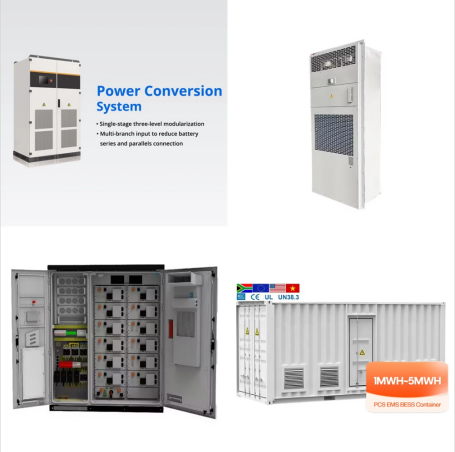
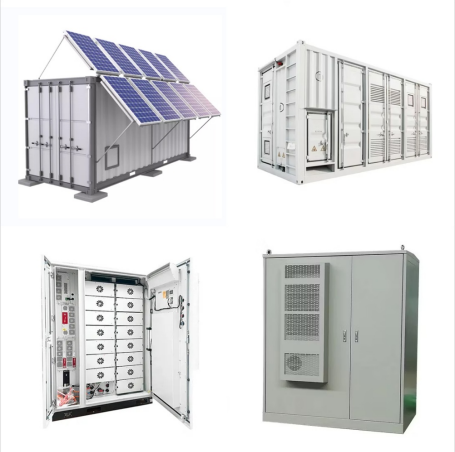
As part of this effort, SETO must track solar cost trends so it can focus its research and development (R& D) on the highest-impact activities. The benchmarks in this report are bottom ???

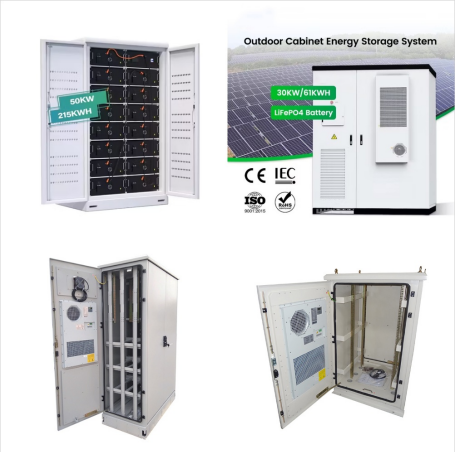


The National Renewable Energy Laboratory's (NREL"s) U.S. Solar Photovoltaic System and Energy Storage Cost Benchmark: Q1 2020 is now available, documenting a decade of cost reductions in solar and battery storage installations across utility, commercial, and residential sectors. NREL's cost benchmarking applies a bottom-up methodology that captures ???

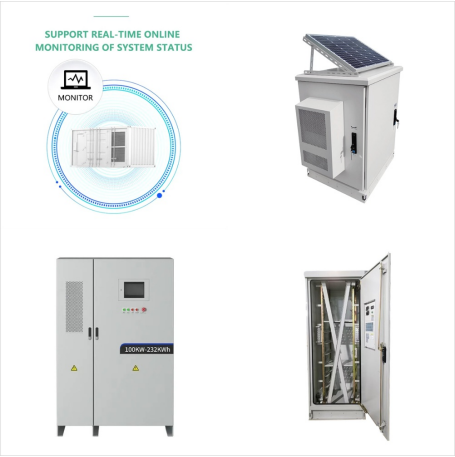


Based on our bottom-up modeling, the Q1 2021 PV and energy storage cost benchmarks are: $$$$2.65$ per watt DC (WDC) (or $$$$3.05$/WAC) for residential PV systems, 1.56/WDC (or $$$$1.79$/WAC) for commercial rooftop PV systems, $$$$1.64$/WDC (or $$$$1.88$/WAC) for commercial ground-mount PV systems, $$$$0.83$/WDC (or ???

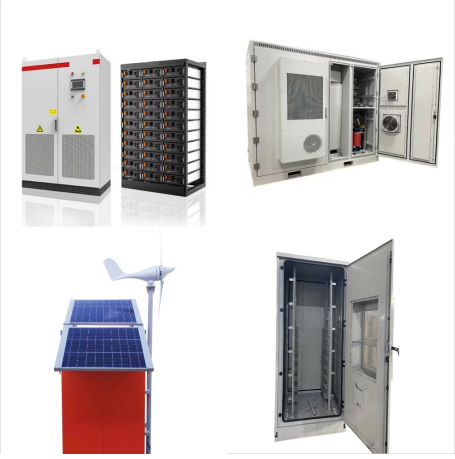
NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



This report benchmarks U.S. solar photovoltaic (PV) system installed costs as of the first quarter of 2016 (Q1 2016). We use a bottom-up methodology, accounting for all system and project-development costs incurred during the installation, to model the costs for residential, commercial, and utility-scale systems.

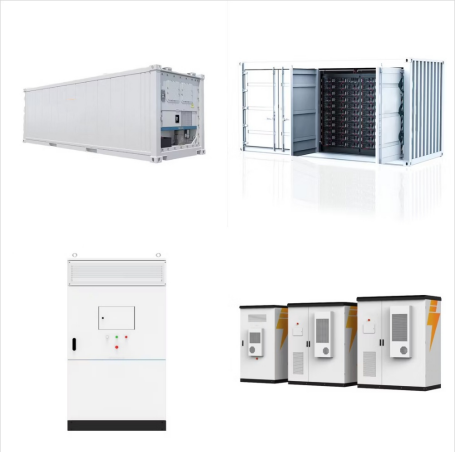


NREL has been modeling U.S. solar photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. PV for residential, commercial, and utility-scale systems, with ???

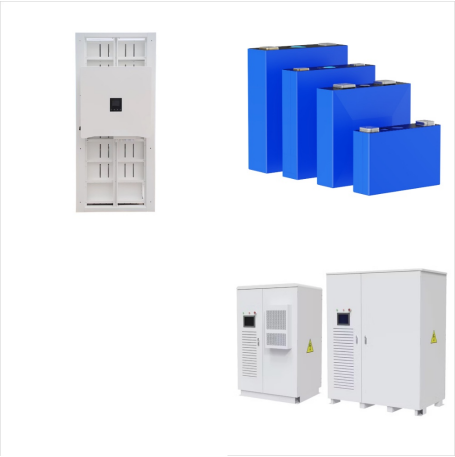


The National Renewable Energy Laboratory (NREL) has been modeling U.S. solar photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. PV for residential, commercial, and utility-scale systems, with and without storage, built in ???

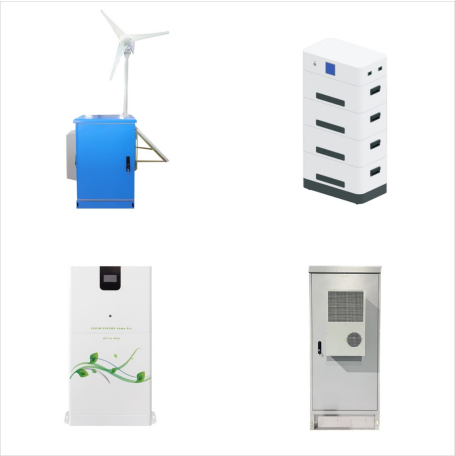
NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



Excel data file for the U.S. Solar Photovoltaic System Cost Benchmark Q1 2016 Report. 1 Data Resource. Name Size Type Resource Description US. solar. PV. Submitted "NREL U.S. Solar Photovoltaic System Cost Benchmark Q1 2016 Report." NREL Data Catalog. Golden, CO: National Renewable Energy Laboratory.

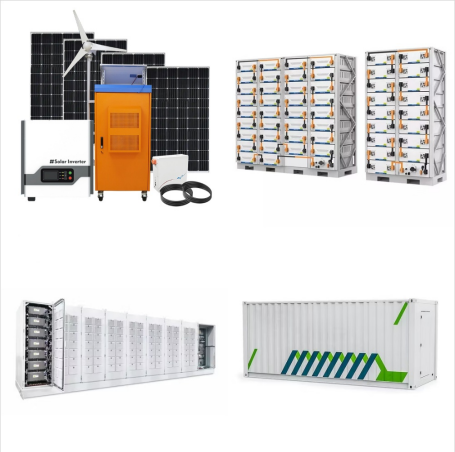


For the 2023 ATB???and based on the NREL PV cost model (Ramasamy et Ran Fu, Ashwin Ramdas, Jal Desai, and Robert Margolis. "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmark: Q1 2020." Golden, CO: National Renewable Energy Laboratory, January 27, 2021. https "H2 2022 US Solar PV System Pricing." Wood Mackenzie

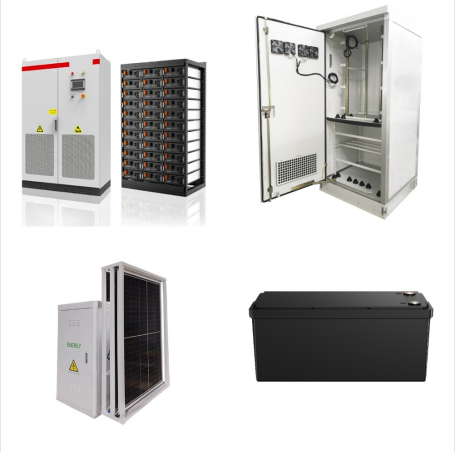


NREL has been modeling U.S. photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. solar PV for residential, commercial, and utility-scale systems built in the first quarter of 2017 (Q1 2017). We use a bottom-up methodology, accounting for all system and project -development

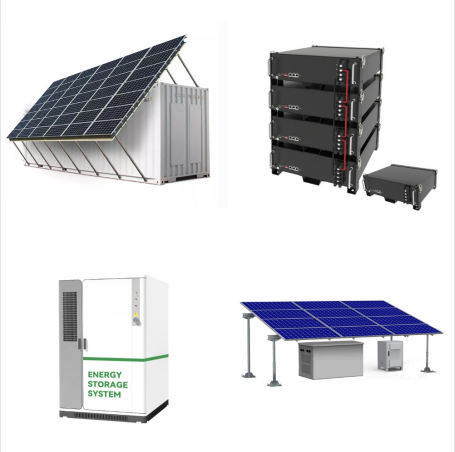
NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



Download the report U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks, With Minimum Sustainable Price Analysis: Q1 2023. Contact report authors Vignesh Ramasamy or Jarett Zuboy with further questions. Learn more about NREL's solar installed system cost analysis.

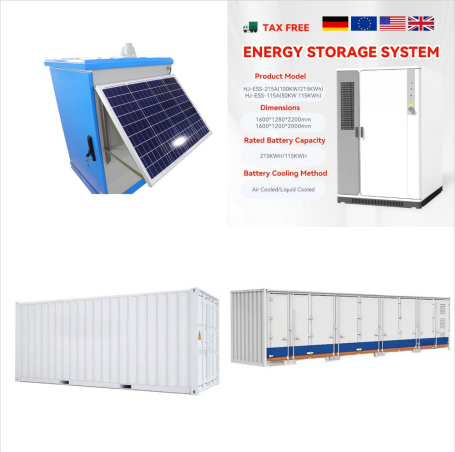


For the 2024 ATB???and based on the NREL PV cost model (Ramasamy et al., Jal Desai, Michael Woodhouse, Paul Basore, and Robert Margolis. "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks, With Minimum Sustainable Price Analysis: Q1 2022." Golden, CO: National Renewable Energy Laboratory, 2022. "H2 2023 US Solar PV



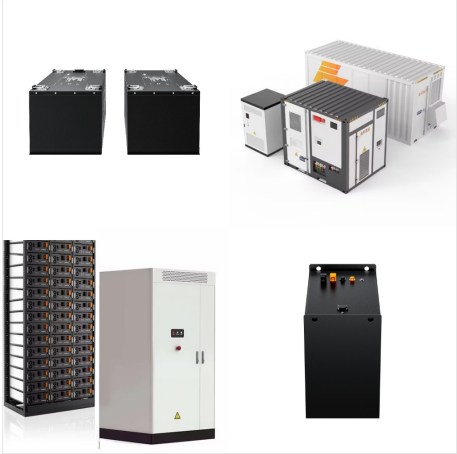
Data File (U.S. Solar Photovoltaic BESS System Cost Benchmark Q1 2020 Report) 536.42 KB: Data: NREL has been modeling U.S. solar photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. PV for residential, commercial, and utility-scale systems, with and without storage, built in the first quarter of 2020 (Q1 2020).

NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



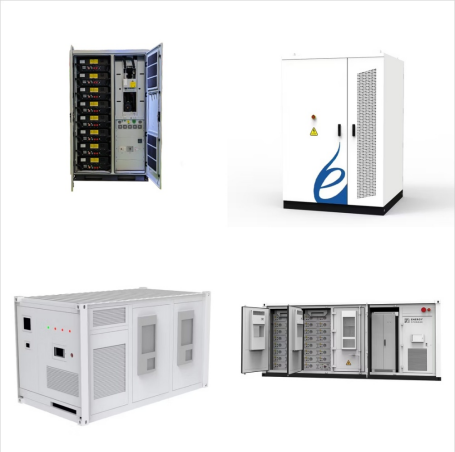
This report benchmarks U.S. solar photovoltaic (PV) system installed costs as of the first quarter of 2017 (Q1 2017). We use a bottom-up methodology, accounting for all system and project-development costs incurred during the installation to model the costs for residential, commercial, and utility-scale systems.

The representative residential PV system (RPV) for 2024 has a rating of 8 kW dc (the sum of the system's module ratings). Each module has an area (with frame) of 1.9 m 2 and a rated power of 400 watts, corresponding to an efficiency of 21.1%. The monofacial modules were assembled in the United States in a plant producing 1.5 GW dc per year, using n-type crystalline silicon solar ???

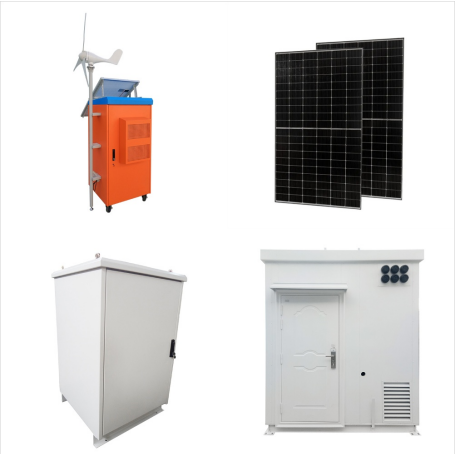


An Updated Life Cycle Assessment of Utility-Scale Solar Photovoltaic Systems Installed in the United States, NREL Technical Report (2024) . Energy and Carbon Payback Times for Modern U.S. Utility Photovoltaic Systems, NREL Factsheet (2024) . Solar Photovoltaic (PV) Manufacturing Expansions in the United States, 2017-2019: Motives, Challenges, Opportunities, and Policy ???

NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



The U.S. Department of Energy's (DOE"s) Solar Energy Technologies Office (SETO) aims to accelerate the advancement and deployment of solar technology in support of an equitable transition to a decarbonized economy no later than 2050, starting with a decarbonized power sector by 2035.



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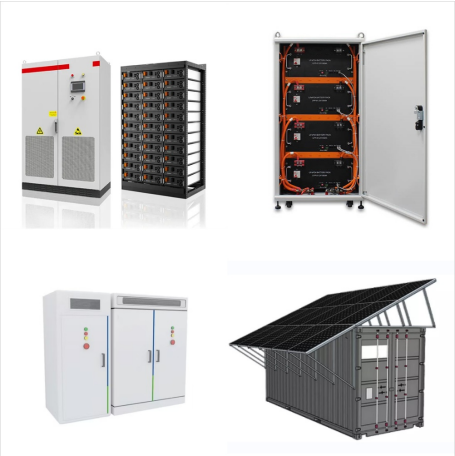


This is the text version for a video???Photovoltaic (PV) and Storage System Cost Benchmarking ???about how to use a bottom-up analysis methodology to model costs for PV systems. It's Part 3 of NREL's Solar Techno-Economic Analysis (TEA) Tutorials video Q1-2020 PV Cost Benchmark Preliminary Results. So, this slide has summary of our

NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK

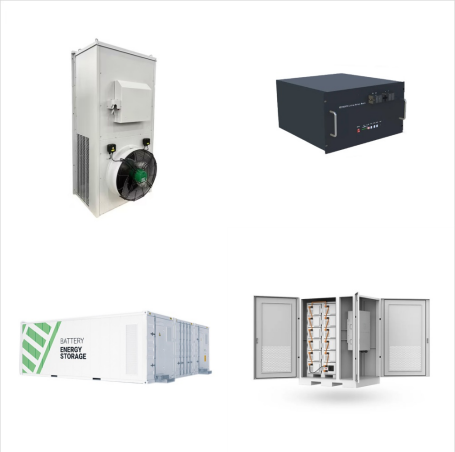
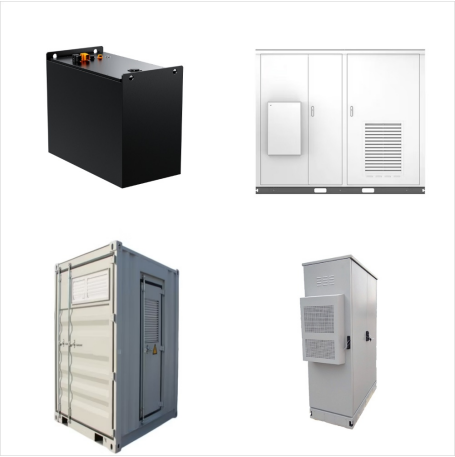
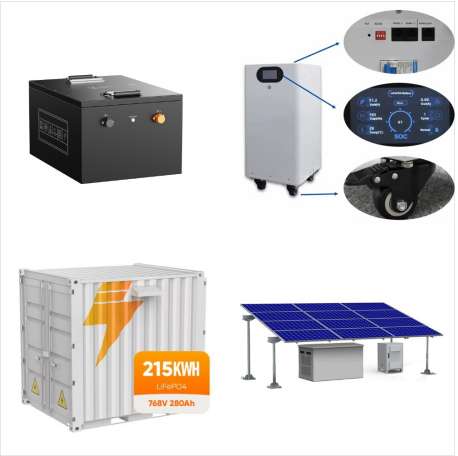


Figure ES-1 NREL PV system cost benchmark summary (inflation adjusted), Q4 2009???Q1 2016 Figure ES-2 Modeled trend of soft cost as a proportion of total cost by sector, Q4 2009???Q1 2016 Figure 1 U.S. PV market growth, 2004???2015, in gigawatts ???



"Q1-2022 U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks With Minimum Sustainable Price Analysis Data File." NREL Data Catalog. Golden, CO: National Renewable ???



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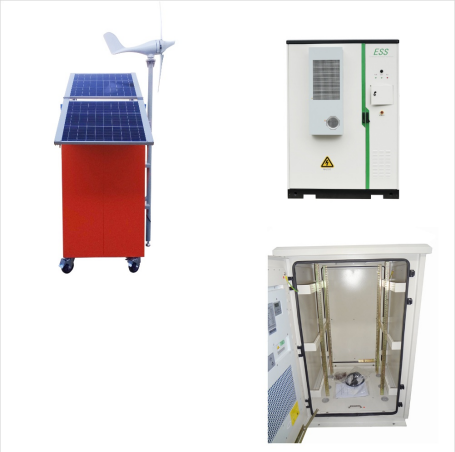
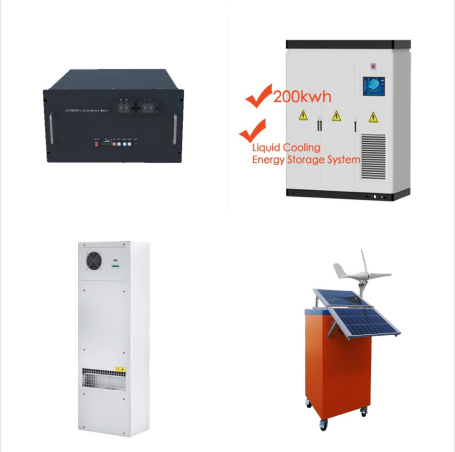
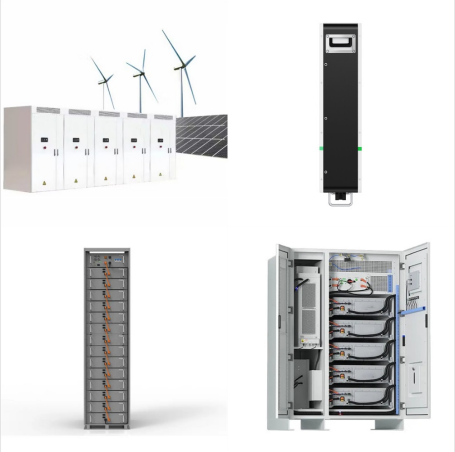
NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



This report benchmarks U.S. solar photovoltaic (PV) system installed costs as of the first quarter of 2020 (Q1 2020). We use a bottom-up method, accounting for all system and project-development costs incurred during the installation to model the costs for residential (with and without storage), commercial (with and without storage), and utility-scale systems (with ???



The U.S. Solar Photovoltaic System CostBenchmark Q1 2018 report benchmarks costs of U.S. solar PV for residential commercial and utility-scale systems built in the first quarter of 2018 Q1 2018. THE methodology includes bottom-up accounting for all system and project-development costs incurred when installing residential commercial and utility



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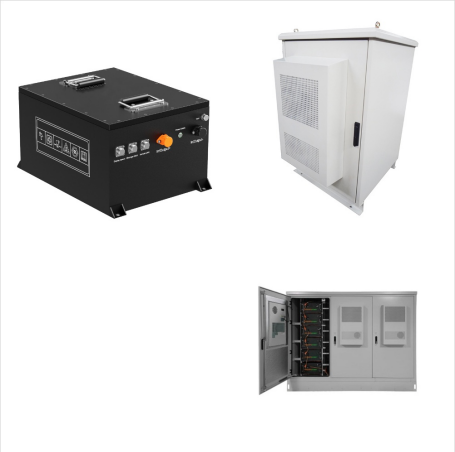
NREL US SOLAR PHOTOVOLTAIC SYSTEM COST BENCHMARK



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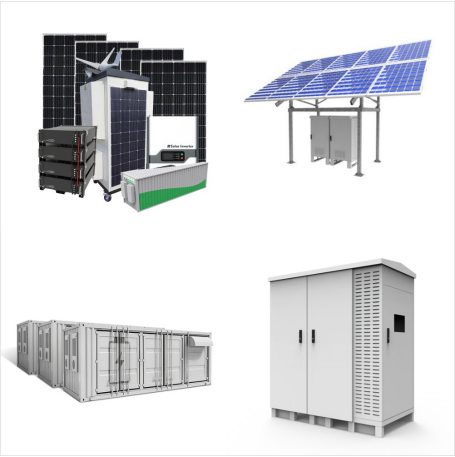
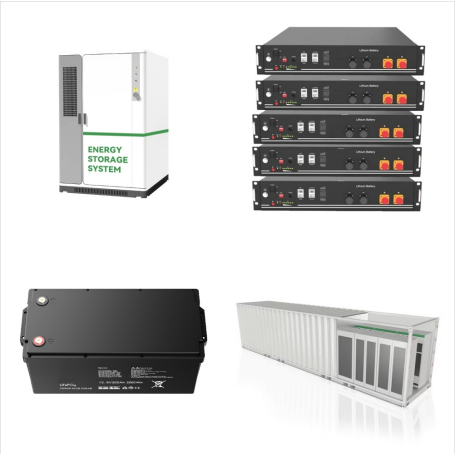


AB - NREL has been modeling U.S. photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. solar PV for residential, commercial, and utility-scale systems built in the first quarter of 2017 (Q1 2017).



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