PERMIT POWER



STATE POLICY ROADMAP

Ready to Connect

A State Policy Roadmap to Save Families Money On Their Utility Bills By Streamlining Home Solar and Battery Interconnection

November 2026

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How Cheap Home Solar and Batteries Can Lower Utility Bills

Families across the United States have seen their electricity bills consistently rise over the past five years.[1] The increase has been so significant that 68% of respondents in a recent poll by Consumer Reports said that their energy bills were straining the household budget.[2] Unfortunately, this upward pressure on bills is projected to continue as American families are charged for the costs of serving new data centers, building new power plants, replacing aging infrastructure, and recovering from disasters.

Home solar and batteries offer the average family the opportunity to save over $60,000 on their utility bills over the life of their system.[3] But, home solar and batteries are out of reach for too many. Today, it costs the average American family $36,000 to install a home solar system, which costs an Australian family $9,000.



68%

of poll respondents say energy bills are straining their household budget



$60,000

average family savings over the life of a home solar and battery system



$1trn

saved on utility bills over system lifetimes if we lower costs

The main driver of expensive home solar in the United States is unnecessary red tape: slow and inconsistent local government permitting and inspections; slow and expensive utility interconnection; and laws that effectively ban cheap plug-in solar.

Bringing down US home solar costs to levels in peer countries by cutting red tape would supercharge the ability of families to save money with home solar, enable over 18 million additional families to install almost 200GW of solar by 2040 and save $1 trillion on their utility bills over the lifetime of their systems.

The Problem of Slow and Expensive Utility Interconnection

Utilities require a family to get its approval to install home solar and batteries, even if the solar and battery system does not export power to the grid. In most places across the country, this "interconnection" approval process is governed by a hodgepodge of rules and layers of bureaucracy created through unique state statutes and codes and utility policy choices. These slow and complicated utility approval processes can generate thousands of dollars of unnecessary costs and months of delays.

The costs and delays generated by the utility interconnection process take several main forms.



Slow interconnection approvals can add thousands of dollars of unnecessary cost and months of delays. Delays in utilities allowing a family to turn on their solar and battery system once it's installed can delay utility bill savings by months.



Utilities apply outdated evaluation methodologies that unexpectedly trigger expensive and time-consuming grid work, or prevent families from installing home solar and batteries at all.



Obsolete utility rules prevent families from using modern technology that would save them money on their home solar and battery installations.

The cumulative effect is a system in which even the simplest and most standardized installations are impacted by red tape and soft costs, putting the utility bill savings of home solar and batteries out of reach for too many American families.

How to Deliver Utility Bill Savings by Cutting Interconnection Red Tape

By implementing the set of policies we outline below to cut utility interconnection red tape, states can help drive down the cost of home solar and batteries and put the utility bill savings of home solar in the hands of more American families.

01

Interconnect instantly.

- Utilities should assess the impact of a home solar and battery system based on simple pass/fail screens rather than requiring custom engineering studies.
- Utilities should process applications instantly.
- Utilities should exempt systems that have a negligible impact on the grid from the interconnection application process altogether.
- Utilities should avoid duplicative inspections and let families turn on their system without delay.

02

Let families avoid expensive grid work.

- Utilities should adopt best practices for measuring grid congestion and headroom, to allow more home solar and batteries onto the existing grid.
- Utilities should assess the impact of a home solar and battery system based on how much the system exports rather than the system's size.
- Utilities should use the latest utility interconnection standards (IEEE 1547) that enable home solar and battery systems to support the grid and avoid costly grid work.
- Utilities should publish maps that show how much solar and batteries the grid can accommodate at every address and at different times of the day and year.

03

Allow families to use cost-saving equipment.

- Utilities should follow national best practice of allowing families to use meter socket adapters, installed by their licensed contractor, to avoid expensive main panel upgrades.

The Interconnection Policy Roadmap

By implementing the set of policies we outline below to cut utility interconnection red tape, states can help drive down the cost of home solar and batteries and put the utility bill savings of home solar in the hands of more American families.

01 Interconnect Instantly

Families should not face delays from the utilities when installing their home solar and battery system.

1.1 Evaluate Small Home Solar & Battery Systems Using Simple Pass/Fail Screens

THE POLICY

States should require utilities to establish a streamlined track for small systems up to 25kW in export capacity and 50kW in nameplate capacity, where their impact on the grid is assessed based on simple pass/fail screens rather than requiring custom engineering studies.

WHY IT MATTERS

Small residential systems make up the bulk of interconnection applications and are the most standardized systems, posing the least risk to the grid. Yet many utilities still route them through the same engineering review and study process as far larger systems. Without a streamlined track that recognizes their standardization and pre-certified equipment, these projects create a backlog in the queue, consume utility staff bandwidth that is better spent on more complex applications, and create costly delays—driving up customer cancellations and making the bill savings of home solar and batteries less accessible to American families.

✓ This policy is supported by the Department of Energy's Distributed Energy Resource Interconnection Roadmap

CASE STUDIES

Illinois, New Jersey and New Mexico evaluate home solar and battery projects up to 50kW in nameplate capacity and up to 25kW in export capacity using simple pass/fail screens.

1.2 Process Home Solar & Battery Interconnection Applications Instantly

THE POLICY

States should require utilities to evaluate technical screens and the processing of interconnection applications instantly for small home solar and battery systems up to 50kW in nameplate capacity and up to 25kW in export capacity. If a system fails its technical screens, utilities should be required to tell the homeowner why and how they could modify their system to pass the screen.

WHY IT MATTERS

Many utilities still use e-mail, or even postal mail, to administer the interconnection application process. For many utilities, the technical screening process for an interconnection application can take weeks, even for a simple home solar and battery system. Interconnection delays are one of the leading causes of project cancellations, increase project costs by thousands of dollars, and delay when families can start saving money on their bills.

✓ The Department of Energy's Distributed Energy Resource Interconnection Roadmap sets a goal for all utilities to approve systems less than 50kW in size within 1 day.

CASE STUDIES

- Commonwealth Edison in Illinois is deploying its Interconnection and Hosting Capacity Automation program to provide instant interconnection application processing.
- The Sacramento Municipal Utility District in California uses the PRECISE tool to deliver interconnection screening results within minutes.
- In Germany, over half of utilities process interconnection requests within 5 minutes by using platforms such as Envelio.

1.3 Exempt Systems that Export Little Power from Interconnection Applications

THE POLICY

States should require utilities to establish "connect and notify" programs for low-exporting home solar and battery systems that do not require families to go through an interconnection application process prior to installing and turning on their systems.

WHY IT MATTERS

The interconnection process for home solar and battery systems drags on for weeks, or even months in some service territories, and creates costly red tape for families and businesses who want to save money on their electricity bills with these technologies. Since residential systems that export little power have a low-to-no impact on the grid, utilities should allow owners of home solar and battery systems that agree to only minimally export to the grid to connect and then notify the utility they are operating, without going through the interconnection process.

CASE STUDIES

- Colorado established a connect and notify process for systems that export less than 1.92kW to the grid.
- The United Kingdom established a connect and notify process for systems with a capacity of less than 3.68kW.

1.4 Allow Families to Turn On Their Systems without Unnecessary Delays

THE POLICY

States should require utilities to accept the results of a local building department's inspection, rather than making families wait to turn on their system while they conduct a duplicative inspection themselves (the utility inspection is sometimes called a "witness test").

WHY IT MATTERS

This test is redundant and unnecessary for residential systems—it occurs after a home solar or battery system design has already been approved by the utility and the installation has been permitted and inspected by the local government. Residential systems are overwhelmingly standardized, use pre-certified equipment that is listed to the UL 1741 standard, and have been tested in a lab for these exact scenarios. For these reasons, a number of utilities around the country, formally or informally, already waive this requirement for residential systems, yet too many still require it.

CASE STUDIES

Arizona does not require most home solar and battery projects to go through a utility inspection, nor do many utilities such as Ohio's FirstEnergy.

02 Let Families Avoid Expensive Grid Work

States should require utilities to adopt modern and transparent standards to ensure that families do not have to wait or pay for unnecessary grid work when installing a home solar and battery system. This work is also critical to enabling instant interconnection for most families. States should also require utilities to be transparent with families about whether the grid that connects to their house can support home solar and batteries.

2.1 Update Rules to Allow More Power onto the Existing Grid

THE POLICY

States should require utilities to adopt the national best practice of approving home solar and battery projects until, together, they export more than the amount of power that is consumed by other customers on that portion of the grid. This will allow more generation onto the existing grid without triggering costly grid work.

WHY IT MATTERS

In many cases, utilities assess available grid capacity for new generation using out-of-date rules that do not allow home solar and batteries to connect if they export more than 15% of the maximum power consumed by other customers on that portion of the grid. These rules have neither been updated to reflect the real-world experience that utilities across the country have had integrating home solar and battery projects, nor to use real-world data from the utility's distribution grid. As a result, utilities deny applications or require costly grid work for many home solar and battery systems that should be allowed on the existing grid.

CASE STUDIES

Illinois and Michigan require utilities to approve home solar and battery projects until data shows that, together, they will export more than the minimum amount of power that is demanded by other customers on that portion of the grid.

2.2 Allow Families to Export Less Power Instead of Paying for Unnecessary Grid Work

THE POLICY

States should require utilities to assess the impact on the grid of a home solar and battery system based on its export capacity, not the nameplate capacity of the solar panels and home battery system. To enable this change, states should formally authorize the use of power control systems to limit exports from a home solar and battery system.

WHY IT MATTERS

Power control systems built into all modern smart inverters let home solar and battery systems cap their actual export to a predetermined limit, set by either the installer or the utility and enforced through the interconnection agreement. This solves a common bottleneck: without a power control system, an application to add solar plus a battery is assessed as if all of its capacity could hit the grid at once. This assumption frequently trips conservative thresholds and triggers expensive grid work or studies, even when the customer never intends to export that much power.

By recognizing UL 1741-certified power control systems, built into modern inverters, the utility can assess applications on their stated export capacity and let customers install larger or more capable systems on constrained circuits without overstating their grid impact, clearing a path for more home solar and batteries while still protecting the distribution system from exceeding its real limits.

✓ This policy is supported by the Department of Energy's Distributed Energy Resource Interconnection Roadmap

CASE STUDIES

Hawaii, Maine and Michigan explicitly authorize the use of certified power control systems to limit electricity exports to the grid.

2.3 Require Utilities to Implement the Newest Interconnection and Interoperability Standard within One Year of Publication

THE POLICY

States should require utilities to implement the newest version of the IEEE 1547 interconnection and interoperability standard within one year of its publication, to allow families to use modern technology to avoid paying for unnecessary grid work.

WHY IT MATTERS

The IEEE 1547 standard is a set of criteria and requirements for the interconnection and interoperability of distributed energy resources in the United States with electric power systems, including power control systems. When utilities choose not to adopt the most recent version of this standard, they ignore innovations such as voltage regulation that allow more home solar and batteries to safely connect to the existing distribution grid. Additionally, when some utilities adopt the newest version and others do not—installers and manufacturers struggle to navigate outdated approval requirements, face unnecessary equipment testing by each utility, and add more time and costs to the project.

CASE STUDIES

- Delaware requires utilities to adopt the most recent national best practices interconnection standards, which includes the most recently published IEEE 1547 standard.
- Utah requires devices enrolled in net metering use equipment certified to the most recently published IEEE 1547 standard at the time of installation.

2.4 Let Families Know What They Can Install Before They Buy

THE POLICY

States should require utilities to publish hosting capacity maps with the information necessary for families to assess the amount of solar and batteries they can install. These hosting capacity maps should be updated in real time. As a pathway to real time hosting capacity maps, states could set and enforce maximum schedules for hosting capacity updates, with the maximum schedules shortening to real time within several years.

WHY IT MATTERS

Utilities routinely deny interconnection applications, or send them back for re-design, after determining there are capacity limitations on the grid at the project site. In the majority of utility service areas, however, applicants are unable to access hosting capacity maps and determine if there are limits to new generation in their neighborhood before they submit the application—a lack of transparency that wastes time and money unnecessarily. Additionally, if hosting capacity maps are not updated regularly, particularly in areas experiencing rapid growth in home solar and battery adoption, customers may be misled by maps and embark on a project that will ultimately be too costly to pursue.

✓ This policy is supported by the Department of Energy's Distributed Energy Resource Interconnection Roadmap

CASE STUDIES

- Nevada requires utilities to publish hosting capacity maps with sufficient information for families to assess how much home solar and batteries they can install.
- Eversource Energy in Connecticut and Massachusetts publishes hosting capacity maps with sufficient information for families to assess how much home solar and batteries they can install, and allows for submission of a pre-application request directly from the map, with the report generated instantly.

03 Let Families Avoid Main Panel Upgrades & Unnecessary Electrical Work

States should require all utilities to allow families to use proven, cost-saving technology like meter socket adapters to avoid main panel upgrades and unnecessary electrical work.

3.1 Legalize Meter Socket Adapters and Allow Contractors to Install Them

THE POLICY

States should require utilities to allow meter socket adapters, installed by licensed contractors, so that families installing home solar and batteries can avoid main panel upgrades and unnecessary electrical work.

WHY IT MATTERS

Most utilities have not authorized the use of meter socket adapters—devices installed between a residential electric meter and the meter socket that home solar and battery systems can plug into, bypassing the main panel. These devices immediately reduce installation time by hours by eliminating the need for complex interior electrical work for home solar, battery, electric vehicle, and other home improvement projects. They also save customers thousands of dollars by avoiding the need for costly main panel upgrades, which can in turn sometimes even trigger distribution grid work. While these devices are authorized and deployed in a number of states, many utilities still have not authorized them—saddling families with unnecessary, additional costs to add solar and battery systems.

Most utilities that do allow meter socket adapters prevent contractors from "pulling the meter" to install the meter socket adapters. They are required to wait days, weeks or sometimes months for an appointment with a utility employee to pull the meter, which takes less than five minutes. This adds costs and delays when families can start saving money on their utility bills.

CASE STUDIES

- Colorado and Maryland require utilities to authorize meter socket adapters. Colorado's statute covers munis and coops, in addition to investor owned utilities.
- Central Maine Power allows licensed electricians to "pull the meter". After one year, the data showed the policy had led to a 20% reduction in call volume for the utility and a faster construction schedule for 95% of customers.

References

1 Heatmap, Massachusetts Institute of Technology, “Electricity Price Hub”, May 5, 2026, https://electricity.heatmap.news/.

2 Consumer Reports, New Survey From Consumer Reports finds Majority of Households Strained by Energy Bills, Concerned over Data Centers’ Impact on Bills, March 11, 2026.

3 Energy Sage, “How much money do solar panels save in 2026?”, January 23, 2026, https://www.energysage.com/solar/much-solar-panels-save/.

PERMIT POWER

Permit Power is an energy affordability nonprofit organization that makes it cheap and easy for Americans to power their lives. We do research, education, and advocacy to break down the bureaucratic barriers that get in the way of American families installing home solar, batteries, and other energy upgrades.