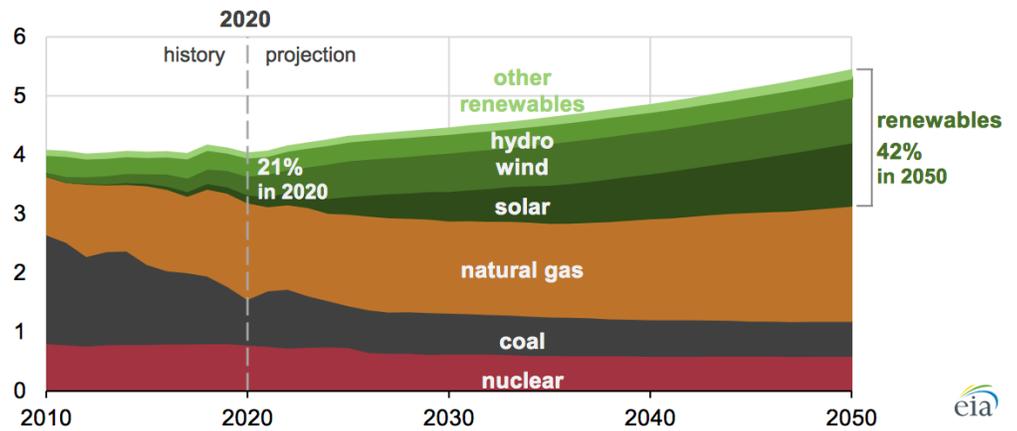


Mainstreaming Renewables

Description:

As the renewable energy industry matured, technology improved, and global production of generating equipment increased. Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2021 Energy Information Administration [report](#) predicts that the share of the

U.S. Electricity Generation: 2010 to 2020 and Predicted to 2050



Source: [U.S. Energy Information Administration Annual Energy Outlook 2021](#)

United States' electricity generation mix supplied by renewable energy resources will increase from 21% in 2020 to 42% by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

Discussion:

To reduce barriers to the adoption of renewable energy technologies, policymakers might consider several options.

Customer-Oriented Policies

- 1. Interconnection** – Interconnection is the process of plugging renewable energy systems into the grid. Interconnection standards apply to both customer-sited and utility-scale systems; however, the focus of most interconnection standards are customer-owned systems. Generally, customers want a clear, streamlined, predictable, and affordable process for connecting to the grid. Without clear interconnection standards, the process to install and connect distributed generation (DG) can be burdensome and expensive. States can consider adopting the Interstate Renewable Energy Council's (IREC) [model interconnection procedures](#).
- 2. Net Metering** – Net metering has been one of the most important policy tools for supporting DG – electricity generation near the user, such as rooftop solar panels. Net metering allows customers to produce electricity onsite and sell excess generation to the utility at a set credit per kilowatt hour (kWh), which creates an incentive for private investment in DG. With net metering, power customers are billed only for the net power consumed over their generation, while they are credited for excess electricity delivered to the grid. Net metering arrangements not only allow the grid to operate like a battery for the customer, but they also contribute clean generation to the electricity mix. A key provision of net metering is that the customer is not paid for power but credited against their use of electricity. This is important for tax reasons, as revenue to a customer is taxable, while crediting for power is not. Net metering policies can apply only to generation that is produced on the customer-side of a single meter (like a solar panel); however, for customers like agricultural facilities, there may be multiple meters serving multiple loads and systems generating electricity at multiple sites. For these

customers, aggregated net metering policies allow credit to be applied using aggregated generation and demand across multiple meters.

3. **Streamlined Permitting** – Installation of distributed renewable energy systems often requires interconnection to the grid and engineering and installation of electrical components. As a result, there are important permitting steps that need to be followed to ensure safety. For DG, “soft costs,” including permitting expenses, can drive up project costs for consumers seeking to connect renewable energy systems to the grid. As the industry has matured, some standard processes have become established. These enable a streamlined permitting process which can create cost and time savings for consumers. States might consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program. States and communities interested in developing streamlined processes should consult utilities and other stakeholders to ensure that appropriate safety standards will continue to be met. State financial incentives, including tax credits or loans, can be tied to systems that are established within a designated streamlined permitting jurisdiction.
4. **Shared Renewables** – Due to building and property attributes, building ownership issues, income level, and/or low credit ratings, many customers are unable to install renewable energy technologies where they live or work. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the project or the generation provided by the system. Shared renewable programs rely on “virtual net metering” where shared systems are off-site from the customer, but the customer receives credits from the shared system as if it were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce. Because virtual net metering is treated as a credit on the customer’s bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system and may come as a surprise to the participant.

Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households’ adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be encouraged either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal [Weatherization Assistance Program](#) to provide recipients of assistance with participation in a shared renewable system.

5. **Corporate Procurement** – Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy and are signing large renewable energy contracts with utilities and other suppliers to meet these targets. The [Corporate Renewable Energy Buyers’ Principles](#), a list of principles developed by seventy corporate signatories, provides a framework for what multinational companies need when buying renewable energy from the grid. States can require the inclusion of corporate renewable purchase commitments in integrated resource, or other long-term plans that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the planning process, regulators can avoid over-building resources and stranding generation assets.
6. **Low- to Moderate-Income Policies** –

Adapt Existing Energy Assistance Programs – Programs such as the Low Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP) provide assistance for paying utility bills and reducing household energy costs. Including distributed energy resources as eligible for funding under these programs can reduce energy costs and increase energy security for low-to-moderate income (LMI) families.

Fund DG for Community Organizations – Organizations or groups that provide support services for LMI communities can be provided funding to install solar or other distributed energy resources. Sites such as homeless shelters, food banks, clinics, and community centers often have enough rooftop area for solar installations. After installation, these resources can reduce an organization’s utility bills, freeing up funds for other activities that support the community.

On-Bill Financing/ Pay As You Save (PAYS) – These programs enable LMI consumers to invest in energy upgrades with no upfront payment. The utility or a third party will pay the initial costs to install the upgrade with the cost of that upgrade recovered through the utility bill. Because repayment includes consideration of the cost savings resulting from the energy upgrade, customers see monetary benefits almost immediately. Once equipment costs are recovered, the equipment belongs to the customer. State policies that reduce lending risk by creating a loan loss reserve and/or a credit enhancement fund can encourage lending to customers that might otherwise not qualify for a loan and can keep interest rates low.

Utility-Oriented Policies

1. **Accelerating and Amending Renewable Portfolio Standards** – One of the oldest and most successful advanced energy policy tools, [renewable portfolio standards](#) (RPSs) usually set a target for a specific percentage of renewable electric generation to be achieved by a specific date (for example, 50% renewable energy by 2030). The RPS was designed to build the market for renewable energy which, at the time when most states were adopting these standards, was more expensive than conventional electricity sources on a kWh basis. Today, we are in a much different situation for most land based, utility scale, renewable energy resources (primarily wind and solar). These technologies are increasingly economical on a direct kWh cost and are being pursued aggressively by most utilities for this reason. The technologies that are still delivering system, economic, and environmental benefits that are not reflected in their higher kWh cost include DG and offshore renewable systems. Accordingly, state policy is evolving to incorporate these technologies while utility system requirements are focusing increasingly on greenhouse gas (GHG) emissions reductions.

The policies focused on GHGs are considered “emissions standards” and focus on the outputs of the electrical system rather than the inputs. This creates a greater pool for economic competition than the standard utility scale wind and solar market – and includes such technologies as energy efficiency, demand reduction, and energy storage.

States can revisit existing RPS policies to increase targets and/or accelerate target dates to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to further incentivize the development of DG and offshore resources. Embedding an RPS within broader clean electricity or emissions standard can allow technological flexibility.

2. **Clean Peak Standards (CPS)** – Clean peak standards aim to increase the share of clean energy resources in use during peak demand and reduce energy bills over time. These goals can be met through:
 - planning and procurement requirements that focus on peak demand,
 - moratoriums on the construction of new peaking units,
 - phasing out existing units,
 - incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times, and/or,
 - establishing a new clean peak standard that sets a target for clean energy deliveries during peak times.

In combination, these initiatives can increase available clean energy for dispatch during peak hours, reduce peak demand, and increase efficiency, all while reducing energy bills for customers.

Example Programs:

States, local governments, and electric utilities offer a variety of incentives to support renewable energy.

- Community Solar in Colorado: <https://energyoffice.colorado.gov/community-solar-0>
- EPA's RE-Powering America's Land Initiative: <https://www.epa.gov/re-powering/learn-more-about-re-powering#what>
- New York State's Accelerated Renewable Energy Growth and Community Benefit Act: <https://www.nysersda.ny.gov/About/Newsroom/2020-Announcements/2020-04-03-NEW-YORK-STATE-ANNOUNCES-PASSAGE-OF-ACCELERATED-RENEWABLE-ENERGY-GROWTH-AND-COMMUNITY-BENEFIT-ACT-AS-PART-OF-2020-2021-ENACTED-STATE-BUDGET>
- Net Energy Metering in California: <https://www.cpuc.ca.gov/General.aspx?id=3800>
- On-Bill Financing in Hawaii: <https://gems.hawaii.gov/participate-now/for-homeowners/>
- Streamlined permitting: <https://solsmart.org>

More Information:

- Cleveland Owns, Cooperative Energy Futures, and the Institute for Local Self-Reliance, Equitable Community Solar: Policy and Program Guidance for Community Solar Programs that Promote Racial and Economic Equity: <https://ilsr.org/wp-content/uploads/2020/02/Equitable-Community-Solar-Report.pdf>
- Energy Sage, Corporate Renewable Energy Procurement: An Overview: <https://news.energysage.com/corporate-renewable-energy-procurement-an-overview/>
- Interstate Renewable Energy Council (IREC): <https://irecusa.org/>
- Lawrence Berkeley National Laboratory, Renewables Portfolio Standards Resources: <https://emp.lbl.gov/projects/renewables-portfolio>
- Local Government Renewables Action Tracker: <https://cityrenewables.org/local-government-renewables-action-tracker/>
- M.J. Bradley & Associates, Clean Peak Standards: https://www.mjbradley.com/sites/default/files/MJBA_Clean%20Peak%20Standard_2018-10-17.pdf
- Rocky Mountain Institute (RMI), Business Renewables Center: <https://rmi.org/our-work/electricity/brc-business-renewables-center/>