

AC SYSTEMS GROWTH FOR RESIDENTIAL PV

May 7, 2012

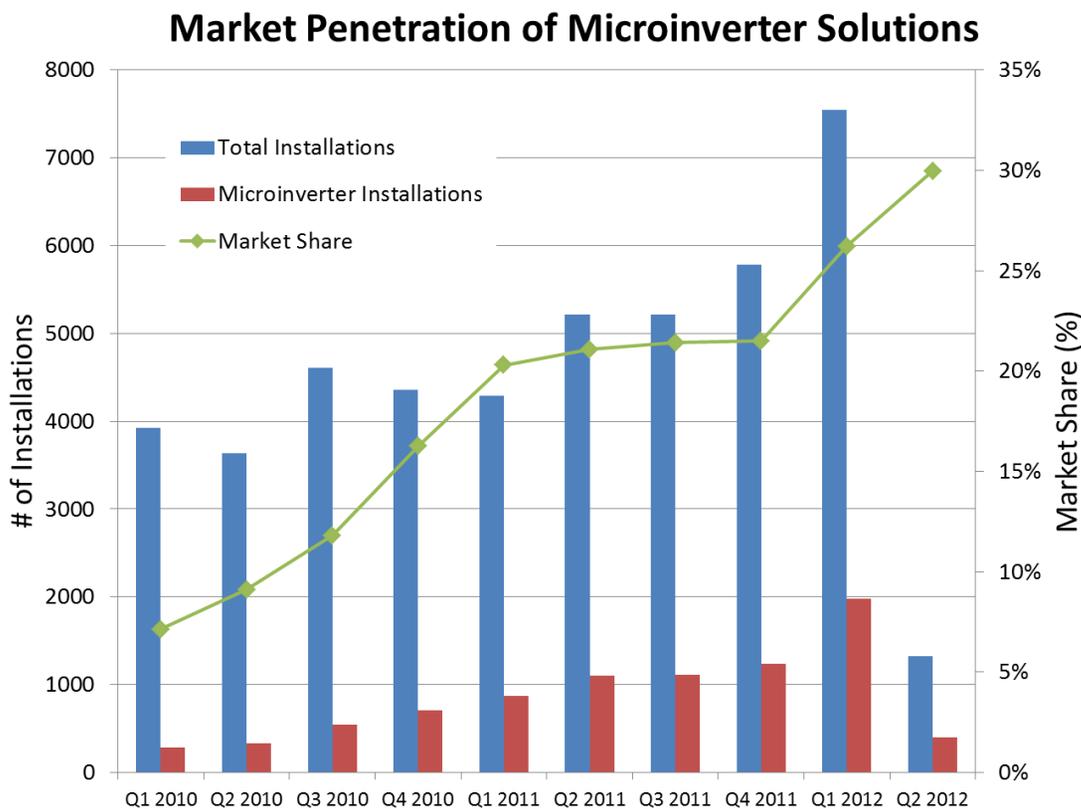


SUMMARY

- An analysis of data from the California Solar Initiative from 2010 to 2012 highlights several important trends for microinverters in residential systems.
 - Installers are increasingly deploying microinverters, with market penetration growing from 7% in 2010 to 31% in 2012.
 - Microinverter systems command a \$0.71/WDC premium to homeowners (11%) over string systems (adjusted for system size) in the CA market.
 - Installers are deploying microinverter systems on average 32 days (22%) faster than string inverter systems. On the roof, stand-alone microinverter solutions such as Enphase's M215 take as much as 75% longer to install than a SolarBridge ACPV solution.
- Module companies are losing leverage to microinverter companies, who are building strong brands, owning the end customer through monitoring platforms, and further commoditizing modules.
- SolarBridge offers a path for module companies to capture this additional value by offering a complete branded ACPV solution that is superior to the offering from stand-alone microinverter companies.

INCREASED MICROINVERTER PENETRATION

Since introduction in the US market 2008, microinverters have seen steadily increasing market share. In the most recent quarter (Q2 2012), microinverters have accounted for 31% of all installations in California.



Source: CSI Data, 4/18/2012

Criteria:

Completed Systems

Residential Host

All Installers

Microinverter Systems include Enecsys,

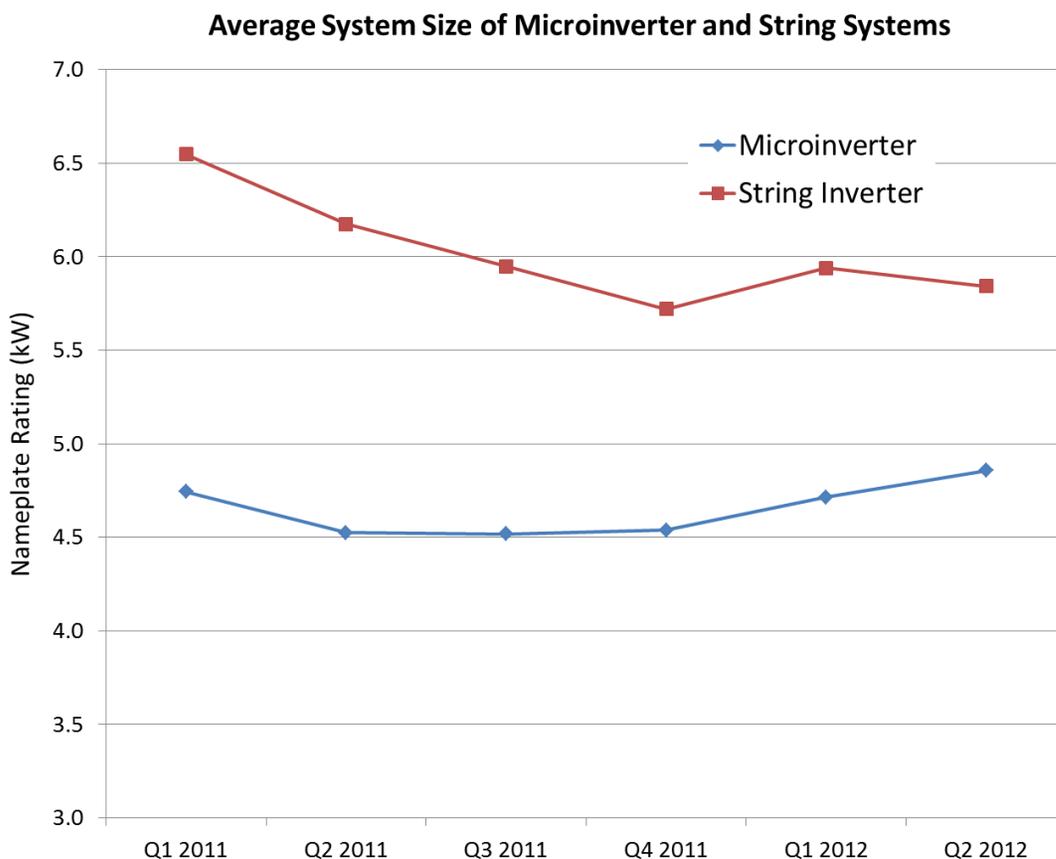
Direct Grid, Enphase, Exeltech,

Siemens, SolarBridge

Q2 is partial data (through 4/18/2012)

AVERAGE SYSTEM SIZE

Microinverter systems are typically smaller than string systems, but that trend is changing, as average string system sizes are coming down, while at the same time, microinverter systems are increasing in size.



Source: CSI Data, 4/25/2012

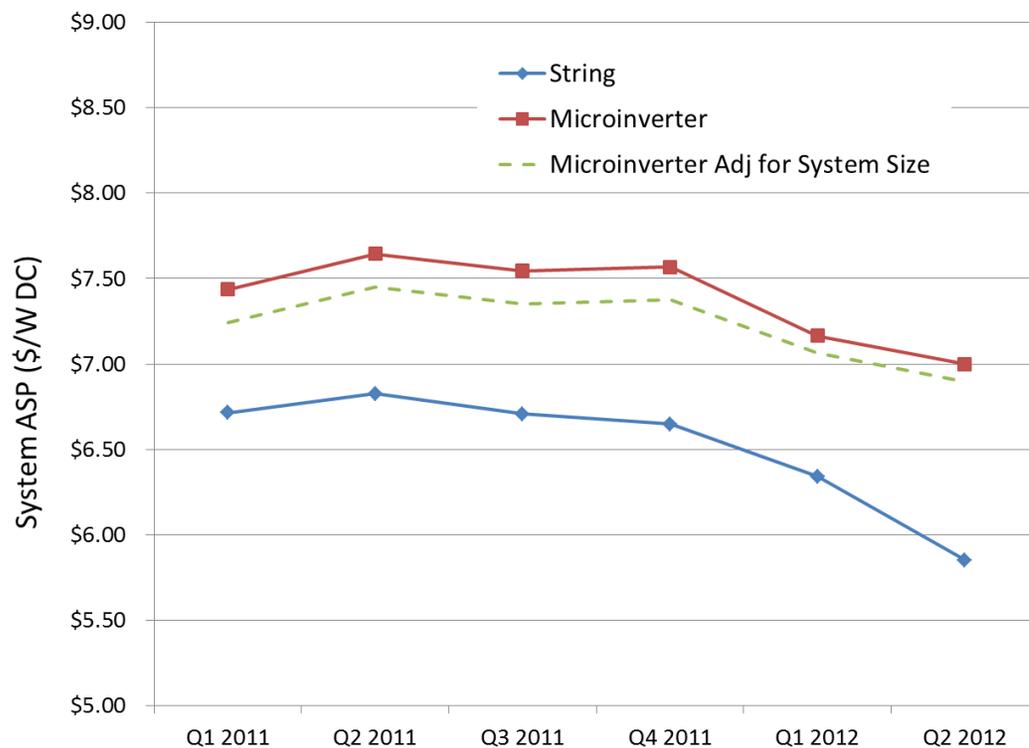
Criteria:

- Completed Systems
- Residential Host
- All Module Mfg's
- All Installers
- Microinverter systems include Enecsys, Direct Grid, Enphase, Exeltech, Siemens, SolarBridge
- Q2 is partial data (through 4/25/2012)

THE “AC PREMIUM”

Since Q1 2011, microinverter systems have commanded a significant premium over string inverters, which has sustained despite rapidly declining ASPs. When normalized for average system size, the average premium over that period is \$0.71/W (11%).

ASP of Microinverter Systems versus String Systems



Source: CSI Data, 4/25/2012

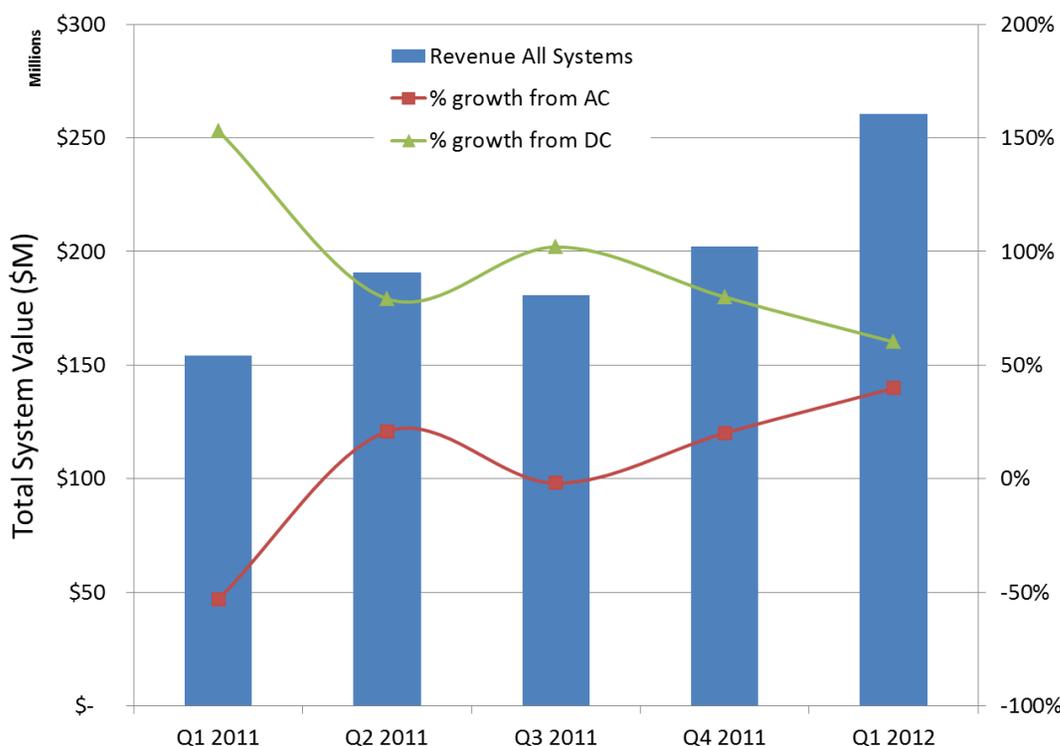
Criteria:

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MARKET GROWTH IS COMING FROM AC

Because of their higher ASPs, microinverters account for an increasing percentage of market growth in the residential sector – accounting for nearly 50% of the quarter-to-quarter growth from Q4 2011 to Q4 2012

% of Market Growth from Microinverter and String Systems



Source: CSI Data, 4/25/2012

Criteria:

- Completed Systems
- Residential Host
- All Module Mfg's
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- Microinverter systems include Enecsys, Direct Grid, Enphase, Exeltech, Siemens, SolarBridge

LABOR SAVINGS ON THE ROOF

ACPV offers significant and proven labor savings for installers over stand-alone microinverter systems.

In a refereed time trial on identical roofs, an Enphase M215 system required 75% more time to install than a SolarBridge ACPV system. This difference is attributed to the additional time required on an stand-alone microinverter system for:

- Installing and securing the trunk and drop cabling
- Installing and securing the individual M215 inverters
- Installing and securing the ground wire (GEC) to each microinverter
- Connecting and securing the DC cables from the M215 to the module



THE RESULTS

AC Modules (Solar Bridge)

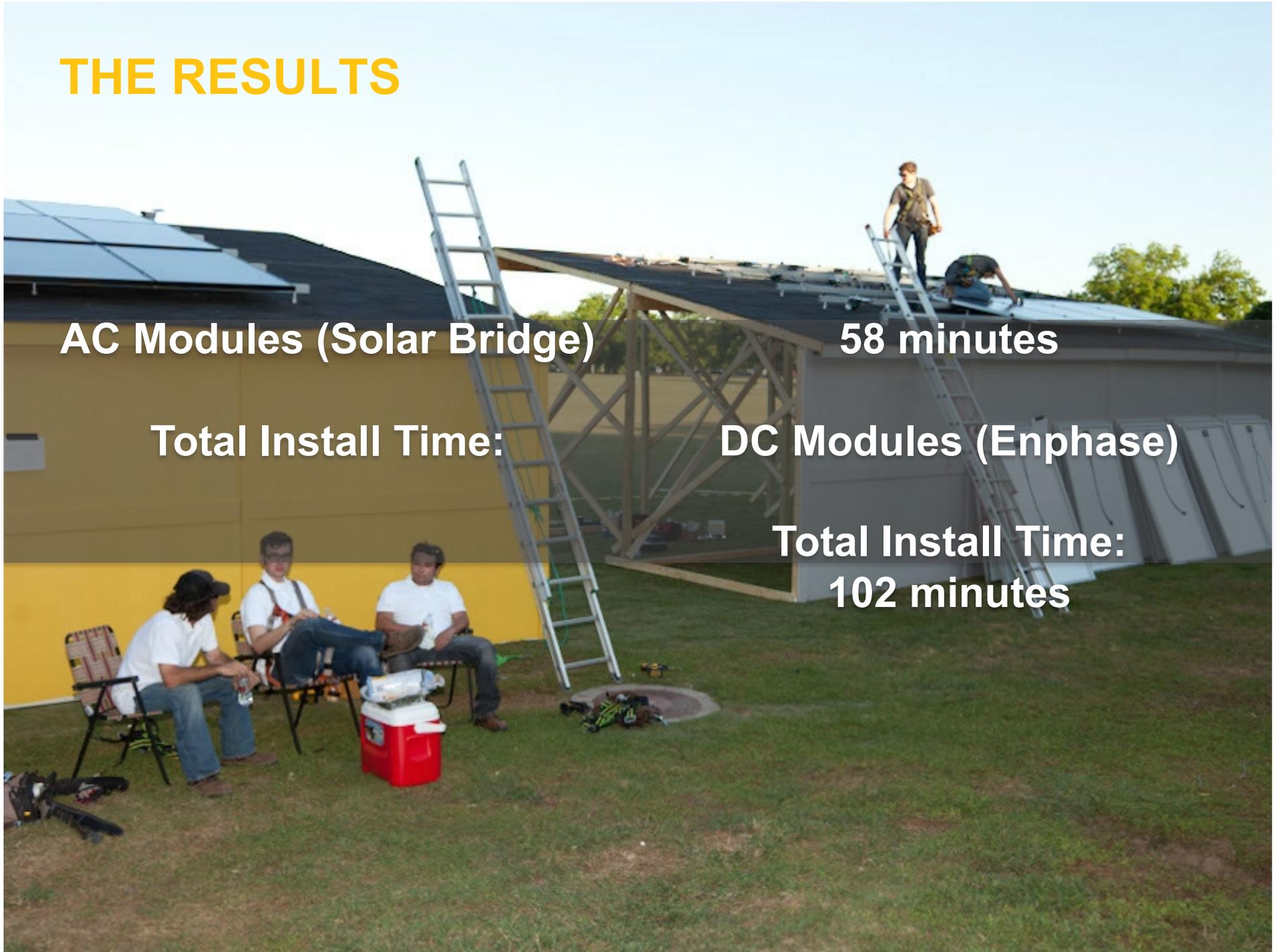
58 minutes

Total Install Time:

DC Modules (Enphase)

Total Install Time:

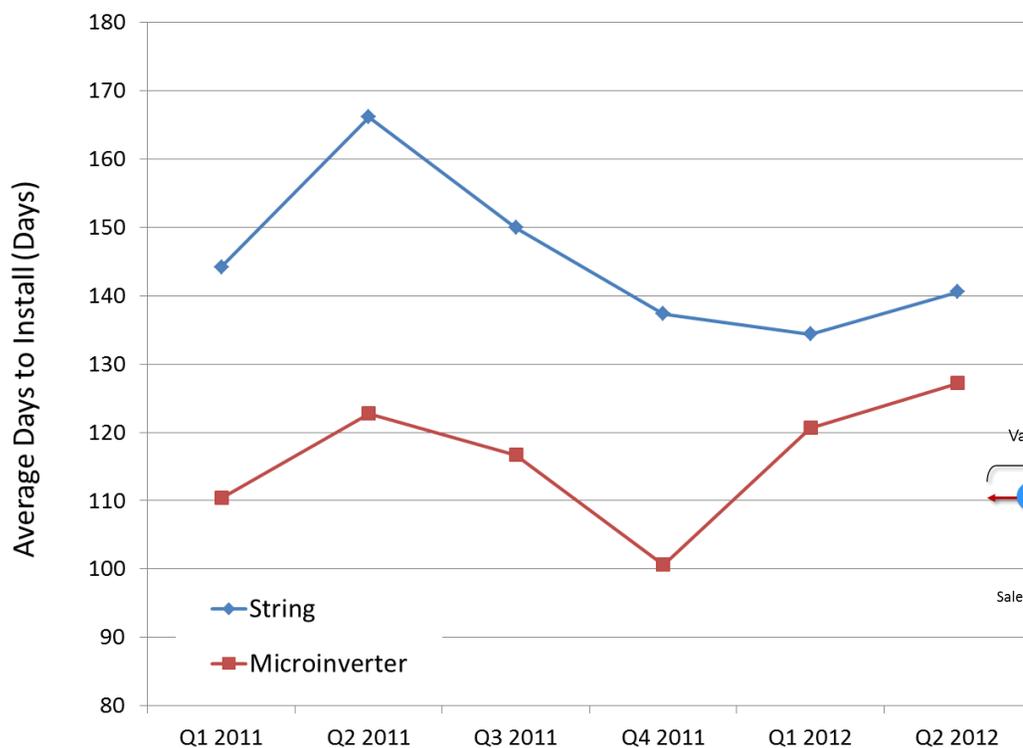
102 minutes



AC SYSTEMS DEPLOY FASTER

An analysis of “Days to Install” for microinverter systems shows significantly faster deployment than string inverters. We attribute this not only to reduced install time, but reduced sales/design/ECO/permit/interconnect time. Since 2011, microinverter systems were deployed on average 32 days (22% faster) than string systems.

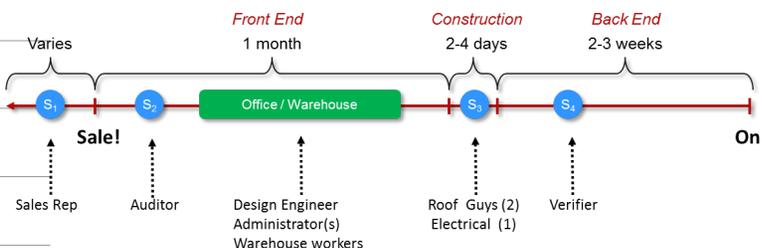
Average Days to Install for String and Microinverter Systems



Source: CSI Data, 4/25/2012

Criteria:

- Completed Systems
- Residential Host
- Microinverter Systems include Enecsys, Direct Grid, Enphase, Exeltech, Siemens, SolarBridge
- “Days to Install” defined from First Reservation Request Review Date to First Incentive Claim Request Review date.



CONCLUSION

- This data presents strong evidence that microinverter solutions are outpacing string solutions in terms of market penetration and ASP growth
- This data also presents a compelling case for module companies to provide an ACPV solution, as it allows the capture of significant additional revenue and margin dollars currently going to inverter companies and distributors
- Finally, this analysis presents significant benefits to installers to select ACPV over string or stand-alone microinverter options.
- There are many other benefits for installers and module companies, not included in the analysis, that will drive sales of ACPV, including
 - Simplification in procurement, inventory management, and service operations for installers, leading to further reduction in installer costs
 - Brand recognition with installers and consumers driven by an integrated solution with integrated warranty
 - A comprehensive branded HW and SW monitoring solution, enabling a long term relationship between module companies and their customers.