1 Introduction

Solar photovoltaic (PV) deployment has grown rapidly in the United States over the past several years. As Figure 1 shows, in 2017 new U.S. PV installations included 2.1 GW in the residential sector, 1.5 GW in the commercial sector, and 7.1 GW in the utility-scale sector—totaling 10.7 GW across all sectors (Bloomberg 2018). Although this represents 30% less capacity than in 2016, it still represents 40% growth over 2015 installations and the second highest installation year to date.

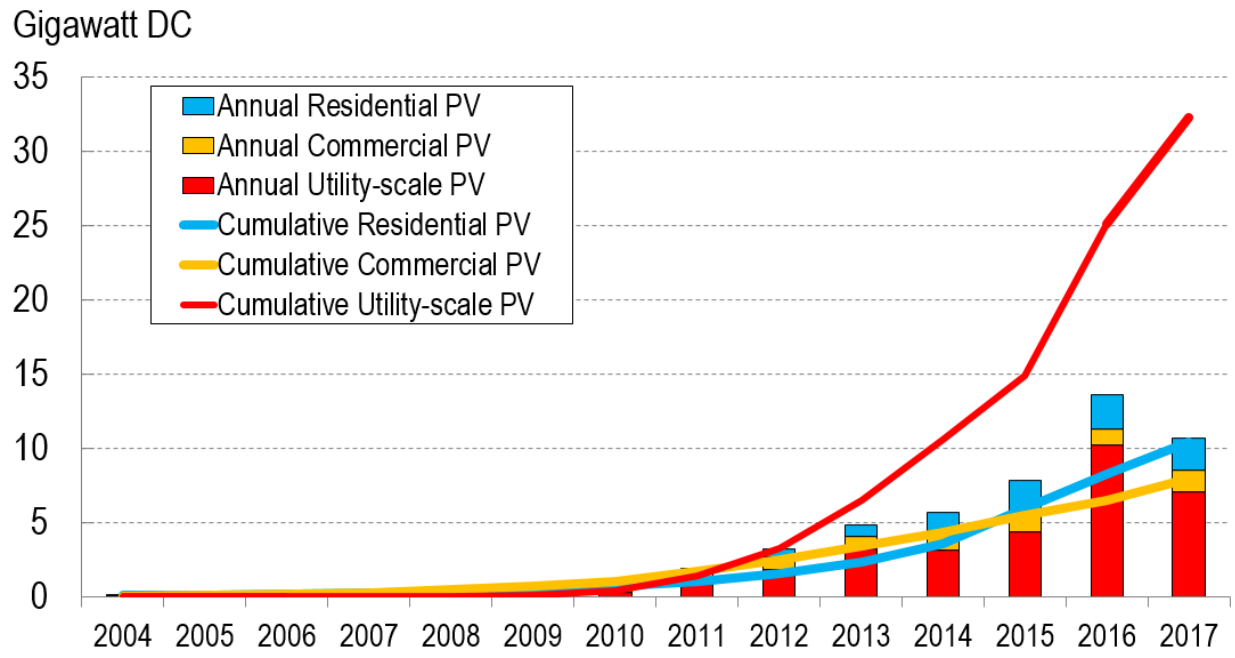

Figure 1. Growth of U.S. PV capacity, 2004–2017 (Bloomberg 2018)

This report continues tracking cost reductions by benchmarking costs of U.S. residential, commercial, and utility-scale PV systems built in Q1 2018. It was produced in conjunction with several related research activities at NREL and Lawrence Berkeley National Laboratory (LBNL), which are documented in Barbose and Darghouth (2017), Bolinger and Seel (2017)[6], Chung et al. (2015), Feldman et al. (2015), and Fu et al. (2016).

Our benchmarking method includes bottom-up accounting for all system and project-development costs incurred when installing residential, commercial, and utility-scale systems, and it models the Q1 2018 costs for such systems excluding any previous supply agreements or contracts. In general, we attempt to model the typical installation techniques and business operations from an installed-cost perspective, and our benchmarks are national averages of installed capacities, weighted by state. The residential benchmark is further averaged across installer and integrator business models, weighted by market share. All benchmarks assume non-union construction labor, although union labor cases are estimated for utility-scale systems.

[6] LBNL compares the bottom-up cost results among various entities, including our results.