

POLICY PRIMER

PLUG-IN PHOTOVOLTAIC (PIPV) SYSTEMS

EXECUTIVE SUMMARY

BOMA International is issuing this primer to alert building owners and managers to the rapid expansion of Plug-In Photovoltaic (PIPV) systems, often marketed as "balcony solar". While these systems offer a pathway to renewable energy for renters, they could pose significant electrical safety and infrastructure risks to your property if not properly regulated.

WHAT ARE PIPV SYSTEMS?

PIPV systems are small-scale solar panels designed to be "plug-and-play".

- **Connection:** Unlike traditional rooftop solar, which requires professional installation and hard-wiring into a building's electrical panel, PIPV systems connect directly to a building's existing electrical system through a standard 120-volt AC outlet.
- **Capacity:** Units typically output 1,200 watts or less, with smaller models operating below 391 watts.
- **Portability:** Designed to be portable and set up by consumers.
- **Market:** They are primarily marketed to apartment dwellers and condominium owners who have balcony access but do not own their roof.
- **Appeal:** PIPV systems offer tenants an accessible, low-cost way to offset energy bills without permanent infrastructure investment.



INTERNATIONAL VIEW

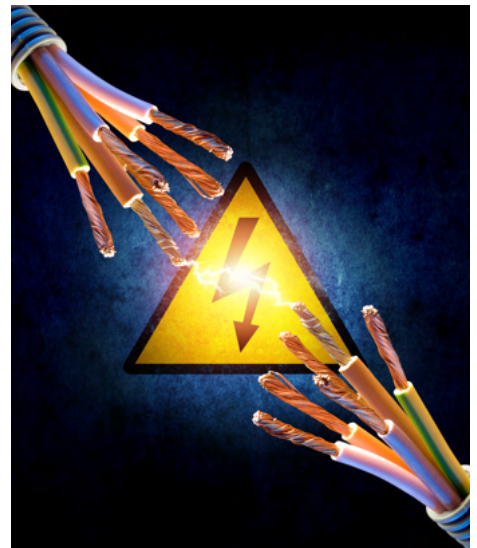
Europe leads global adoption, notably in Germany, which surpassed one million registered PIPV systems by early 2026 due to an 800-watt inverter limit and "privileged measure" legal status granting tenants installation rights. In contrast, the Asia-Pacific region continues to prioritize large-scale and community-integrated rooftop projects over portable kits, with Japan focusing on next-generation solar cells for permanent infrastructure. Meanwhile, Australia and South Africa maintain strict professional certification standards; recent 2026 mandates in Western Australia now require remote-disconnect capabilities for all grid-connected systems to ensure network stability.

THE “RISK”

Research by UL Solutions indicates that PIPV systems, if not built to UL 3700 standards, create three primary hazards:

1. Overcurrent Conditions: Back-feeding power into a standard circuit can exceed conductor ratings without tripping the circuit breaker, creating a fire risk.
2. GFCI Degradation: These systems can interfere with Ground Fault Circuit Interrupters, potentially disabling life-safety shock protections in bathrooms or kitchens.
3. Touch-Safety: Poorly designed systems may leave "live" pins on a plug when it is disconnected from the outlet.

The "391 Watt" Loophole: Some bills attempt to exempt systems under 391 Watts from certification requirements. Research shows that even at low power outputs, these safety hazards remain present.



LEGISLATIVE LANDSCAPE

FEDERAL STATUS

Absent federal legislation or regulation, the definitive U.S. safety framework for PIPV construction and installation is UL 3700¹, published by UL Solutions in December 2025.

STATE LEGISLATION

State legislatures are rapidly moving to exempt PIPV from traditional utility connection requirements.

- Utah (H.B. 340²): Passed in March 2025, this was the first law to exempt PIPV systems (under 1,200W) from utility approval, provided they meet NEC standards and are certified by a recognized laboratory.
- Virginia (HB 1213359³): Recently passed, this bill explicitly prevents landlords from prohibiting PIPV use. A stakeholder work group is currently meeting to finalize safety recommendations by November 2026.
- Maryland (HB 1532⁴): Passed as part of a 2026 energy package, authorizing “balcony solar” up to 1.2 kW.
- Colorado (HB26-1007⁵): Recent legislation prohibits utilities and, in some contexts, property owners from imposing "unreasonable" conditions on installation.
- Connecticut (HB 5340⁶): Enacted as part of a broader 2026 renewable energy package, signed into law on June 4, 2026, with balcony solar provisions taking effect October 1, 2026.
- Active Bills: California (S. 868⁷) remains under active consideration, having cleared the Assembly Appropriations Committee and moved to the Assembly floor. New York (S. 8512-C/A. 9111-C⁸) and New Jersey (S. 2368⁹) have each passed both legislative chambers and are awaiting the governor’s signature.



BOMA INTERNATIONAL CONSIDERATIONS FOR PENDING STATE LEGISLATION

BOMA recommends the following:

- Preservation of Owner Rights: Legislation must protect an owner's right to manage electrical loads and prohibit installations that present safety risks to its occupants.
- Mandatory UL 3700 Certification: All systems should be certified to the UL 3700 standard.
- No "Carveouts": BOMA opposes exemptions for low-wattage systems (e.g., the 391W loophole) that bypass safety testing and do not mitigate 100% of risk.

CONSIDERATIONS FOR BUILDING OWNERS & MANAGERS

- Conduct a building electrical system review to determine if your system can safely handle reverse flow of electricity.
- Include provision in rental agreement prohibiting non-approved PIPV. BOMA recommends determining if the UL 3700 should be your standard.
- If building is subject to severe weather, like high winds, the "balcony solar" panel may cause harm to others. Consider rules about safely securing these items.

¹ <https://www.ul.com/resources/plug-photovoltaic-systems-residential-safety-concerns>

² <https://le.utah.gov/Session/2025/bills/introduced/HB0340.pdf>

³ <https://www.utilitydive.com/news/virginia-legislature-passes-balcony-solar-bill/814582/>

⁴ <https://www.google.com/search?q=https://mgaleg.maryland.gov/2026RS/bills/hb/hb1532E.pdf&authuser1>

⁵ <https://www.google.com/search?q=https://leg.colorado.gov/bills/hb26-1007&authuser=1>

⁶ <https://legiscan.com/CT/bill/HB05340/2026>

⁷ <https://www.pv-tech.org/california-moves-ahead-with-balcony-solar-bill/>

⁸ <https://legiscan.com/NY/bill/S08512/2025>

⁹ https://pub.njleg.gov/Bills/2026/S2500/2368_S1.PDF

