



## Choosing the right business software platform—based on company business model and strengths—could help smaller residential solar installers remain competitive

The US residential PV market of today is more competitive and cost sensitive than it was 10 years ago. National solar firms currently comprise 50% of the residential PV installer market share and have done so on the back of innovations in technology, business models, financing, marketing programs, software tools and operational effectiveness. Ideally, small and midsize PV installers can learn from the best practices that have helped the nation's largest solar installation companies establish and expand their market share.

The Solar Foundation's *National Solar Jobs Census 2013* (see Resources) indicates that of the estimated "10,392 [independent and regional business offices] deriving at least some of their revenue from [solar] installation services and related goods, the vast majority of these—approximately 8,000—are quite small, employing only one or two solar workers." The

revised 2014 data, released in January, indicate that the solar installation sector still primarily comprises small firms, more than half of which have 10 or fewer employees. These small companies make up the "long tail" of the solar industry and rely the most on manufacturing, distribution and finance partners—the solar services sector—for products and services to help them run their businesses successfully, win new customers and gain or maintain market share. As the long tail of the industry has grown, the solar services sector has become more robust.

In this article, I explore how an industry-wide focus on soft-cost reductions is changing residential solar business models. I look at how software tools have changed the industry landscape and how smaller solar companies can take advantage of opportunities to streamline and optimize their business practices—advantages that used to be available only

# Residential Business Software Platforms

By Pamela Cargill

to larger national firms. I conclude with an overview of several solar business software platforms that can help residential installation companies automate routine business processes and focus their resources on providing quality customer service and installing quality PV systems. For the purposes of this article, I define a *solar business platform* as a stand-alone or cloud-based software tool that not only automates core sales activities, such as proposal generation and system design, but also tracks and streamlines some combination of pre- and post-sales activities, such as lead generation and management, business administration and project management.

## Residential Solar Growth

Of all the solar market sectors, residential solar has experienced the steadiest growth since 2008. This rising tide may not float all boats equally. According to *US PV Leaderboard* data published by GTM Research in October 2014 (see Resources), SolarCity and Vivint Solar accounted for 51% of the residential market share in Q2 2014. From Q1 to Q2 2014, SolarCity increased its US residential market share from 28% to 36%, while Vivint Solar nearly doubled its market share to 15%. However, other data indicate that the overall residential market continues to grow, even as the largest installation companies post larger and larger numbers.

Nevertheless, the residential sector is clearly undergoing meaningful changes. According to the "US Solar Market Insight

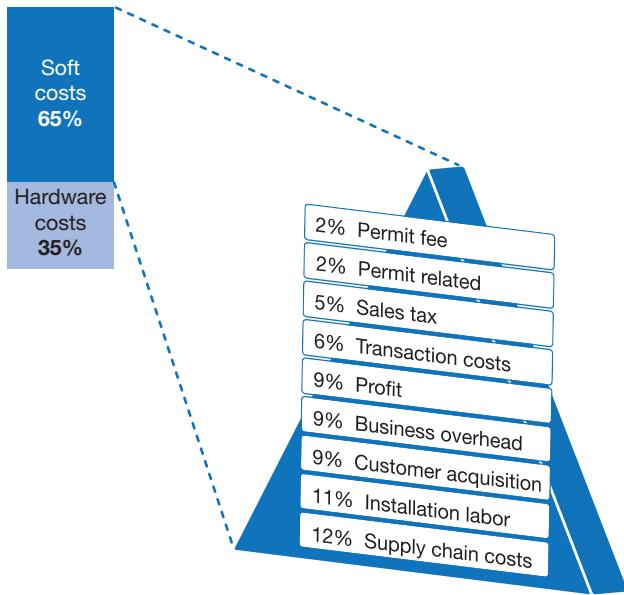
Report 2014 Q3" (see Resources), published by the Solar Energy Industries Association (SEIA) and GTM Research, "For the first time ever, more than 300 MWdc of residential PV came on line in a single quarter and *more than 50% [of] residential PV came on line without any state incentive*"(emphasis added). The report notes that while third-party ownership rates are still on the rise in markets such as New York and New Jersey, they are flattening out and even decreasing in other important markets, including Arizona and California.

According to the report, there are two main reasons for decreasing third-party ownership rates. First, more and more installers are able to offer loans to their customers. Second, customers are increasingly able to make cash purchases due to steadily declining PV system prices. This latter trend is particularly notable, as PV *module* prices were generally flat in 2014 and have actually increased since late 2013. Instead, nonhardware BOS cost reductions largely drove the recent PV system price declines, in part due to increases in operational efficiency.

## Soft-Cost Opportunity

Reducing business process or nonhardware BOS costs—often referred to as *soft costs*—creates a major opportunity for the solar industry to open new markets. To accelerate customer adoption in sectors with low electric rates or without

Data courtesy US Department of Energy



**Solar soft costs** The US Department of Energy's SunShot Initiative published this breakdown of residential solar soft costs in 2013. These data suggest that soft costs are now a bigger hurdle to solar adoption in the US than hardware costs are.

incentive programs, or to reach new demographics in established markets, installers must be able to reduce residential PV system costs enough to make the financial proposition attractive to potential customers. Recent studies indicate that after several years of extreme downward pressure on PV module prices, soft costs now represent the best opportunity for continued system cost declines, especially in the US market.

In June 2014, the Rocky Mountain Institute (RMI) published "Lessons from Australia: Reducing Solar PV Costs through Installation Labor Efficiency" (see Resources), which is part of a larger effort at RMI to identify solar BOS cost-reduction opportunities. The report's authors note: "Between 2008 and 2012, the price of sub-10-kilowatt rooftop systems in the US decreased 37%, but 80% of that cost decline was due to decreasing solar PV module costs. Total soft costs—including customer acquisition; installation labor; permitting, inspection and interconnection (PII); and margin and other associated costs—now make up approximately 70% of the total installed prices for a US residential PV system. Thus soft costs represent a land of opportunity for cost reductions."

### POSTCARD FROM DOWN UNDER

The Australian market is proof that strong market demand can drive down solar soft costs. It is also evidence that solar installers should not confuse efficiency with effectiveness.

**Efficiencies of scale.** Australia boasts the highest solar installation rate per capita in the world. Whereas less than

1% of US homeowners have PV systems, the residential solar adoption rate is 14% for Australians. Initially, generous incentives in the form of aggressive feed-in tariffs, as well as rising retail electric rates, stimulated residential market demand in Australia. While these feed-in tariff programs are now severely threatened—in part victims of their own success—by an effort to cut the country's Renewable Energy Target, the resulting market competition dramatically lowered both total installed and soft costs.

According to the RMI report, the installed cost for rooftop PV systems in Australia fell from \$12 per watt in late 2008 to \$2.56 per watt by Q2 2013. Over the same period, Australian soft costs—including margin, financing and other costs—fell from \$5 per watt in 2008 to \$1.20 per watt in 2013. High market demand, coupled with streamlined PII processes, clearly drove this success. However, streamlined business processes, such as labor specialization, with the backing of business software tools also supported the resulting economies of scale.

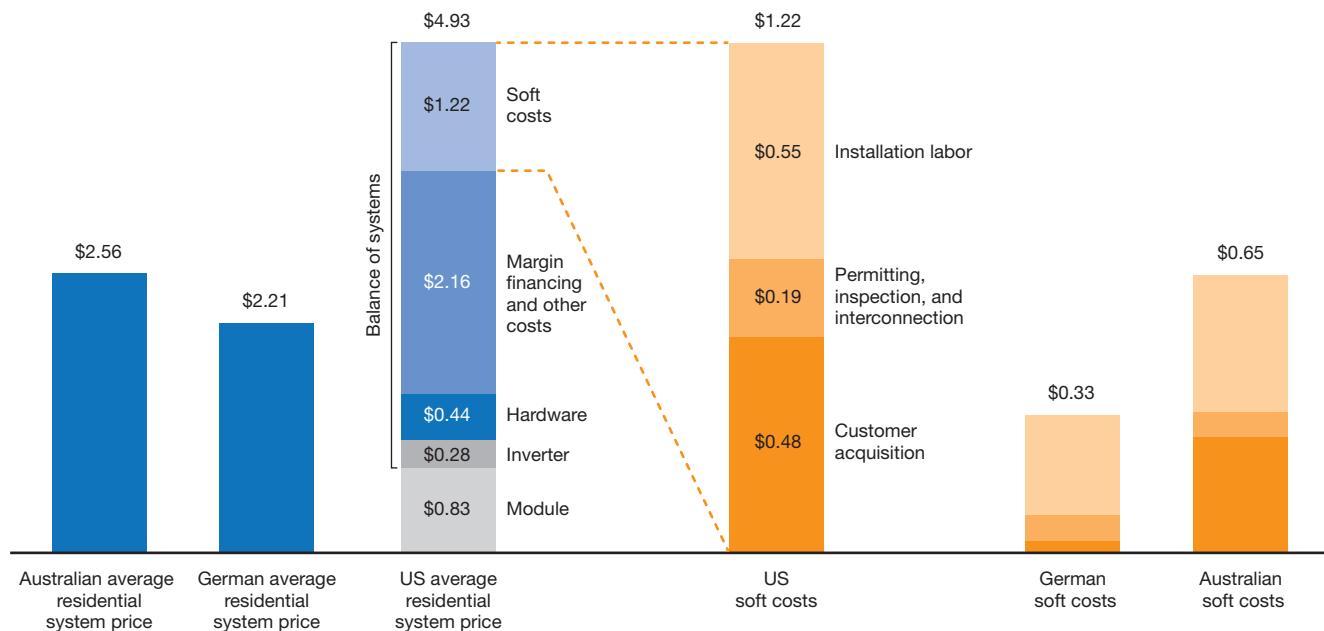
Jeremy Tranter is a professional engineer with Australian design-build firm Solari Energy. He explains, "Margins here are so low that driving volume is the only way to make any money." However, companies cannot simply work faster; they must also work smarter. Tranter continues: "Administrative and logistic burdens are so huge in a high-volume solar business that software tools are critical to streamlining business operations. The logistics have to be correct. Processes have to be in place. For example, we prefabricate racking systems as much as possible. Everyone needs to know what he or she is doing. Success is very much about driving efficiencies."

Nigel Morris, the director of SolarBusinessServices (a consultancy that provides business development support for companies in the Australian solar market), echoes these sentiments in a December 2014 year-in-review blog post: "Operational efficiency was my number one theme in my business coaching work this year. With falling prices and tight margins, refined business processes and efficient operations are the only way to survive."

**Efficiency vs. effectiveness.** While lowering soft costs is crucial, it cannot come at any cost. Companies must still ensure that field labor has a safe working environment; designers still need to create *Code-compliant* systems; and friendly and knowledgeable staff should still provide customer support. If a company or an industry cuts corners in the name of efficiency, this can have a negative impact on the organization's effectiveness.

There are many examples of false efficiencies that are not effective in the long term. It may be tempting for companies to cut costs by reducing wages; however, the poor customer service or installation quality that may follow can lead to fewer referrals. A myopic focus on cutting design costs is ineffective if it inadvertently increases installation costs due to a need for field engineering. If companies

CONTINUED ON PAGE 54



**Land of opportunity** These bar graphs are based on Q2 2013 data and compare the average residential PV system price and associated soft costs in dollars per watt in Australia, Germany and the US. While the US average residential system price fell to \$3.60 per watt by Q3 2014—according to data gathered by SEIA and GTM Research using a bottom-up cost methodology—this is still \$1.39 per watt above the price index for Germany.

or sales representatives make false or misleading claims—about system performance, future electric rates or product country of origin—the resulting consumer protection complaints can erode customer confidence in the industry as a whole.

Rather than engage in a race to the bottom, installation companies need to focus on streamlining service and delivery to provide an excellent customer experience. This requires that installers look at their business holistically as they plan improvements. Will this new innovation result in an improved product that a prospective customer would value? Will it reduce internal project delivery friction, thus freeing up more resources for what the customer will perceive as value-added activity? Companies should always frame any decisions about software tools, process changes, new equipment or other potential soft cost reductions within the scope of customer value.

### EVOLVING BUSINESS MODELS

In the US, the national solar brands have been facing the problem of scalable growth head-on for several years. The top residential solar companies, as measured by market share, have all invested significant resources in streamlining and standardizing customer acquisition, customer experience and project deployment. The goal of these ongoing investments is to deliver solar at scale and with lower cost structures. According to a November 2014 shareholder report, SolarCity's goal is to deliver solar residential projects at \$2.50 per watt by 2017—down from \$2.90 per watt in Q3 2014.

Sungevity came to market in 2008 with a remote solar design tool that fundamentally changed the process used to sell solar in many major markets. According to the new process, system design and sales precede the site evaluation, hence reducing costs associated with presale truck rolls and related staffing costs. Since 2008, national solar companies have engaged in a virtual arms race to acquire customers at a lower cost, deliver projects at a lower cost and engage customers post-interconnection to drive referrals.

Many market leaders—including SolarCity, Sunrun and Vivint Solar—have recruited software development teams and invested millions of dollars over the last 5 years to build proprietary customer relationship management (CRM) tools or to highly customize off-the-shelf platforms such as Salesforce. These companies also have invested significantly in other custom sales, design and enterprise resource planning and project management software in an effort to bring project delivery to scale without linearly scaling human resources. Many of these efforts aim to reduce the number of non-value-added activities that employees perform manually or supervise, freeing them to focus on higher volumes of value-added activities.

**Value-added vs. non-value-added activities.** Value-added activities are those that a customer is willing to pay for because they contribute to or conform to the expected end product. For example, having a designer put together a permit package for an AHJ is a value-added activity. It transforms

## Solar Business Platform Features

Representative Platform Features	Solar Business Platforms					
	Aurora	CPF Tools	enACT	ModSolar	Solar eCRM	SolarNexus
<b>LEADS AND SALES</b>						
Lead marketplace	no	yes	no	yes	yes	no
Website intake form or widget	no	yes	no	yes	yes	yes
CRM (managing leads, follow-ups, notes, appointment settings)	no	limited	yes	yes	yes	yes
Incentive database	limited	yes	limited	yes	no	yes
Integrated project financing options	no	yes	yes	limited	no	no
Ability to add custom financing information	yes	no	yes	yes	yes	yes
Proposal document generation	yes	yes	yes	yes	yes	yes
Financial analysis	yes	yes	yes	yes	yes	yes
Sales pipeline reporting and analysis	no	limited	limited	limited	yes	limited
<b>SYSTEM DESIGN AND PRODUCTION</b>						
PV system design functionality	yes	yes	limited	yes	limited	yes
Energy production modeling	yes	yes	yes	yes	no	yes
Shade estimation support	yes	limited	limited	limited	no	limited
Utility tariff support	yes	yes	yes	yes	no	yes
Pricing engine	yes	yes	yes	limited	limited	yes
<b>COMPANY AND PLATFORM ADMINISTRATION</b>						
Intuitive user experience and user interface	yes	yes	yes	yes	yes	limited
Customization of fields	no	no	no	limited	yes	yes
Waterfall permissions (channel, franchise, multi-office capabilities)	limited	limited	yes	yes	yes	yes
Templates and best practices	limited	limited	limited	limited	yes	limited
<b>PROJECT MANAGEMENT</b>						
Lead to project conversion	yes	limited	limited	N/A	yes	limited
Milestone template	limited	limited	limited	N/A	yes	yes
Customization of tasks	no	N/A	no	N/A	yes	yes
Reporting and analytics	no	N/A	limited	N/A	yes	limited
Document management (interconnection forms, permit applications)	limited	N/A	yes	N/A	limited	limited
Linked storage of document templates	no	N/A	yes	N/A	yes	limited
Notifications and alerts	limited	N/A	limited	N/A	yes	limited

**Table 1** This table provides a general comparison of representative solar business platform features as of January 2015. Note that some vendors offer multiple plans, and not all features are available at all plan levels. Also, every platform includes features not detailed in this table. Features not on the vendor's platform road map are identified as not applicable (N/A).

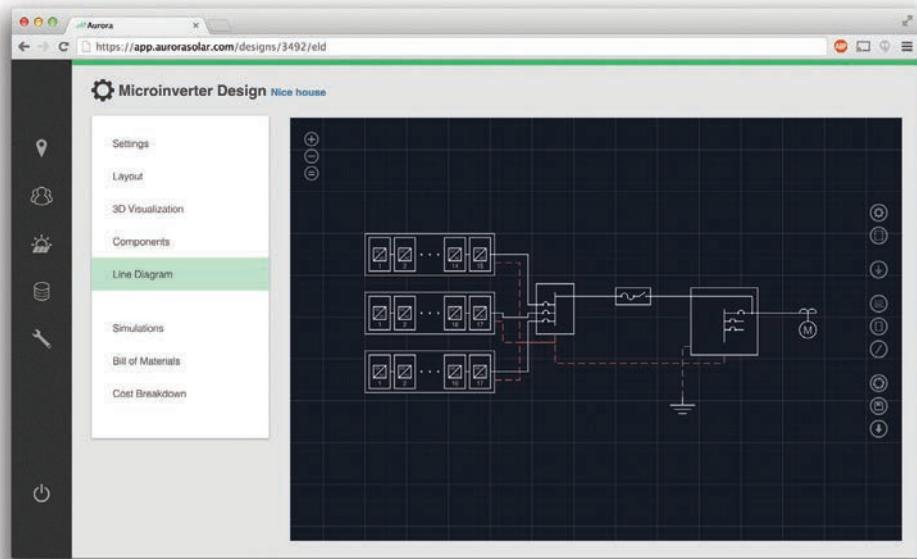
the order, which represents the customer's wish or desire, into something that tangibly moves the project closer to execution. Of course, the ultimate value-added activity is the installation itself. Installation companies should seek to optimize the performance of value-added activities.

Non-value-added activities fall into two categories: business requirements and pure waste. The former are generally associated with company overhead. Human

resources efforts (fees on payroll and benefits systems, recruiting fees or administration of employment paperwork), fleet management and compliance activities related to project finance are all examples of non-value-added business requirements. While these business activities do not add value for the customer, they are essential in the sense that you cannot run a business without performing them. Nonetheless, installation companies should seek to

## Solar Business Software

Courtesy Aurora Solar



**Process optimization** Installation companies can use business software platforms to optimize the execution of a variety of value-added activities. For example, Aurora Solar's cloud-based platform can automatically generate single-line drawings for permit packages.

minimize or automate these non-value-added business activities as much as possible.

Other activities not only provide no value to the customer, but also offer no value to the business. Holding excessive coordination meetings, generating reports that go unread, creating policies that go unenforced, having multiple internal layers of approval and doing any kind of rework are all examples of pure waste. Installation companies should always seek to eliminate activities in this category.

## Solar Business Platforms

Today's solar installation companies have many more choices in how to set up and run their business than the pioneering firms had 10 or more years ago. Early solar contractors had to master system design and installation for multiple technologies—on- and off-grid PV systems, solar thermal or pool heating systems, small wind or microhydro turbines, green building and home efficiency solutions. They also had to possess some sales and marketing savvy, and understand the business of construction. As a result, the market presented a high barrier of entry.

Now, solar installation companies can segment and specialize their businesses—not just by technology or application, but also by selectively outsourcing activities that do not suit their core strengths. In the past, a small installation

company generally had to scale every aspect of its business linearly to grow. This is no longer the case. Companies can outsource lead generation, marketing programs, back-office paperwork preparation and design services, as well as traditional construction-related subcontracting activities. In fact, labor constraints related to specialized content areas—such as PV system design expertise—have spurred growth opportunities for outsourced solar business services. In highly competitive solar markets, such as the San Francisco Bay Area, knowledgeable designers are hard to find and can fetch a salary premium.

Until relatively recently, solar installation companies that were unable to build their own custom software tools were primarily limited to platforms focused on pre-sales activities such as proposal

generation and financial benefit analysis. For example, OnGrid Solar launched its spreadsheet-based software tool in 2005, which allowed for more sophisticated and nuanced solar sales proposals. OnGrid's software not only allows users to generate proposals at a prospective customer's kitchen table, but also combines powerful financial analysis capabilities with an extensive rate structure database. This means users can quickly model the impact of varying PV system capacities versus the utility rate structure and hone in on the system design and utility tariff that provide the most value to the customer. Since then, several vendors have brought web-based solar business platforms to market that expand on these proposal and financial analysis capabilities. Installation companies can now automate or streamline most aspects of the sales cycle, design process, project financing and delivery.

### PRODUCT OVERVIEW

In this section, I review six of the available solar business platforms and describe how installation companies can best leverage each of these platforms to compliment their unique business model and market dynamics. In each of the overviews, I provide a brief company background, detail defining software features, describe the user interface, summarize unique product strengths and suggest a profile of the type of solar installation company most likely to benefit from using the tool.

Each of these solar business platforms has different sets of features, as illustrated in Table 1 (p. 55). Sales features include

## Solar Business Platform Pricing

### Footnote Key

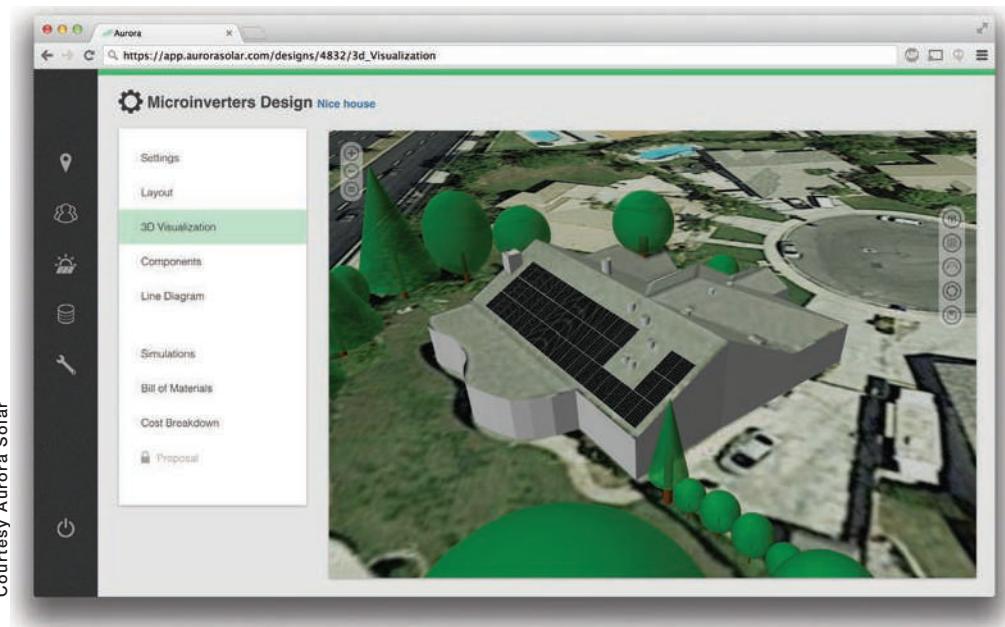
- <sup>1</sup> Customized white-label platform
- <sup>2</sup> Limited number of proposals allowed
- <sup>3</sup> Includes multi-office or franchise support
- <sup>4</sup> Eighth user free

Solar Business Platforms	Representative Pricing Tiers or Plan Levels (per user, per month, unless otherwise noted)			
	First tier	Second tier	Third tier	Fourth tier
Aurora	\$159 (Sales only)	\$259 (Sales & engineering)	—	—
CPF Tools	\$139	—	—	—
enACT	\$50 (min. 10 users) <sup>1</sup>	\$50 (min. 10 users) <sup>1</sup>	Custom enterprise pricing for 50+ users	—
ModSolar	\$100 (Basic 10 plan: 1 user only) <sup>2</sup>	\$295 (Professional plan: 3-user min., \$70 for additional users)	\$995 (Enterprise 1 plan: up to 20 users) <sup>3</sup>	\$1,995 (Enterprise 2 plan: up to 40 users) <sup>3</sup>
OnGrid	\$100 (1 or 2 users)	\$50 (3+ users) <sup>4</sup>	—	—
Solar eCRM	\$89	\$69 (2–5 users)	\$59 (6–10 users)	\$49 (11–100 users)
SolarNexus	\$139 (AllPro plan)	\$99 (2 users, AllPro plan)	\$69 (3–5 users, AllPro plan)	\$59 (6–10 users, AllPro plan)

but are not limited to lead management, CRM functionality, process optimization, proposal generation and customization, and financial analysis or financing. Design features might include basic module layout, source-circuit sizing, bill-of-materials generation, pricing engine and system production analysis. Administrative features could include platform-specific features such as customizable user interfaces, fields, preferences or permissions, and may also encompass general company management features such as multi-office support or capabilities for sharing templates, best practices and so forth. Project management features could include milestone templates, project reporting and analytics, document management, and the ability to assign and track specific tasks.

Table 2 details representative pricing plans for each of these solar business platforms. The majority of these vendors offer a free trial period, typically lasting 30 days. Some vendors provide full access to software features during this trial period; others limit the features available. Product support options also vary—ranging from email or phone support to online help centers—not only by vendor but also in some cases by the plan selected. Note that unlike hardware products—such as PV modules, inverters and racking—software products can change and iterate quickly. The reviews that follow are based on platform features available as of January 2015. Many of these companies have road maps for introducing additional features and services in the near future.

**Table 2** This table provides pricing data for representative solar business platform plans as of January 2015. Note that some vendors offer multiple plan levels at different price points with different feature sets. Except where otherwise noted, the prices are provided on a per user, per month basis.



Courtesy Aurora Solar

**Aurora** Aurora Solar's cloud-based platform can generate a three-dimensional model based on two-dimensional aerial images. Users can then modify elements within this 3-D model—such as the height of trees—and evaluate the shading and performance impacts.

**Aurora.** A new entrant to the solar software market, Aurora Solar unveiled its cloud-based solar installation design software tool, Aurora, as part of the Start-up Alley program at Solar Power International (SPI) 2014. The Aurora Solar team consists of recent Stanford University graduates with degrees in computational mathematical engineering, electrical engineering, business administration and computer science. Stanford University's TomKat Center for Sustainable Energy awarded Aurora Solar an innovation grant in 2013. The start-up has also received a Department of Energy (DOE) SunShot Incubator award.

While Aurora Solar offers two software packages—sales only, or sales and engineering—the defining features of its software are generally engineering related. For example, the company has filed a provisional patent for its image recognition algorithm, which converts two-dimensional images into three-dimensional models. The software can then generate a detailed solar access heat map for a roof, which allows users to identify the most promising array locations. Since the software identifies roof edges and features such as hips and valleys, users can define rooftop fire code setbacks, and then populate available roof surfaces with realistic PV modules. A proprietary simulation engine performs module-level performance analyses that account for specific components. A load profile portal allows users to compare modeled PV system production against different load profiles. Users with access to the engineering package can also generate single-line diagrams exportable to AutoCAD, ArcGIS, SketchUp or Visio. The sales and engineering version of the software also verifies *NEC* compliance and autogenerates a bill of materials and a detailed breakdown of system costs.

The Aurora Solar software user interface is visually oriented and provides rich functionality. For example, the color-coded dots used to detail rooftop solar access provide visual cues to guide array placement, and hovering over individual points reveals the actual irradiance values and annual solar access percentage. While the Aurora Solar software platform does not include CRM or project management capabilities, the product design team created integration points that allow customers to use its design automation software in conjunction with common CRM and project management software. As such, the software is ideal for installation companies that already have solid sales and marketing programs in place and that want to improve integration and information flow between sales and operations by letting the sold

The screenshot shows the Aurora Solar software interface. At the top, there is a navigation bar with tabs for 'Customer Info' and 'Proposal Info'. Below the navigation bar, there is a breadcrumb trail: Energy > System > Pricing > Payment > Review. A button labeled 'MANAGE RATES' is visible. The main content area displays a list of utility rates under the heading 'Select the Post-Solar Utility Rate'. There are several entries, each with a green checkmark icon and a delete icon. The entries are: E1 - Residential Service, Tiered - Cost Type: B - Territory: X; E1 - Residential Service, Tiered - Cost Type: B - Territory: Y; E1 - Residential Service, Tiered - Cost Type: H - Territory: P; E1 - Residential Service, Tiered - Cost Type: H - Territory: Q; E1 - Residential Service, Tiered - Cost Type: H - Territory: R; and E1 - Residential Service, Tiered - Cost Type: H - Territory: S. Below this list, there are input fields for 'Utility Inflation Rate' (5.5%) and 'Utility User's Tax' (0.000%). A blue button labeled 'Planned Changes in Energy Usage (Post-Solar)' is present. At the bottom of the screen, there is a summary dashboard titled '100% Cash' with various financial metrics: Size: 7,040 kW, Production: 11,305 kWh, System Price: \$2,575/kW DC, Offset: Cost: 18%, Usage: 73%, Current Cost: \$327.92, Post-Solar Monthly Cost: \$59.48 (Fit: \$0.00 Util: \$59.48), and Monthly Savings: \$268.43. A 'SAVE & RECALCULATE' button is located at the bottom right.

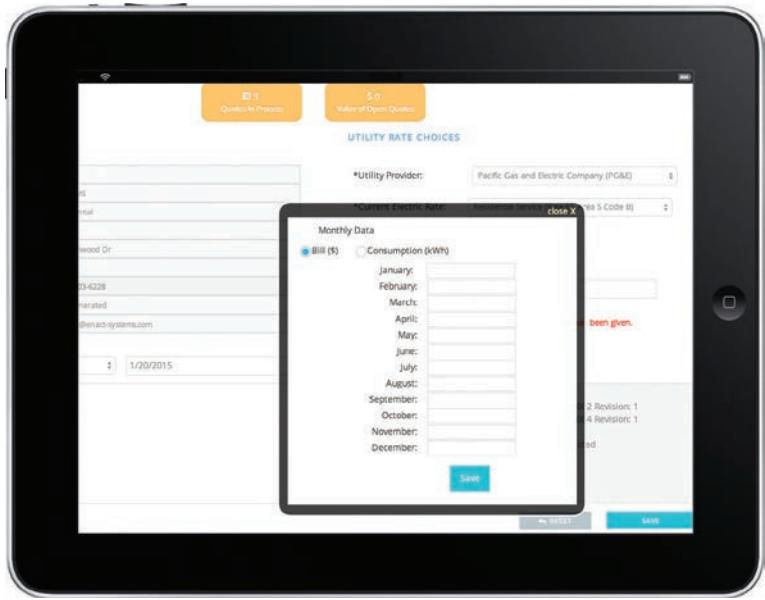
**CPF Tools** Clean Power Finance maintains an extensive centralized database of utility rate structures that autopopulate within CPF Tools based on the customer's zip code. A tool located at the bottom of the dashboard displays a high-level overview of the key project metrics.

design drive the delivery process. The Aurora Solar platform is also good for companies that want to reduce design-related costs via automation.

**CPF Tools.** Founded in 2007 by Silicon Valley software entrepreneur Gary Kremen, who also founded Match.com, Clean Power Finance (CPF) is a veteran solar business platform provider. The company originally released its software-as-a-service (SaaS) platform, CPF Tools, in 2008, making it one of the longest-running SaaS platforms available to the solar industry. In 2011, the company launched a redesigned version, updated based on customer feedback and including new features. In recent years, the company has won several DOE SunShot Initiative grants aimed at reducing solar soft costs. The results of these projects include the National Solar Permitting Database ([solarpermit.org](http://solarpermit.org)) and SolarPro Connect ([solarproconnect.com](http://solarproconnect.com)), as well as an O&M marketplace designed to pair fleet managers with solar O&M providers.

Perhaps the most defining CPF Tools feature is its ability to match preapproved residential solar installers—at least those operating in Arizona, California, Colorado, Connecticut, Massachusetts, Maryland, New Jersey or New York—with access to white-label financial tools. Another strength of the CPF Tools platform is its ability to streamline the process of generating PV system sales proposals that detail the financial benefits for the homeowner. For example, the software can guide sales personnel through a step-by-step process that culminates in a design-specific sales proposal. Once complete, the user can save this proposal as a template or copy and modify it, either of which can reduce rework later on.

The software also eliminates the need to maintain multiple databases. For example, CPF maintains and offers access to



**enACT** Sales personnel can use enACT System's platform on mobile devices to produce solar quotes on the go. Where Green Button data is available, users can automatically access metered energy consumption data for prospective customers.

centralized databases including utility rate structures, solar incentive program data, rebate-eligible equipment lists and performance data, and so forth. These data can be time-consuming for a small business to track and difficult to update across multiple prospects, so access to these databases saves solar companies time and effort.

The CPF Tools user interface is functional rather than flashy. However, sales staff can remotely perform aerial site surveys and take roof measurements to generate system capacity estimates. The CPF Tools platform includes the ability to upload Solmetric SunEye data or enter an estimated shading percentage. It also makes extensive use of Solmetric's PV Designer performance-modeling tools so sales personnel can generate rough system production estimates from their desks. Financial analyses automatically incorporate these results, which sales proposals can include as charts and graphs. The multipage proposal tool also includes a helpful dashboard feature called "The Bottom Line" that tracks changes and automatically updates top-level quote details while sales personnel work the proposal in real time. The interface's generally utilitarian structure is well suited to data entry and administrative functions. Finance-enabled partners can take advantage of task and performance tracking, status updates and document management related to finance deals.

CPF Tools is ideal for residential solar installation companies that have steady leads and established post-sales

engineering and project management processes. The platform expedites the delivery of professional-looking sales proposals with sophisticated financial statements of benefits. The platform may also allow small solar companies to offer new finance products to their residential customer base.

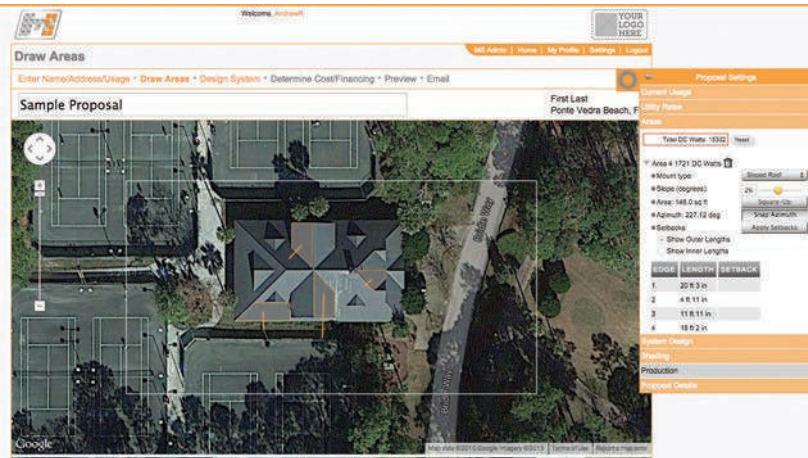
**enACT.** A new market entrant, enACT Systems officially launched its SaaS platform in June 2014. Deep Chakraborty, the company's cofounder and CEO, brings to the start-up his expertise in automotive industry automation and international business consulting, as well as experience founding Centrosolar's North American business division.

One of the defining features of the enACT platform is its ability to streamline the process of getting 12 months of actual energy consumption data for prospective customers. The software includes rate structure data for all US utilities, and it can also import metered energy consumption data for certain customers (with their express permission) via the company's participation in the Green Button initiative. Developed in response to a White House call to action, Green Button is a voluntary effort on the part of utilities to standardize electronic energy usage information so that various stakeholder groups, including residential and commercial customers, public institutions, energy service providers, software providers and energy efficiency organizations, can share and use these data. Access to Green Button data in enACT is currently limited to California customers of participating utilities but will expand over time.

enACT designed its user interface with simplicity and ease of use in mind. The current platform focuses on streamlining the sales process via disciplined and repeatable business processes built atop a simple CRM. (The company plans to add a complementary platform for boutique solar financiers in the near future.) It includes remote site assessment and array layout tools, straightforward performance-modeling capabilities, and document generation, management and approval features. On a desktop or mobile device, users can prepare a sales proposal that includes different project finance options such as loans, cash or PACE financing. Premium users can automate branded marketing outreach efforts via online platforms designed to increase engagement with homeowners interested in solar or energy efficiency upgrades.

Because of enACT's willingness to customize its platform for enterprise users, it is well suited for midsized (20–50 employees) or regional companies looking to automate and optimize business processes and streamline financing transactions. The company can design custom application program interfaces to CRM or enterprise platforms, third-party

Courtesy ModSolar



**ModSolar** When sales personnel enter a prospect's address, the ModSolar platform pulls up an aerial Google Earth view of the property. Once users outline promising roof areas for solar, they can use the tool to superimpose automatically generated modules on those surfaces.

monitoring platforms, fund engines and so on. Though not as fully featured as a customized premium platform, the company's stripped-down Tier 1 platform is relatively affordable on a per-seat basis for fewer than 10 users, which may make it attractive to budget-minded solar companies.

**ModSolar.** The inspiration for a simple yet powerful SaaS platform came to Mike Dershowitz, the company's cofounder and president, when he was investigating options to install solar on his home in Pennsylvania. The idea behind the business, which started up in 2011, was to leverage mobile and online sales technology to replace the antiquated appraisal methods he saw used in the home improvement industry. As a design manager at JPMorgan Chase, Dershowitz led teams developing industry-changing mobile applications, such as the photo-based check-deposit apps used for online banking.

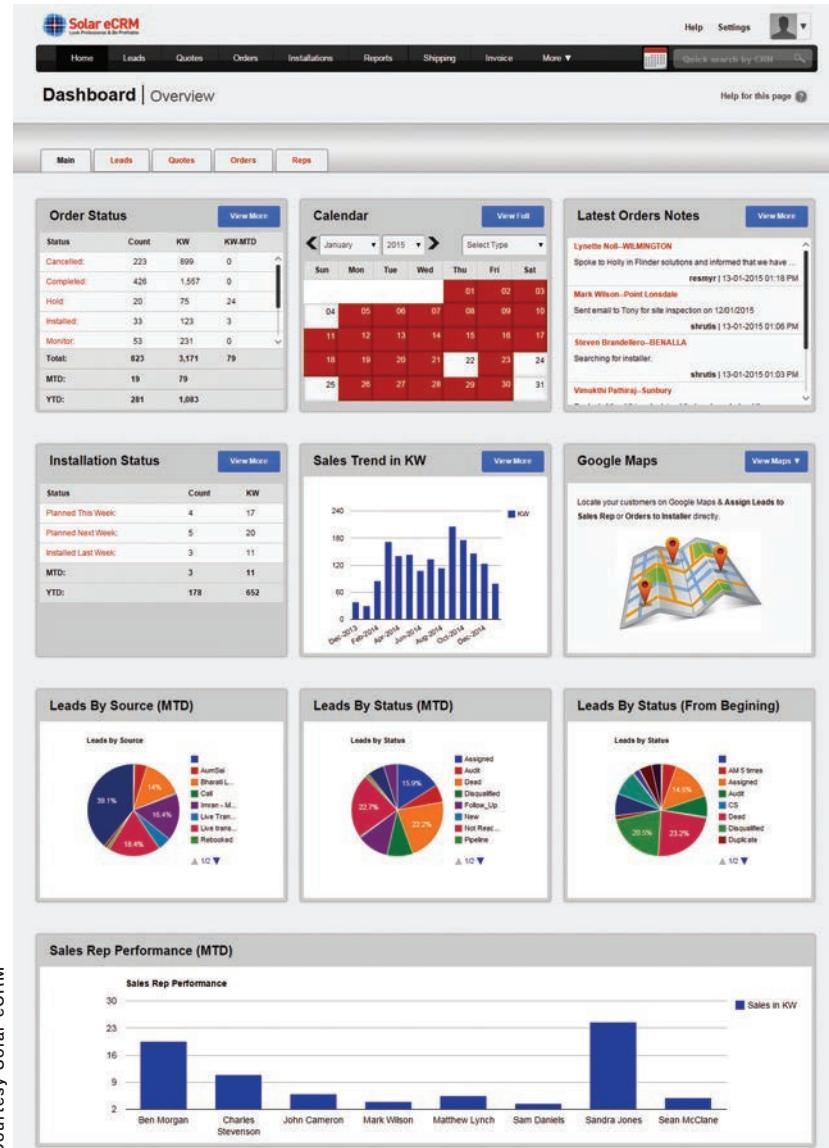
One of the ModSolar platform's defining features is the ModSolar Acquisition Pipeline System (MAPS). Unveiled in October at SPI 2014, MAPS is a lead acquisition system that allows solar installation contractors to identify and contact households prequalified for a solar retrofit. Through the MAPS service, these prequalified prospects receive a postcard in the mail that shows an aerial image of their home with a rooftop PV system superimposed on it, generated by the ModSolar design software, as well as an estimate of the economic benefits of going solar. The mailer also includes contact information for the participating solar installation company. For online lead generation, ModSolar offers a website widget that allows homeowners to pull up an aerial image of their own roof and helps them complete their own array layout. To see the financial benefits, the prospect must provide contact information, which the widget pushes to the solar contractor's account as a new lead.

The ModSolar blog chronicles regular updates and revisions to its user interface and software features that are clearly driven by user feedback and designed to improve ease of use. For example, the platform uses the latest version of PVWatts to estimate system production. Entering a prospect's contact information automatically pulls up a Google Earth view of the address. An automated layout tool allows users to quickly identify and populate promising array areas. Users can then remove individual modules or groups of modules as needed to avoid obstructions. The platform also allows users to specify the roof pitch and amount of monthly shading on individual roof faces. The proposal generation is automated and customizable. Since the platform uses a simple dollars-per-watt pricing engine, users do not need to configure a database of products or labor line items. Though financing is not an integral part of the platform, customers can load financing terms from other sources.

The ModSolar platform is well suited for new market entrants looking for a straightforward design and proposal tool to help them get up and running quickly. Established installation companies that lack strong sales and marketing capabilities could also benefit greatly from the platform, especially from MAPS. The company offers many pricing tiers for its design and proposal software, including five enterprise pricing options for large companies. ModSolar also offers a software version, sold separately, that manages or automates preclosing activities such as executing contracts with DocuSign, checking customer credit and streamlining workflow.

**Solar eCRM.** Mounesh Badiger established Solar eCRM, a new entrant to the US market, in 2012 to fully manage solar businesses in the low-margin, high-volume Australian residential market. Badiger, who is also the company's managing director, has extensive international business management and information technology experience. He has been offering services and solutions to the solar industry since 2008.

One of the defining features of the Solar eCRM platform is that its developers specifically structured it as an end-to-end business solution—an enterprise-wide CRM tool. As such, the platform is a viable alternative to CRM platforms such as Salesforce, yet it also automates PV system design and proposal activities. Compared to most of the business platforms developed by or for the US market, Solar eCRM is less focused on creating customized system designs and communicating complex financial propositions. Instead, it focuses on streamlining business processes and creating continuity in the customer experience. In this sense, Solar eCRM has a lot in common with the proprietary business



Courtesy Solar eCRM

**Solar eCRM** The Solar eCRM interface utilizes a graphical dashboard that allows users to track the sales pipeline at a glance. The platform also allows them to manage all aspects of the customer experience, from lead generation to sending invoices.

management platforms that the top US residential solar providers use. Because it is a full-featured CRM tool, it allows users to interact with prospects or customers. For example, users can conduct email marketing campaigns and track results from within the platform. The company even offers outsourced inside sales lead generation and appointment-setting call centers as separate services to subscribers.

The Solar eCRM user interface features a dashboard with customizable graphs that allow users to track the sales pipeline at a glance. The platform is very scalable and

adaptable, supporting inside sales, channel sales, franchises, dealers and other enterprise models. Solar eCRM includes extensive post-sale project management capabilities. It uses a customizable task notification system to keep projects on track, sending out email alerts to sales personnel or managers during the customer acquisition process, for example, or to crew leads, project managers and business administrators to identify milestones during project delivery. The platform also manages documents during project fulfillment and can generate sales and profitability reports.

Solar eCRM is ideal for solar installation companies looking for a whole-business management platform. It is also well suited for companies with multiple offices or franchises that are looking to streamline operations. Since the company is still customizing its software to fit the unique and fragmented needs of the US solar market, Solar eCRM currently lacks support for the complex landscape of incentives and utility tariffs commonly handled during quotation. However, users can manually enter these data as needed to model estimated energy production and financial performance. Companies looking to model production and financial savings in more detail could pair the CRM and business management tools in this platform with a dedicated production-modeling tool from OnGrid Solar or PVsyst, or with NREL's free Solar Advisor Model (SAM).

**SolarNexus.** Founded in 2009, SolarNexus released the beta version of its web-based solar business management platform at SPI 2010 and rolled out the first professional version in March 2011. The company's president and CEO, Eric Alderman, is an experienced software industry executive. Alderman cofounded SolarNexus with Michael Palmquist, who started working in the solar industry in 1996 and began to develop enterprise software products in 2004. In 2014, SolarNexus won a DOE SunShot Incubator award for its proposal to develop an ecosystem of interoperable software applications using a common data exchange format, which will allow the company to integrate key functionality from different solar software vendors into its web-based sales and business management platform.

One of the SolarNexus platform's unique features is that it is technology agnostic, allowing installation contractors to develop proposals for solar thermal and energy efficiency upgrades in addition to solar electric systems. This means

## Solar Business Software

Courtesy SolarNexus

The screenshot displays the SolarNexus All Pro software interface. At the top, there's a navigation bar with links for Home, Operations, Resources, Administration, and a search bar. Below the navigation is a section titled "Milestone Definitions" with a note about displaying dependencies. There are three main groups of milestones:

- Group: Design & Permitting**: Contains milestones like "Permit App Submitted" (depends on "All"), "Permit Issued" (depends on "Permit App Submitted"), and "AHJ Approved" (depends on "Work Completed").
- Group: Installation**: Contains milestones like "Install Scheduled" (depends on "All"), "Work Started" (depends on "Permit Issued"), and "Work Completed" (depends on "Work Started").
- Group: Operations**: Contains milestones like "Project Completed" (depends on "Work Completed") and "Project Canceled" (depends on "All").

**SolarNexus** The SolarNexus platform allows users to define custom milestones, along with dependencies and follow-up actions, and organize these into groups that represent the entire project delivery process.

installation contractors can simultaneously estimate costs, model performance and provide a quote for multiple solutions. The solar thermal functionality allows users to model complete solar hot water systems much as they can model PV system performance. Users can also specify the expected energy savings associated with proposed efficiency upgrades, and the application accounts for these in the project's financial analyses.

At SPI 2014, SolarNexus launched a new and improved user interface that allows for a more visually based design process. Via its SunShot-supported project, SolarNexus has integrated key SolarDesignTool capabilities, most notably a lightweight Google Maps-based array layout tool. Design results, including equipment selection and production estimates, flow back into the proposal generation screens. At the core of SolarNexus is a robust, flexible pricing engine. This was originally conceived as a way for distributors and OEMs to upload and update their product catalogue and pricing. However, most installation contractors use this to manage product data from across their supply chain. A waterfall set of permissions allows managers to change or push out new pricing, equipment or templates to all users. After the sale, installers can set up a custom milestone, task and dependency system to help shepherd the project to completion. SolarNexus includes a simple tabular reporting system, and can export data for further slicing and dicing in a spreadsheet.

Companies looking for a fully customizable business platform will find SolarNexus attractive. It is well suited for power users or hands-on business owners. Administrators have an incredible degree of control within the platform to customize proposal, design and post-sale processes; create

product and utility tariff databases; define margins and milestones; and so on. The platform is also ideal for contractors that offer a suite of services, including solar thermal and home efficiency upgrades.

### WHICH PLATFORM IS BEST?

There is no one perfect solar business platform. However, some platforms may be better suited to your company's needs or business model than others. As you evaluate options, reflect on what makes your company unique. What are its strengths and weaknesses? What is its selling style? What will help your managers be more effective?

Overall, a solar business platform should add value to the customer experience, both pre- and post-sale. It should allow you to communicate options to prospects more quickly and accurately. These communications should be easy for customers to understand and evaluate. A good solar business platform will reduce non-value-added activities and help you optimize value-added ones. If a platform is not doing that, it is not the right tool for you.

Take time to consider the features and benefits of each tool you evaluate. Take advantage of free trials. Review user guides and training videos. Once you make a final decision, redesign your company's business processes to take advantage of the new platform and leverage the unique strengths of your operation. ☺

### » CONTACT

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### RESOURCES

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*National Solar Jobs Census 2013*, The Solar Foundation, February 2014

*National Solar Jobs Census 2014*, The Solar Foundation, January 2015

"US Solar Market Insight Report 2014 Q3," SEIA/GTM Research, December 2014

*US PV Leaderboard*, GTM Research, October 2014

### VENDORS

Aurora Solar / aurorasolar.com

Clean Power Finance / 866.525.2123 / cleanpowerfinance.com

enACT Systems / 855.503.6228 / enact-systems.com

ModSolar / 610.572.2555 / modsolar.net

OnGrid Solar / 866.966.5577 / ongrid.net

Solar eCRM / 209.920.4988 / solarecrm.com

SolarNexus / 510.842.7875 / solarnexus.com