

Opposition testimony to HB 4080

Eric Sherman – Depoe Bay, Oregon

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Chair and Members of the Committee:

I am writing in opposition to the continuance of HB 4080. My name is Eric Sherman, I am a licensed electrician in the state of Oregon with over 20 years of experience in the field. For most of that time, I practiced my trade on the Oregon Coast doing service work; that is, alteration, new construction, repair, troubleshooting, and maintenance of electrical systems ranging from heavy industrial facilities to residential dwellings and everything in between. I maintain multiple state-issued electrical licenses in Oregon and Washington, including the Oregon Supervising Electrician license and Oregon Electrical Inspector certifications, and have served as a registered electrical apprenticeship and continuing education classroom instructor for over 16 years. There I teach all manner of electrical topics including electrical theory and mathematics, electrical codes, safety, and standard industry practices. I am a working electrician by day and serve as President of IBEW Local Union 932, representing Oregon Coast electrical workers.

I am entirely supportive of innovative methods for generating surplus power, and with the proper process, I share this bill's vision of portable solar's potential for alleviating overstressed power generation capacity and maybe reducing peoples utility costs a little bit. My opposition to this bill is twofold: 1. Numerous technical and safety concerns, some of which are outlined below, and are also addressed by other experts in the electrical and fire protection worlds. Subject matter expertise on electrical products such as portable plug-in solar should be heeded. And 2. This is the wrong process to introduce new technologies into the electrical industry and will result in reduced protection for Oregon consumers.

First, safety issues. I would hope that expert opinion alone would be enough to shelf this bill until the technology has been fully evaluated. I am all for portable plug-in solar but we need to make sure it is done right, and this bill isn't doing that. Such technical issues include but are not limited to:

1. The UL listing process for these devices has just started. Minimum standards and product listing are intended to be in place BEFORE products go to market, and establishing a law endorsing such products before they're listed will lead to a big legal liability mess for somebody or another when an unlisted faulty product inevitably causes harm or damage. This law serves no purpose other than tacitly approving to the public a product that has not finished being vetted for suitability.
2. Any device that generates electric power is inherently hazardous to trained and untrained personnel alike; solar modules specifically offer an enhanced hazard in the sense that they cannot be turned off. If it is exposed to sunlight it will generate photovoltaic power. A fueled generator can be shut off, a battery bank can be switched off, but unless it is dark or the solar module is installed in a cave, it will be on. Portable solar modules would incorporate devices to prevent accidental energization of exposed conductive parts (the plug end of the cord) and to prevent backfeeding to a grid during an outage. Such devices would likely take the form of a tiny electromechanical relay, or solid state relay, or some combination thereof, built onto the solar

module's circuit board and intended to prevent those hazardous conditions. Any failure of these components could lead to injury or damage. Product safety devices fail all the time. Faulty electrical products are common. Even UL listing standards are no guarantee of quality. I have made a living evaluating and fixing broken electrical systems and components.

3. These are not comparable to any old plug-in appliance. When your toaster breaks it doesn't backfeed the power grid.
4. These are not comparable to Electric Vehicle charging systems, which are an established product on the market for years, highly standardized, and listed. EV charging systems have multiple points of redundancy to prevent grid backfeeding and other dangerous situations. They have been developed for consumer use with standardized connection devices (cords and plugs) that, among other features, won't even allow a vehicle to charge if there are electrical faults or other dangerous conditions present.
5. These are not comparable to permanently installed power generation sources such as generators or solar arrays. These installations have occurred for decades under Oregon electrical code and licensing and enforcement and require a number of safety measures to be installed, such as transfer switches and interlock mechanisms.
6. The biggest concern I have is directly from my experience as a service electrician: unless you wired your home yourself, you have no idea what might be going on with the wiring inside the wall. In general, the potential hazards get worse and worse the older a building and its wiring are. This includes circuit capacity limitations, conductor insulation integrity, conductor termination points (every wire termination is a potential failure point), and others. There are houses, apartments, condos, commercial buildings, industrial properties, and any other occupancy you can think of scattered all over Oregon that still have 100+ year old electrical wiring energized and in use. Any receptacle circuit with plug-in solar connected to it needs to be suitable for the purpose.
7. As these are portable solar devices intended to be plugged directly into the wall, this would most likely occur at an outdoor receptacle, which stands a strong chance of being protected by a GFCI device if the receptacle installation has happened any time in the last 40 years or so. GFCIs do not work backwards. Their primary protection component is a small internal current transformer (C.T.) encircling the circuit conductors and measuring for stray or leakage electrical current – these CTs inherently only work in one direction, and backfeeding through them could in fact produce a worse situation: the receptacle stays energized but the GFCI protection is disabled. This is especially true for older generation GFCI devices.
8. There is nothing preventing anyone from plugging multiple arrays into a common power strip and easily overloading circuit wiring. Or plugging multiple units together and then into an undersized 16 gauge extension cord. If there is a way to create a dangerous electrical situation, someone will inadvertently figure out how to do it.

My second point of opposition is that I don't believe this is the type of thing we should be putting into statute. ORS 479 houses the Oregon Electrical Safety Law, which already contains the exact procedure for incorporating new technologies and electrical code modifications into electrical systems. In normal practice, ORS 479.730 and 740 establish statutory guidelines for adopting new technologies and delegates the Dept of Consumer and Business Services to handle it. This is precisely how balcony solar technology should be adopted: through the regular administrative process involving the state Electrical Board, Building Codes Division, the public at large,

and with consumer protection and safety considerations in place and in mind. Adopting new technology into the electrical industry is commonplace, but this bill bypasses our established procedures and potentially puts people and their homes in harm's way. Please vote no on advancing HB 4080.

Eric Sherman

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IBEW Local 932