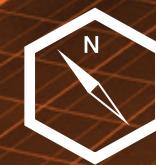


EVOLVE OR DIE

INTRO

Solar **Survival** Guide

How to Survive a Tough Solar Market



⊖ ENPHASE.



SURVIVAL? BUT I'M DOING JUST FINE.

If you are not scared,
you should be.

Let's get straight to the point. There isn't a solar installer on the planet that can look at its cost structure or installation speed and relax. The industry has reached a period of intense competition. Every aspect of the installation process, from customer acquisition and hardware procurement to system installation and interconnection, has been put under the microscope. Look closely and you'll find inefficiencies everywhere.

Whether you're the fastest installer in France, the most active in Australia, or the newest in New Mexico, the challenge is the same: to get and stay ahead of your competitors. How? Take one step to simplify operations. Then another. And another.



BECAUSE THIS TIME, SOLAR REALLY IS HEADED FOR A SHAKEOUT

There's perpetual talk in the solar industry about a great culling of the herd, a time when companies that stumble over inefficiency will starve, leaving only the fittest to survive. This notion has been hyperbole, until now. Today, there is something fundamentally different.

A decade or two ago, incentive programs established in almost every developed nation aimed not only to stimulate consumer demand, but also to push solar companies up the learning curve. And it worked: while incentives supported the markets, hardware costs fell, project finance became available, and solar reached grid parity in many markets. But now that solar might be able to stand on its own two feet, it's being forced to in many areas. And the ramifications for you as a solar installer are serious.

FOUR MARKET TRENDS THAT COULD KILL YOU

1

RISE OF THE MEGA INSTALLERS

Solar is big and on its way to massive... Deutsche Bank expects over 100 million new customers to deploy solar over the next 20 years, creating roughly \$4 trillion of value. And that assumes only about 10 percent of global electricity production will come from solar during that time frame. With such a hefty prize for the taking, fast-growing installers in key residential markets have raced down the path of expansion. Some favor market share over profitability. Some big companies from outside the solar industry are tossing a hat in the ring. These mega installers are tough on each other, and on everyone in the industry.



WHAT THIS MEANS FOR YOU

With the most spartan challengers vying for market share, you have to get smarter and stronger to survive.

2

THE BEST MARKETS ARE THE MOST COMPETITIVE

**WHAT THIS MEANS FOR YOU**

Whether you're a Top 10 installer in the most lucrative markets or a local installer in a relatively tough market, you can't get ahead by simply bargain hunting for system components.

The survivors in the market know it's all about optimizing their entire business, including installation practices.

In summer of 2014, the US reached a turning point that's emblematic of where the industry is headed globally. The residential market was continuing its run of steady growth, but industry leaders were grabbing up the lion's share of new projects. For the first time, the Top 10 installers captured more than half the residential market, according to Greentech Media's PV Leaderboard. While some markets such as Australia and the Netherlands haven't seen any single installer take a significant slice of the market yet, most markets are seeing a similar trend: the big guys are getting bigger.

Part of what's driving consolidation is that variable factors, like permitting, inspection and interconnection costs, vary from area to area. Industry leaders target areas where these costs are low, leaving everyone else to duke it out on more challenging terrain.

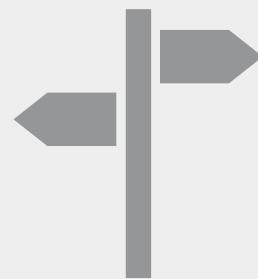
**3**

NOW-YOU-SEE-'EM, NOW-YOU-DON'T INCENTIVES

**WHAT THIS MEANS FOR YOU**

If incentives are going, going, gone, that means you'll need to manage your costs down so you can still sell solar at a price the market will bear. And you need to be agile enough to change directions if a landslide wipes out the path you are on.

Spain. United States. England. Australia. Just about every part of the world where subsidies fueled rapid growth has experienced—or is about to experience—a withdrawal of support from the government. And in some markets, incentives come and go based on political whim. Take France, where installers are holding their breath while the government shapes a new law requiring living roofs or solar projects on new commercial properties. It's a fair bet every residential installer in the market is suddenly looking at getting into commercial solar too.



4

UTILITIES CHANGE DIRECTION



WHAT THIS MEANS FOR YOU

There's a reason why installers that get to a certain size expand into a second or third region. It's safer to spread the risk. If you're in one area, stay aware of what's on the utilities' mind, and build a financial buffer to see you through if a storm moves into the area.

Another threat that emerges as solar gets big is that utilities that control access to the grid might add to the whipsaw by changing the rules. Ask Hawaii, where Enphase helped the utility break the dam that had blocked interconnection for new systems in many areas. Or Queensland, Australia, where zero-export rules mean every installer is suddenly looking at emerging battery technologies as a key to survival.

CAUTION

ARE YOU SETTING YOUR OWN TRAP?

Whether you're travelling in tough or unstable terrain is irrelevant if you're simply not fit enough to even be taking on the challenge. Are you making any of these fundamental mistakes that could cost you your business?

High cost of sales. If you don't get enough leads, don't win enough deals you go after, or simply spend too much time hunting small, hard-to-catch game, the cost of customer acquisition can deal a fatal blow.

Poor workmanship. A shoddy job can cost you in rework, in bad word-of-mouth, even in legal fees.

Low quality materials. Repairing bad equipment can eat away margins after you thought a job was finished.

Over-complication. If you try to be expert in every brand of equipment, or spend a lot of time customizing design options... chances are your crew will never be great and neither will your margins.

Cash flow challenges. Even if business is growing, if money goes out faster than it comes in, your cash flow can strangle your company.

OK. I'M SCARED. ANY GOOD NEWS?



Yes. There's plenty of room for improvement.

Solar market experts are telling Wall Street to bank on long-term solar cost reductions. One analyst, Vishal Shah at Deutsche Bank, says that even in mature solar markets, system costs are not as low as can be. How do we know? Everyone is following the same essential cost roadmap, but nobody to this point has advanced as far as Germany's installers.

Shah expects total system costs to drop 30 to 40 percent, with the **biggest reductions coming from operational efficiency and effectiveness** improvements and scaling residential solar.

Substantial improvements in customer acquisition will drive costs lower, as solar gains mainstream acceptance and companies simplify relationships with customers. Better tools and techniques in the field will also cut the cost of installation, without needing to cut wages.



BUT IF ONLY THE FITTEST SURVIVE...



What does it take to get fit?



EFFICIENT VS. EFFECTIVE

Management guru Peter Drucker explains “Efficiency is doing the thing right. Effectiveness is doing the right thing.” It’s no use being really great at doing useless tasks, so we’ll look at both streamlining what you do (effectiveness) and how you do it (efficiency).

What can you do to survive? The answer is to streamline every aspect of your business so you are both **efficient and effective**. It means honing you and your team’s skills in every step of the process, from customer acquisition, through design, installation, and commissioning, and continuing through the system’s O&M. Plus it means getting good at all the support functions that make installation possible, such as logistics, scheduling and material management.



SO GETTING FIT = BECOMING LEAN?

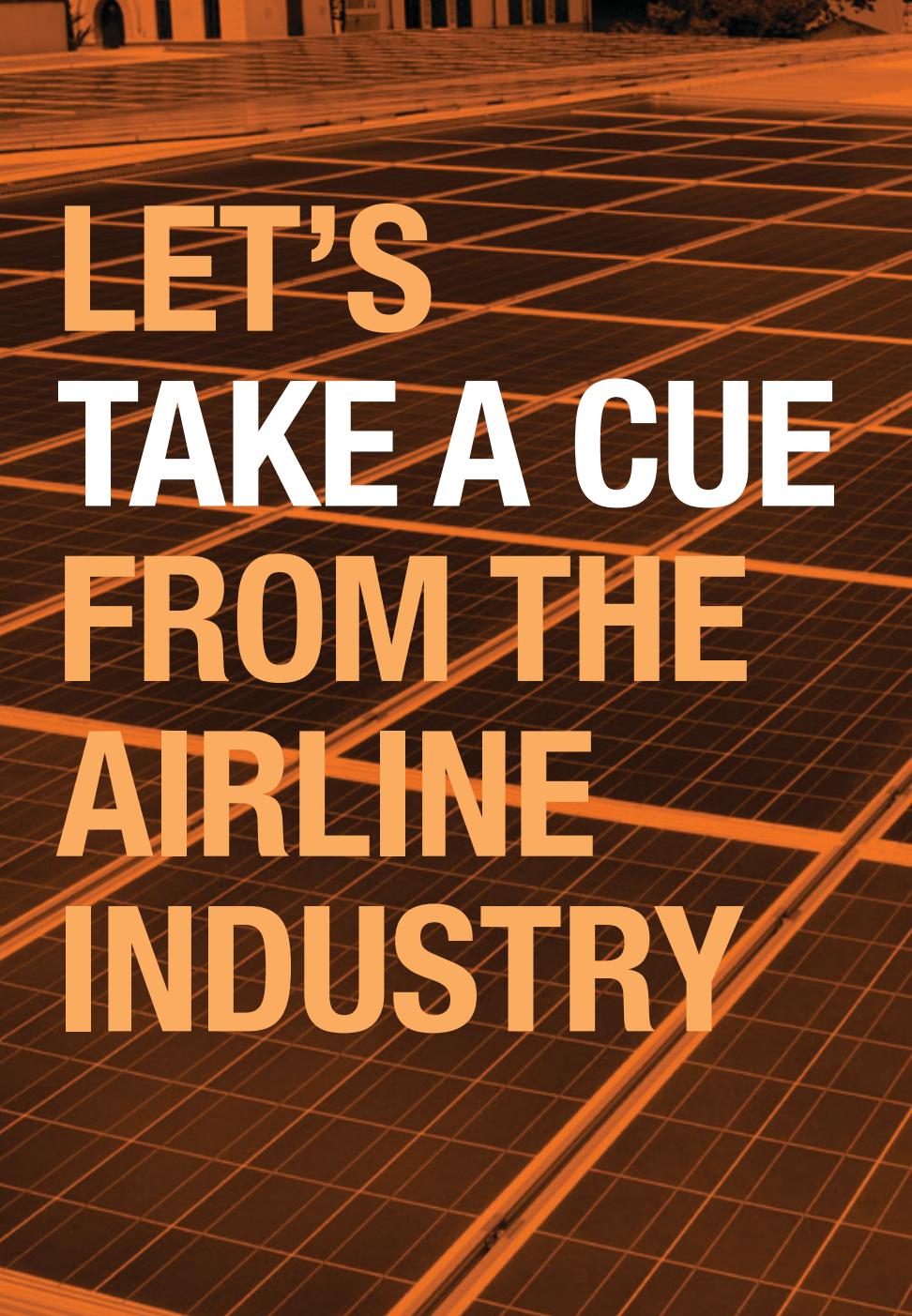
Exactly.

Solar installers can learn from the manufacturing world. In lean manufacturing, they eliminate waste, that is, activities that don't add value. Smart solar installers are also looking to get lean. Rocky Mountain Institute (RMI) and Georgia Tech Research Institute have used time-and-motion studies to identify several forms of waste that contribute to higher system costs in the US compared to systems in Germany. Examples include installation delays and the use of rail-based mounting systems. If US installers implement universal designs to mitigate project-specific preparation and delays, and reduce racking system requirements—including roof penetrations and extensive wire management—RMI says there's potential to reduce labor costs by 64 percent.

LINGO
CHECK

LEAN

Borrowed from the manufacturing world, “lean” refers to the elimination of waste in a process...whether it’s cutting out needless steps or using less material.



LET'S TAKE A CUE FROM THE AIRLINE INDUSTRY

SUCCESS STORY

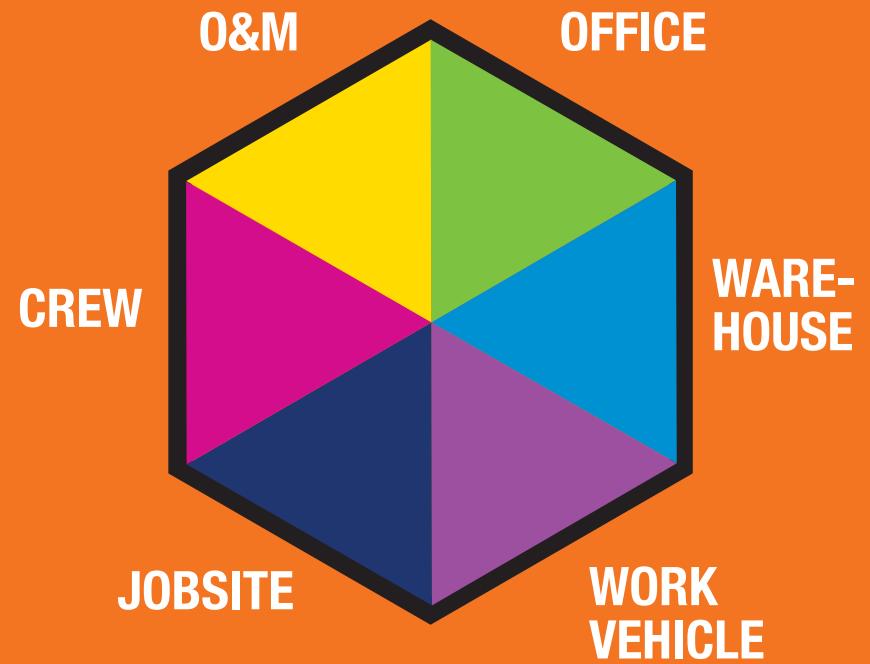


How streamlining operations helped a company survive, then thrive.

When Southwest Airlines took flight in the United States in 1971, it took on established competitors in a mature industry, and won. What can solar installers learn from an airline? Southwest rose up as a beacon of efficiency focusing its entire operation on a single aircraft, the Boeing 737, while traditional airline fleets used several different ones. Standardizing the operation in this way brought big advantages in productivity: pilots, mechanics and flight crews could work with any aircraft in the fleet.

Solar installers can follow the Southwest way by using a standard kit of parts, following a jobsite checklist, and always stocking and organizing the truck so crews never leave the site in search of missing parts. If there are any doubts that process optimization can reduce costs, consider the results at Southwest. In 2014, the airline had the most passengers, the most departures and the largest market share among 88 US passenger carriers, while recording a profit for the 42nd consecutive year.

AND
AIM TO
IMPROVE
EVERY-
THING





GO FOR THE GOAL ONE DAY INSTALLATIONS FOR SMALL PROJECTS



Installing systems smaller than 10 kilowatts in a day or less opens a rare opportunity that has a high impact by streamlining costs that would otherwise be duplicated on a second day at the job site. Methods for achieving one-day installations may include universal system designs, designs based on satellite imagery, intelligently stocked trucks and deep levels of task specialization.



WHERE SHOULD I START?



**START WITH THREE
SIMPLE STEPS.**



- ① Choose your destination.
- ② Map your route.
- ③ Get ready for the trip.



CHOOSE YOUR DESTINATION

The most effective companies have a clear target. Your management team needs to be united on the answers to fundamental questions. Do you want to:

- Grow where you are or expand into new locations?
- Compete primarily on quality or price?
- Sell residential, commercial, or both?
- Specialize in solar or offer related services such as roofing or energy efficiency?
- Connect customers with loans, or offer leases?



MAP YOUR ROUTE

Once you are clear on the destination, determine what, if anything, needs to change to get you there. Do you need to:

- Lower the cost of installation?
- Reassess vendors used and technology installed?
- Divest, outsource, or close some lines of business?
- Retrain staff or hire people with new skills?
- Just say no to potential customers that are not in your target market?



START THE TRIP

When the goal is to streamline everything, you need to pick one place to begin. Look at the distance between where your company is and where you would like it to be and ask:

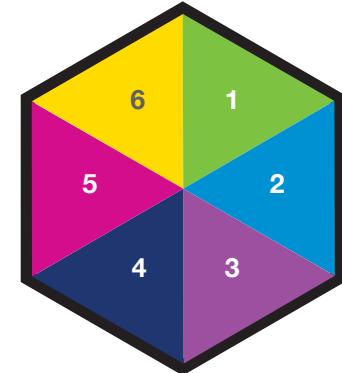
- Are the biggest challenges we face in the office, warehouse, or on the jobsite?
- Do we struggle more with finding leads or winning bids?
- How close are we to reaching the goal of one-day installations?
- How much are we spending on managing existing installations?

Depending on your answers, Enphase has a **Solar Survival Guide** that addresses your biggest pain points. Choose one and start the trip there. Cherry pick the tips, ideas and action plans for improving your company's operations, and begin the journey to solar success.

BUT I CAN'T STREAMLINE EVERYTHING AT ONCE.



 ENPHASE



THAT'S WHY WE ARE HERE TO HELP

Enphase is creating a series of Solar Survival Guides to help you get through this tough market. Each installment will tackle one of the six areas you'll need to streamline. Even if you just cherry pick a couple of the best practices from each section, you'll be on your way to survival.

1 SURVIVAL STARTS HERE

Streamlining the Solar Back Office

2 BASE CAMP BASICS

Organizing Your Warehouse for Work

3 NO TURNING BACK

Setting Up Your Work Vehicle for Success

4 SETTING UP CAMP

Implementing Jobsite Strategies

5 TEAMWORK ON THE TRAIL

Working Effectively as a Team

6 PROTECTING THE HIGH GROUND

Streamlining and Simplifying O&M