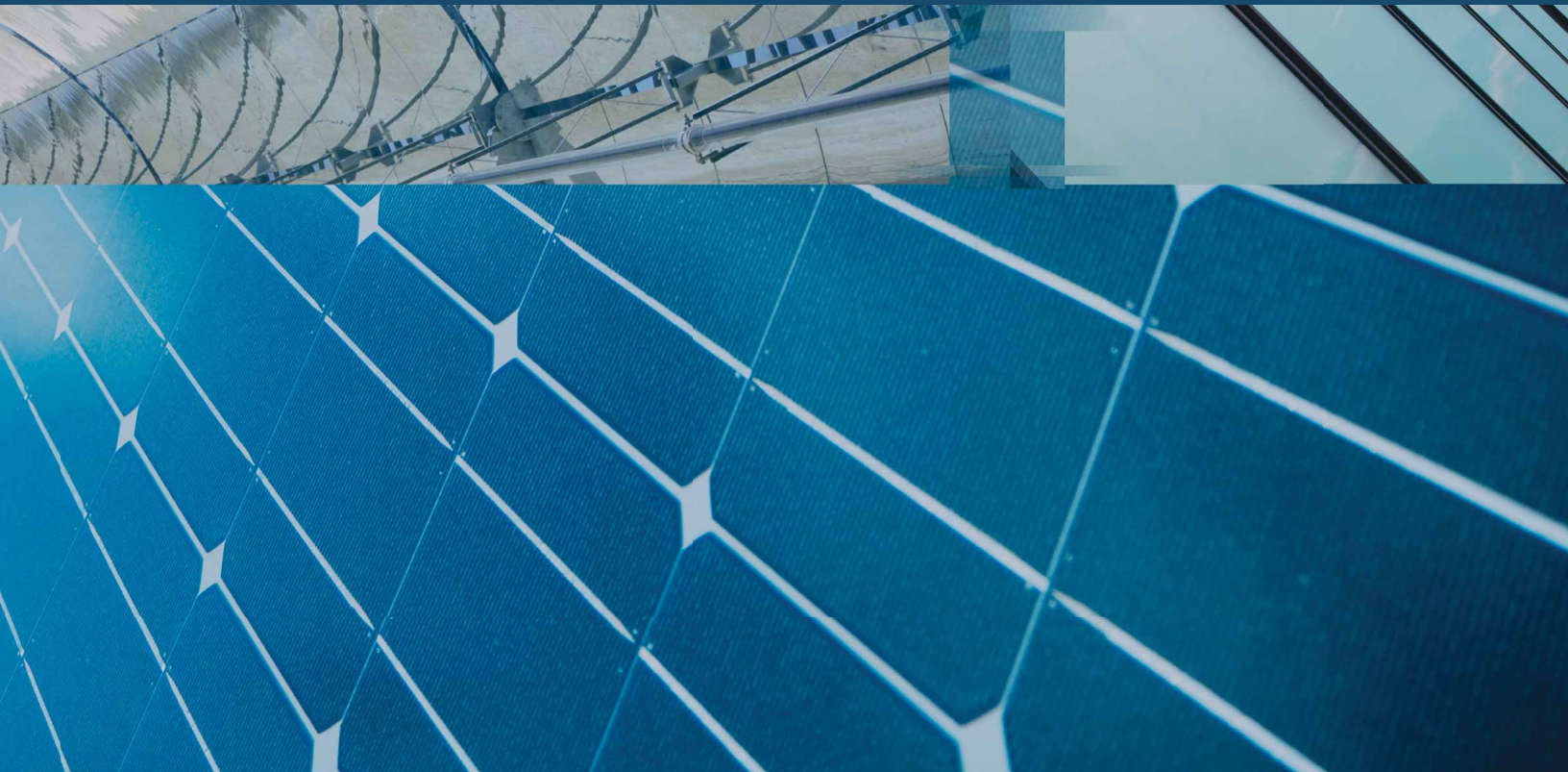


Q2 Q3 Q4 Q4 Q3 Q2 Q1 Q1 Q2 Q3 Q4 Q3 Q2 Q1 Q1 Q2 Q3 Q4 Q4 Q3 Q2 Q1
Q3 Q2 Q1 Q1 Q2 Q3 Q4 Q4 Q3 Q2 Q1 Q2 Q3 Q4 Q4 Q3 Q2 Q1 Q1 Q2 Q3 Q4



U.S. SOLAR MARKET INSIGHT

REPORT | Q2 2012 | EXECUTIVE SUMMARY



U.S. Solar Market Insight™

Q2 2012: EXECUTIVE SUMMARY

Figure 1-1: U.S. PV Installations, 2010-Q2 2012

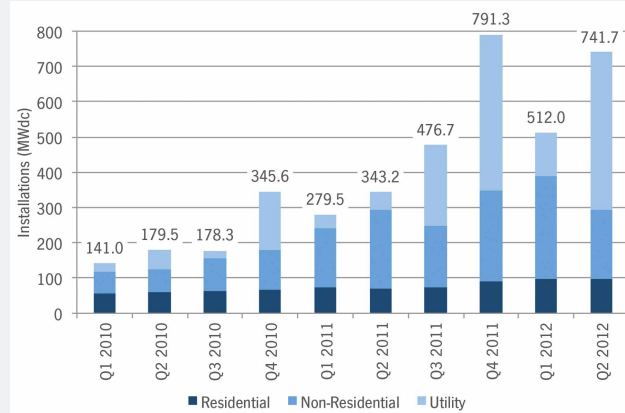


Figure 1-2: Q2 2012 PV Installations by State

RANK (Q1 '12)	RANK (Q2 '12)	STATE	Q1 2012 (MW)	Q2 2012 (MW)
2	1	California	150	217
3	2	Arizona	63	173
1	3	New Jersey	174	103
16	4	Nevada		
15	5	Texas		
24	6	Illinois		
7	7	North Carolina		
4	8	Massachusetts		
17	9	New Mexico		
6	10	Hawaii		
11	11	New York		
5	12	Tennessee		
10	13	Pennsylvania		
9	14	Maryland		
8	15	Colorado		
13	16	Oregon		
12	17	Ohio		
14	18	Florida		
20	19	Missouri		
21	20	Washington		
23	21	Connecticut		
19	22	Delaware		
22	23	Wisconsin		
25	24	DC		
18	25	Vermont		
Total			512	742

Complete Dataset by Market Segment Available in Full Report

INTRODUCTION

The U.S. market remains a rare bright spot in a difficult global solar environment this year. Although global installations should grow overall (GTM Research forecasts 18% global growth in 2012), manufacturer margins remain severely compressed as a result of persistent overcapacity. Major markets such as Germany and Italy show few signs of recovery, leading suppliers to turn with increasing fervency to growth markets – primarily China and the U.S. Fortunately, both of these markets have borne fruit in 2012. China has been a particularly dramatic growth story, with installations expected to more than double in 2012 and exceed 5 gigawatts (GW) by year's end. Meanwhile, the U.S. continues its recent trend of posting strong, albeit more moderate and consistent, growth figures each quarter – with the exception of individual quarterly booms driven by utility installations.

As usual, the second quarter was a tale of many markets for solar in the U.S. Growth rates varied greatly across states and across market segments. New Jersey began to experience a long-expected correction, while Massachusetts boomed. Overall commercial installations fell nationally, but utility installations more than doubled on a quarterly basis.

This report series tracks 24 states individually, as well as Washington, D.C., and while most market dynamics remain state-specific, a few trends were consistent throughout the country:

1. System prices continue to fall, bringing the market ever closer to the point where residential and non-residential demand is driven more by solar radiation and retail electricity prices than state-level incentives

To ensure the utmost accuracy, each quarter new data is added to the U.S. Solar Market Insight reports, thus reported figures may not match those of previous iterations.

2. The residential third-party financing model continues to gain steam in every market where it has been introduced
3. The non-residential market has struggled where incentive levels or SREC prices decline (particularly in California and New Jersey), implying system costs must fall further before state incentives become unnecessary
4. The volume of utility installations is booming, but new utility procurement has slowed down, leaving some earlier-stage projects in limbo as developers turn their attention to more promising prospects

GTM Research forecasts that 3.2 GW of PV will be installed in the U.S. this year, representing 71% growth over 2011. Given this forecast, U.S. market share of global installations will rise to over 10% from 7% in 2011 and less than 5% in 2010.

Key Findings

Photovoltaics (PV):

- PV installations totaled 742 megawatts (MW) in Q2 2012, up 45% over Q1 2012 and 116% over Q2 2011
- The residential market remained relatively flat in Q2, while the non-residential market shrank 33% on a quarterly basis
- Q2 2012 was the largest quarter ever for utility PV installations, as more than 20 projects were completed, totaling 447 MW
- There is now a cumulative 5,161 MW of PV capacity spread amongst nearly 248,000 individual systems operating in the U.S. as of the end of Q2
- GTM Research forecasts that 3.2 GW of PV will be installed in the U.S. in 2012, up 71% over 2011

Solar Energy Industries Association:

Tom Kimbis, Vice President, Strategy & External Affairs
Justin Baca, Senior Research Manager
Will Lent, Research & Policy Analyst
Shawn Rumery, Research Analyst
research@seia.org

U.S. Solar Market Insight™ is a quarterly publication of the Solar Energy Industries Association (SEIA)® and GTM Research. Each quarter, we survey nearly 200 installers, manufacturers, utilities, and state agencies to collect granular data on photovoltaic (PV) and concentrating solar power. These data provide the backbone of this Solar Market Insight™ report, in which we identify and analyze trends in U.S. solar demand, manufacturing, and pricing by state and market segment. We also use this analysis to look forward and forecast demand over the next five years. As the U.S. solar market expands, we hope that Solar Market Insight™ will provide an invaluable decision-making tool for installers, suppliers, investors, policymakers and advocates alike.

See the back cover of this report for more information.

Concentrating Solar Power (CSP and CPV):

- Cogentrix's 30 MWac CPV Alamosa Solar came on-line
- Construction progressed at BrightSource's Ivanpah Project, with 92% of pylon installation complete at Unit 1 at the end of June
- Two CSP projects, the 100 MW Quartzsite Project and the 100 MW Moapa Solar Energy Center, were expedited under President Obama's "We Can't Wait" initiative
- As of the end of Q2 there is a cumulative of 546 MW of concentrating solar capacity operating in the U.S.

GTM Research Solar Analysts:

Shayle Kann, Vice President, Research
Shyam Mehta, Senior Analyst
MJ Shiao, Senior Analyst
Andrew Krulewitz, Solar Analyst
Carolyn Campbell, Research Associate
solaranalysts@gtmresearch.com

2 PHOTOVOLTAICS

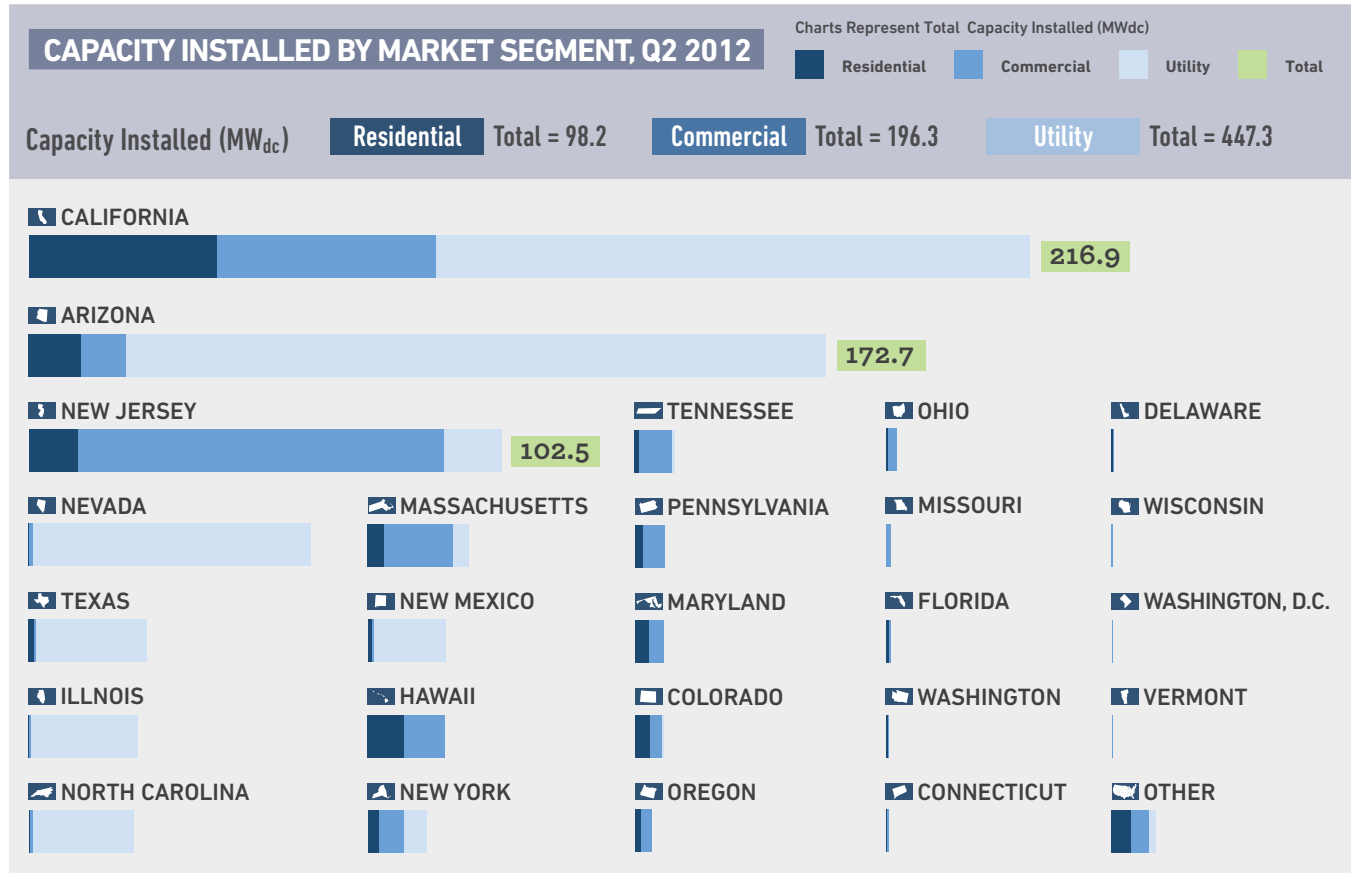
Photovoltaics (PV), which convert sunlight directly to electricity, continue to be the largest component of solar market growth in the U.S.

2.1 INSTALLATIONS

The U.S. installed 742 MW of photovoltaics in the second quarter of 2012. This represents 45% growth over Q1 2012 and 116% growth over Q2 2011. Through the first half of 2012, the U.S. market has already installed 1,254 MW – more than double the amount installed over the same period in 2011. On the surface, this would seem to indicate that the U.S. market is headed for a third consecutive year of triple-digit growth. However, it is likely that annual growth rates in the second half of the year will be significantly lower. GTM Research forecasts that the U.S. market will grow 71% over the course of 2012, ultimately reaching 3.2 GW.

As detailed below, each market segment (residential, non-residential, and utility) experienced a drastically different landscape in Q2 2012. While the residential market grew incrementally, the non-residential market contracted significantly and the utility market boomed. Increasingly, the U.S. market needs to be considered in light of these differing dynamics, lest a casual observer draw errant conclusions about any given market segment.

Figure 2-1: State-Level Installations



Note: Underlying Data by State Available in Full Report

For the fifth consecutive quarter, the U.S. **residential** PV market grew incrementally. In Q2, the residential market grew by less than one megawatt overall. Thirteen of the 24 states GTM Research tracks individually saw growth in the residential sector in Q2. The two states with the most notable growth were Maryland and Massachusetts. The California market grew 5% over Q1 2012, but both New Jersey and Arizona saw shrinking residential markets in Q2. Third-party ownership of residential systems is still on the rise in states where the option is available. However, to date this model has not expanded the overall market, but rather taken market share from direct ownership.

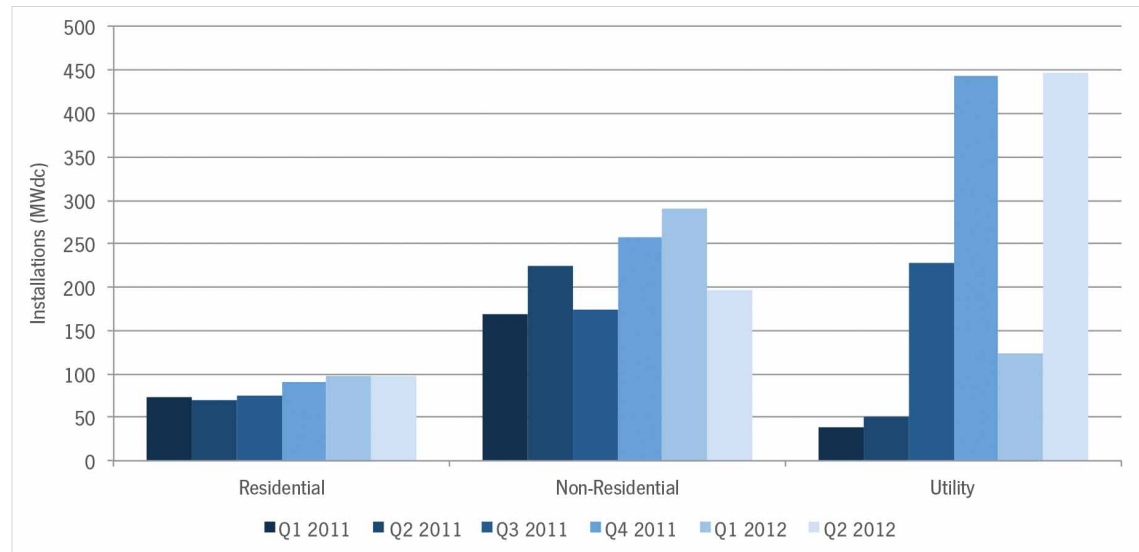
The **non-residential** market performed poorly in Q2 2012, declining substantially both quarter-over-quarter and year-over-year. This was not the result of a single state experiencing a downturn. Although California (down 45%) and New Jersey (down 35%) contributed a large part of the decline, these states were not alone. Only ten of the 24 states GTM Research tracks individually saw quarterly growth in the

non-residential market in Q2. This trend was likely due to a combination of factors. In some individual markets such as New Jersey, it was a result of state-market-specific factors such as SREC oversupply. In other states, Q1 had been propped up by installations safe-harbored under the 1603 Treasury program. Despite the lower second quarter, growth is still expected for the year overall.

Notable growth states for non-residential installations included Massachusetts and Tennessee.

The **utility** market more than made up for quarterly decline in the non-residential segment and grew overall in Q2 2012. Had the utility market remained flat quarter-over-quarter, total installations would have declined 18% instead of growing 45%. Q2 2012 was the largest quarter in the history of the U.S. market for utility installations. This included a mixture of larger, multi-phase projects (Agua Caliente, Mesquite Solar) and smaller standalone utility-side installations (Silver State North, McHenry Solar Farm).

Figure 2-2:
U.S. PV
Installations by
Market Segment
and Quarter,
2011-Q2 2012



Note: State-by-state market segment data is available in the full report.

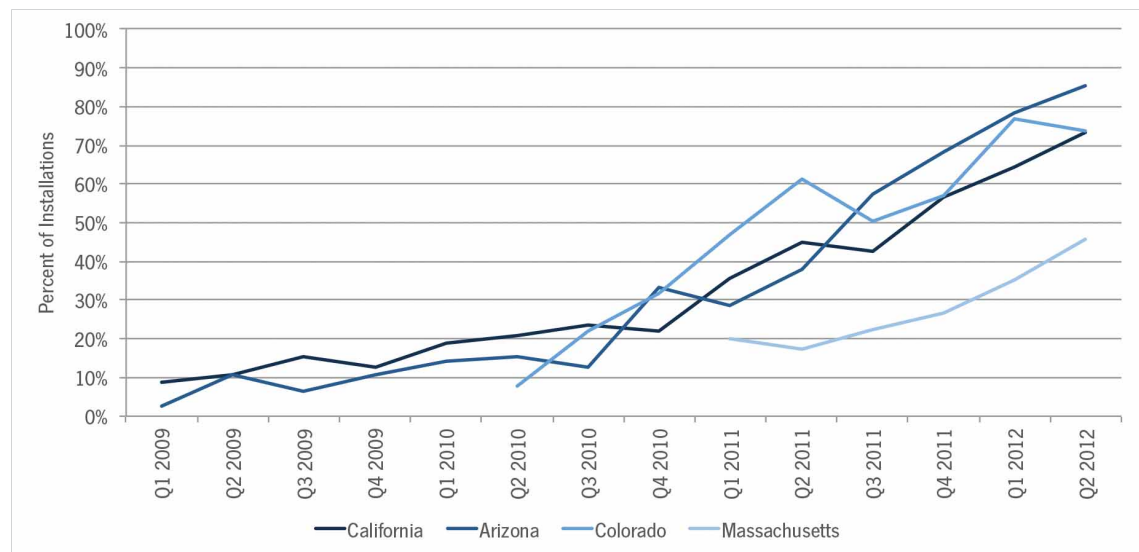
FULL REPORT EXCERPT: THIRD-PARTY RESIDENTIAL FINANCE

Third-party ownership has taken the residential solar space by storm, particularly in the last year and a half. The promise of lower energy bills with little to no upfront payment has spurred tens of thousands of homeowners to install solar systems through a PPA or lease agreement. In Q2 2012, the average price of a residential system was \$32,453, down from \$37,144 a year ago, despite a slight uptick in average system size from 5.8 kW to 5.9 kW. Even with costs coming down, purchasing a system outright is not a financially viable or appealing option for many homeowners. For homeowners looking to lower their energy costs or reduce their environmental footprint, the option to avoid upfront payment and have a contract with a company to monitor and repair the array is appealing.

As seen in Figure 2-3, the relative market share of third-party-owned residential systems has grown immensely in established markets. In Massachusetts, which has a burgeoning residential sector, installers that offer third-party financing far outnumber those who only offer cash sales. It is expected that the market share of third-party systems in Massachusetts will soon reach the levels seen in the other three states presented: Arizona, California, and Colorado. In the other major residential markets of New Jersey and Hawaii, where data is not available regarding third-party ownership, conversations with prominent solar providers suggest that levels of third-party penetration are similar to those seen in California and Colorado (70%-80%).

The success of third-party residential solar providers has attracted more than \$600 million in new investments in recent months. Leading financial institutions have raised company-specific funds for solar providers to either offer to installer partners or use to install systems under their own name. This influx of cash into the residential space signifies the growing acceptance of solar leases as a secure investment and a unique way to reduce tax liability for the project owners, which in this case are the investors. It is expected that third-party installations will quickly claim even more market share in the coming quarters.

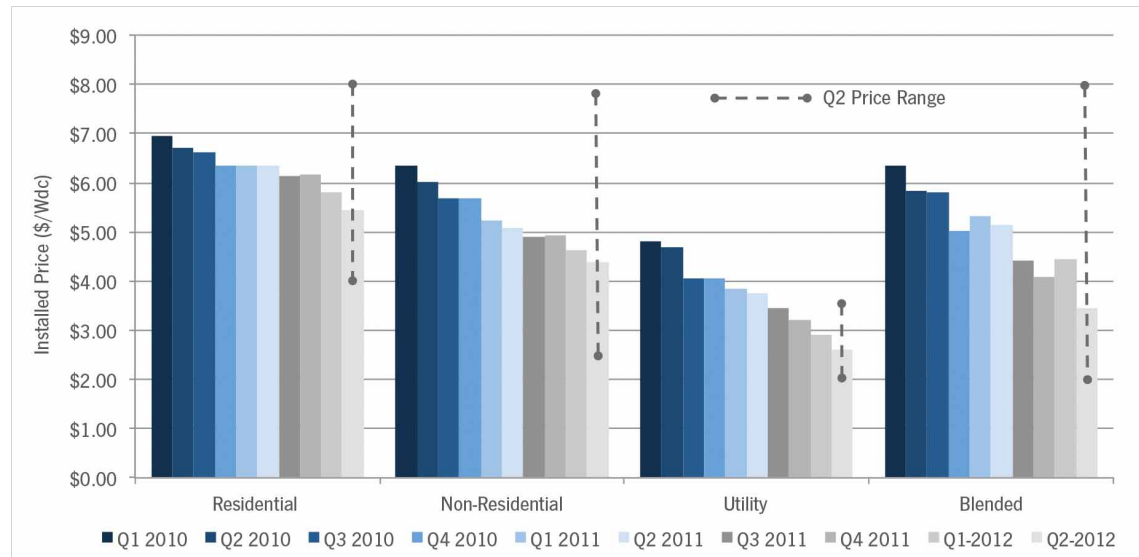
Figure 2-3:
Percentage of
Third-Party Owned
Residential
Installations in
AZ, CA, CO & MA,
2009 - Q2 2012



Note: Granular market share percentages as well as third-party/direct-sale installed price comparisons are available in the full version of the U.S. Solar Market Insight report.

2.2 INSTALLED PRICE

Figure 2-4:
National
Weighted Average
System Prices,
2010 - Q2 2012



Quarter-over-quarter, the national weighted-average system price fell by 22 percent, from \$4.44/W to \$3.45/W. Year-over-year, average installed costs declined by 33 percent. This average number is heavily impacted by the volume of utility-scale solar installed in a given quarter, and there was substantially more in the second quarter of 2012 compared to Q1. It should be noted that prices reported in this section are weighted averages based on all systems that were completed in Q2 in many locations.

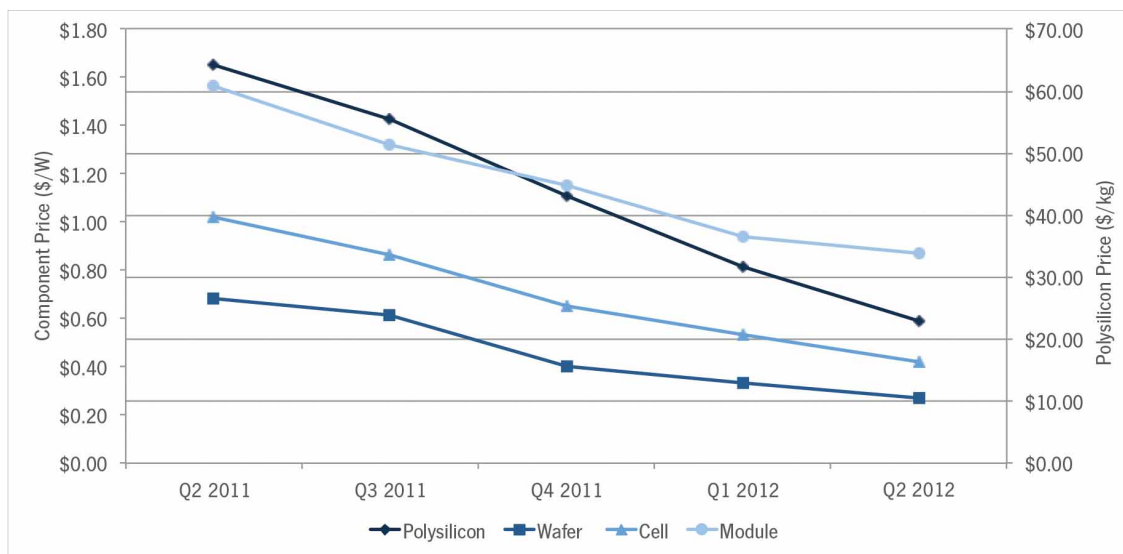
- **RESIDENTIAL** system prices fell by 6 percent from Q1 2012 to Q2 2012, as the national average installed price dropped from \$5.81/W to \$5.46/W. Year-over-year, installed costs declined by 14.1 percent. The most significant price decline came in California, which saw the average residential installation cost drop from \$6.27/W to \$5.73/W. This is a result of smaller CSI rebates, falling equipment costs, and third-party providers' system prices being lower than ever before.
- **NON-RESIDENTIAL** system prices fell by 5.4 percent quarter-over-quarter from \$4.63/W to \$4.38/W. Year-over-year, installed costs declined by 13.8 percent. New Jersey, the largest non-residential state market in Q2, led the low-cost charge, as developers attempted to counteract low SREC prices by streamlining installation processes as much as possible. For projects in excess of 100 kilowatts, final project prices were consistently in the \$2.50/W-\$2.75/W range, which created tight margins for developers and installers. California also experienced significant price declines, as the average non-residential system price fell from \$5.43/W to \$5.16/W, largely spurred by diminishing CSI rebates.

- **UTILITY** system prices once again declined quarter-over-quarter, dropping from \$2.90/W in Q1 2012 to \$2.60/W in Q2 2012. Year-over-year, installed prices fell by 33 percent. This low average price was heavily influenced by two factors. First, three of the six projects over 25 MW completed in Q2 were built by vertically integrated manufacturer project developers, who employed their own technologies. Second, the other three completed projects over 25 MW employed low-cost Chinese-made modules.

2.3 COMPONENT PRICING

Pricing for polysilicon and PV components continued to exhibit softness in Q2 2012 due to the persistence of the global oversupply environment that the industry has faced since early 2011. Blended contract and spot polysilicon prices declined by 27 percent quarter-over-quarter to \$23/kg. Blended module average sales prices (ASPs) for Q2 2012 were down to \$0.87/W, a staggering 44 percent lower than Q2 2011 levels of \$1.56/W. Thus far, module pricing does not appear to be materially affected by antidumping tariffs on modules containing Chinese cells, even though tolling cells through Taiwan does impose a slight cost increase on manufacturers. Assuming a \$0.22/W wafer-to-cell conversion cost in Taiwan (compared to \$0.16/W in China) and an additional \$0.03/W cost increase for third-party sourcing (based on a 5% tolling margin), this equates to an overall tolling cost difference of around \$0.08/W. However, this increase does not prohibit China-based suppliers from continuing to provide relatively low-priced modules to U.S. developers. Coupled with further conversion cost reductions and the continuing decline in ASPs, a significant increase in U.S. pricing some in the industry had expected has not materialized. Blended average factory-gate inverter pricing dropped to \$0.23/W on the quarter from \$0.25/W in Q1, although this trend had more to do with product shipment mixes rather than actual competitive dynamics.

Figure 2-5:
U.S. Polysilicon,
Wafer, Cell and
Module Prices, Q2
2011-Q2 2012



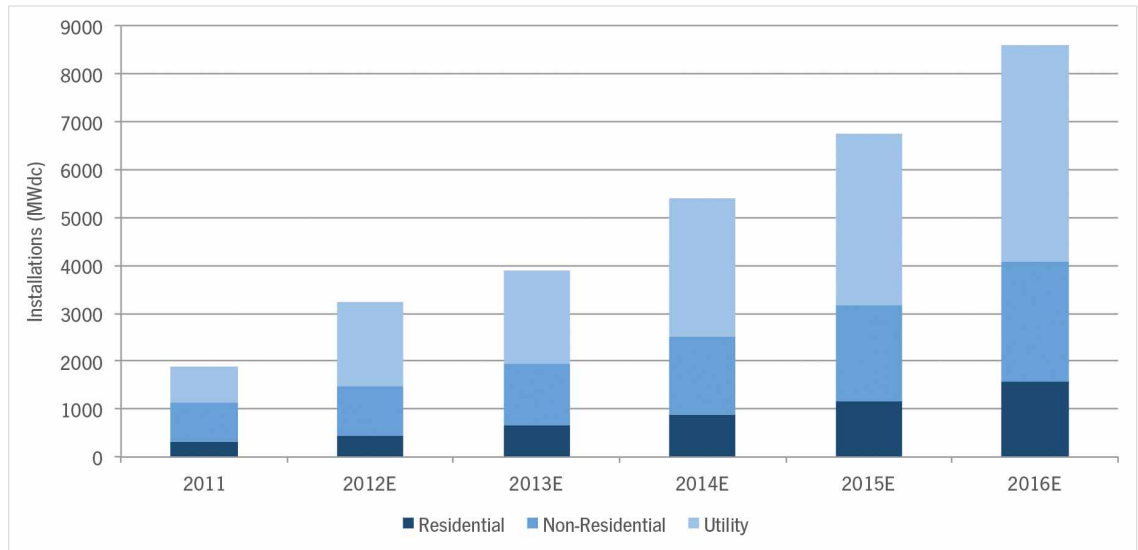
2.4 MARKET OUTLOOK

This quarter, the full-year 2012 forecast has been revised downward slightly from 3.3 GW to 3.2 GW. A strong second half of the year is still expected, driven by a slight recovery in the California commercial market as well as large utility installation figures in Q4. By year's end, it is anticipated that the utility market will account for 54% of annual installations, up from 40% in 2011. Still, the overall growth rate will have slowed to 71%, and expect a further slowdown in market expansion in 2013 to 21%. This will usher in a new period, from 2012-2016, with relatively lower but still impressive annual growth in the 25% to 30% range.

As the U.S. solar industry progresses toward 2016, it is becoming increasingly clear that system prices will fall significantly. This will enable a substantial volume of installations in some states to be built using only federal incentives. At first, these installations will only be feasible in locations with high insolation and high retail electricity prices (e.g., parts of PG&E territory in California). However, as system prices continue to fall, additional markets will open up and drive demand despite the likelihood of waning state-level financial support for solar projects. Effective state policies, particularly those pertaining to net-metering and permitting, will still be needed in order to accelerate deployment in some markets.

Midway through 2012, it is also time to begin to consider the landscape of the U.S. market in 2017, at which point the Investment Tax Credit may no longer be in place. While this is not a foregone conclusion, prudent solar businesses will begin preparing for the possibility today. Over the next few quarters SEIA and GTM Research will dedicate more attention to considering what that scenario might look like.

Figure 2-6:
U.S. PV
Installations by
Market Segment,
2011-2016E



Note: Full report contains market forecast through 2016 by state and market segment.

Figure 2-7:
Top Ten State
Forecast for
2012

Top States by Annual Installed PV - 2012 Forecast			
Rank	Residential	Non-Residential	Utility
1	California	New Jersey	California
2	Arizona	California	Arizona
3	New Jersey	Massachusetts	Nevada
4	Hawaii	Arizona	New Jersey
5	Colorado	Hawaii	Texas
6	Massachusetts	Tennessee	Maryland
7	New York	North Carolina	North Carolina
8	Oregon	Pennsylvania	New Mexico
9	Maryland	New York	Illinois
10	Pennsylvania	Colorado	Massachusetts

3 CONCENTRATING SOLAR

3.1 INSTALLATIONS

In Q2 2012, Cogentrix's 30 MWac Alamosa Solar project using Amonix's CPV technology was the sole utility-scale concentrating solar project to come on-line. However, during the quarter, there was additional progress made on several of the large CSP projects under development;

- Construction progressed at BrightSource's Ivanpah Project, with 92% of pylon installation complete at Unit 1 at the end of June
- BrightSource acquired Palen Solar from Solar Trust of America and plans to petition the California Energy Commission for a change to its power-tower technology
- Two CSP projects, the 100 MW Quartzsite Project and the 100 MW Moapa Solar Energy Center, were expedited under President Obama's "We Can't Wait" initiative
- SunPower signed an agreement with an undisclosed major U.S. utility for a 6 MW project utilizing its C7 CPV technology and is expected to bring the project on-line next year

Figure 3-1: Major US Concentrating Solar Project Development Highlights

Project	State	Capacity (MW-ac)	Construction	Expected Completion	Project Status Update
CSP					
Solana Generating Station	AZ	280	Dec-10	2013	April 2012: Capital Riesgo Global (a subsidiary of Banco Santander) will invest \$125m for an equity stake in the project. July 2012: Siemens began shipping integrated drive technology to project.
Mojave Solar Project	CA	280	Dec-10	2014	April 2012: Placed order with Tubos Reunidos for high performance steel pipes.
Hidden Hills	CA	500	--	2015	May 2012: CEC issued "Preliminary Staff Assessment" finding less than significant environmental impacts.
Ivanpah	CA	392	Oct-10	2013	Unit 1: Pylon installation 92% complete as of June. Unit 2: Steam drum in place; tower topped out. Unit 3: Steel portion of tower is complete; first boiler placed in late May.
Palen Solar	CA	500	--	2014	June 2012: Brightsource acquired development rights from Solar Trust of America; will petition CEC for change to power-tower technology.
Quartzsite Solar Energy	AZ	100	--	2015	August 2012: expedited under the "We Can't Wait" initiative.
Moapa Solar Energy Center	NV	100	--	2014	August 2012: the project on Moapa River Indian Reservation land will use either eSolar or AREVA equipment; expedited under the "We Can't Wait" initiative.
Gaskell Sun Tower	CA	245	--	2015	PPA Terminated
CPV					
Alamosa	CO	30	May-11	2012	Online April 2012.
SunPower C7 Project	--	6	--	2013	SunPower signed a 6 MW agreement with a "major" U.S. utility.

References, data, charts or analysis from this Executive Summary should be attributed to the SEIA/GTM Research *U.S. Solar Market Insight*

Media inquiries should be directed to Nick Rinaldi (rinaldi@gtmresearch.com) at GTM Research, or to Monique Hanis (mhanis@seia.org) or Jamie Nolan (jnolan@seia.org) at SEIA.

All figures sourced from GTM Research. For more detail on methodology and sources, visit www.gtmresearch.com/solarinsight.



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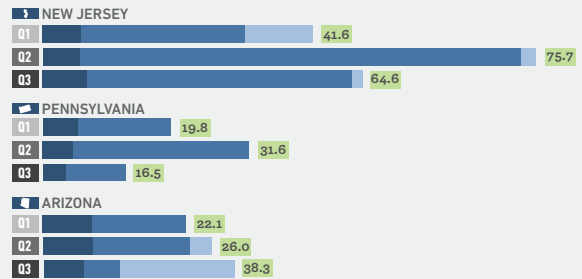
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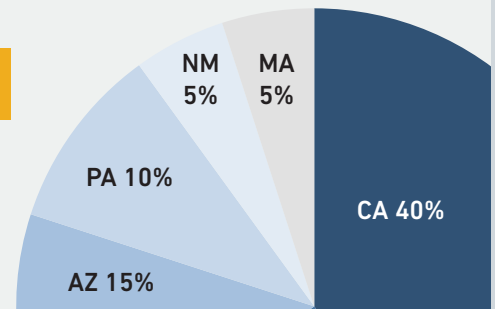
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- › Installed cost by market segment for each state
- › State-by-state market analysis
- › Component pricing across the value chain
- › Manufacturing capacity & production by component by state
- › Demand projections to 2016 by technology, market segment & state

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- › National aggregate capacity additions
- › National aggregate number of installations
- › National weighted average installed price
- › National aggregate manufacturing production

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Please find a more detailed content and pricing matrix on the reverse side of this page.



U.S. SOLAR MARKET INSIGHT

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