestry, 2023 review, Maine has 1.3 million acres of farmland. Following is the breakdown from that document.

- 7,600 farms – mostly diversified (537 organic)
- 1.3 million acres (58,774 acres organic)
- Average acreage/farm: 172 acres
- Land in farm by use (acres):
 - Cropland: 472,508
 - Pastureland: 62,369
 - Woodland: 685,529
 - Other: 87,207

By far the most valuable farmland is cropland. A distant second is pastureland. Note the majority of the farmland is actually woodland that farmers own. That was true on my former farm.

The total real farmland (cropland and pastureland) is 534,877 acres. This compares to the DEP estimated 5.75 million “wetland” acres. There are 10 times more Maine “wetland” acreage than farmland acreage, and most of the “wetland” is not very wet. Maine may well 5.75 million acres of land that meets the 1987 Army Corps of

Engineers Wetlands Delineation Manual requirements, but a lot of it is not very wet. Following are the three criteria from the Army Corps Manual to delineate a wetland.

- **Hydrology:** *The soil is saturated to the ground surface at sometime during the growing season.* That is a very low bar in Maine in which the growing season starts in May and Maine has extensive very low permeability basal till subsoils and relatively flat topography creating long distances for surface runoff to travel to drain.
- **Soils** *are present that have been classified as hydric.* Hydric soils are identified by mottling in the soil created by low oxygen conditions. To sell my farm with its house located on the top of a hill, I replaced its cesspool with a leach field. The licensed site evaluator determined the soil in my lawn, on top of a hill, which was underlain by a basal till, at a depth of 8-inches was mottled. It is a very low bar to have mottled soil in Maine.
- **Vegetation:** *The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions that are saturated or inundated that grow hydrophytes.* This is a low bar as well. Basically, all low flat areas that are underlain by a basal till or other low permeability subsoil will be wet in most years in April and May and the

beginning of June in the first few weeks of the growing season. So, of course hydrophytes get a growing head start at the beginning of the growing season.

The US Supreme Court decision did not change the definition of a wetland it did change what is a federal protected wetland was changed. The ruling as paraphrased on the Michigan Law website follows:

“the EPA may only regulate wetlands that have a continuous surface connection to bodies of water such as lakes and streams. Previously, nearby wetlands also fell under federal regulation.”

Most “wetlands” more accurately called damp lands in Maine do not have a continuous surface connection to bodies of water such as lakes and streams. First most Maine wetlands are not continuous themselves, nor do they discharge to a continuous stream. A large number if not most, eventually, some over many hundreds or thousands of feet, eventually discharge to an intermittent stream. The operative word is intermittent – not continuous. Intermittent streams are easily identified on a US 7.5 minute topo map as a dashed blue line. Perennial (continuous flowing) streams are a solid blue line on a US topo map.

Maine DEP has identified wetlands of special significance (WOSS) creating a file showing them along with the DEP required 250-foot protection setback. Maine DEP Chapter 310 Wetland Waterbodies Protection lists eight characteristics of WOSS to which only one needs to be met to be a WOSS.

I have imported that WOSS file into Google Earth. I’m personally familiar with a good number of the WOSS. One of them is just over the property line of my former

farm. I agree that wetland and every shown WOSS that I'm familiar with and every WOSS I zoomed into on Google Earth is indeed a true wetland. The commonality is they actually have at least some open water, and they have emergent vegetation, and it can be seen from above because it is sufficiently wet that trees don't grow.

By no means have I checked every WOSS in the state using Google Earth. Though every WOSS that I have checked and cross referenced to a USGS Topo map has been connected to a solid blue line, a perennial stream, not to a dashed blue intermittent stream. It appears that all or at least most of the State identified WOSS continue to be federally protected wetlands, after the US Supreme Court (Sackett v. EPA) ruling.

CLOSING SUMMARY

I like ducks, frogs, turtles and salamanders probably far more than most people. I have worked nearly all my life as an environmental engineer. I have cared for and managed 160-acres of raw Maine land for more than half of my life. I have no problem protecting real wetlands such as the DEP identified WOSS. I do have a problem protecting damp lands that are not true wetlands as a sacrosanct landform to be protected at all costs particularly since about 25% of the state is such land and building solar farms on such land will not change its underlying function of providing flood water storage and groundwater recharge. Additionally, allowing solar farms on damp lands will preserve farmland and I believe will be far more accepted by the public. In my talking with people, few have any knowledge that the large low lying, flat forest areas they drive by or are hidden from view backland are a wetland.

I urge the EUT Committee to:

1. Support LD 204.
2. Resolve to have the State adopt statewide solar zoning regulations with a focus to advance grid scale solar.
3. Have the solar regulation allow solar development on non-federally protected “wetlands”, more appropriately termed damp lands.