



# The Code To Closing Today's Residential Solar Deals

NEW RESEARCH REVEALS CONSUMER APPETITE  
FOR PROTECTION PLANS

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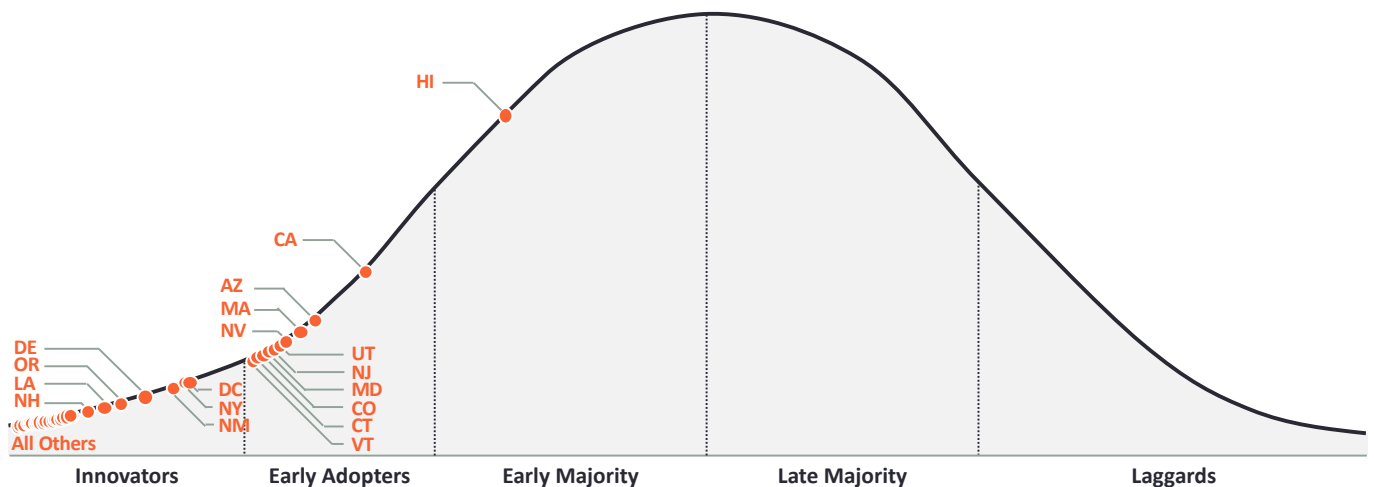
*presented by Omnidian*

# Residential Solar is Crossing the Chasm

Like every innovation, residential solar PV is making its way through the technology adoption lifecycle<sup>1</sup>. As solar market penetration increases, the industry faces the challenge of conquering a very different set of customers.

Innovators are willing to overlook flaws and complexities because they take pride and excitement in living on the cutting edge. Unfortunately, they only represent 2.5% of the population. **Most residential solar markets in the U.S. (40 states) are still tapping into the ‘innovators’ population, as shown on the adoption lifecycle chart below.**

## ADOPTION OF RESIDENTIAL SOLAR PV BY U.S. STATE (2017)



Source: SOLICHAMBA Consulting and GTM Research. Based on the Technology Adoption Lifecycle (‘Crossing the Chasm’ by Geoffrey Moore). Percentage of solar penetration by U.S. state calculated as the cumulative count of residential PV installations in Q3 2017 (GTM Research U.S. Downstream Distributed Solar Service) divided by the estimated number of owner-occupied housing units in July 2016 (U.S. Census).

Early adopters are also excited about innovation and may forgive minor glitches, but they do require a more proven and polished product. They represent 13.5% of the population. **Solar is already in the ‘early adopter’ stage in ten U.S. states: California, Arizona, Massachusetts, Nevada, Utah, New Jersey, Maryland, Colorado, Connecticut, and Vermont.**

Pragmatists make for 68% of the market, split equally between the early majority and the late majority, and they need a robust, fully-finished product, easy to buy, easy to use, and worry-free. **Only in Hawaii has the solar industry ‘crossed the chasm’ to sell residential PV to these mainstream consumers, but this cannot be interpreted as proof that solar is ready for the mass market: The Aloha**

State benefits from uniquely favorable conditions with the highest retail electricity rates in the country, more than twice as high as the Nationwide average<sup>2</sup>.

The ‘chasm’, or gap between the early adopters and early majority customers, is where most new technologies fail, and where countless companies die. And while the solar industry achieved great progress in improving solar system design, equipment, and installation, residential PV remains a complex product, and a difficult one to sell. **Stubbornly-high costs of sales (around \$3,900 per customer<sup>3</sup>) clearly indicate that residential PV, as it is offered today, is not fully ready for mass market adoption.**

# Direct Ownership Means More Risk for Consumers

Between 2012 and 2016, residential PV was sold primarily in the form of power-purchase agreements (PPAs) and leases (with some form of production guarantee). But these third-party ownership (TPO) models peaked in 2014 and their market share has been declining steadily ever since, as illustrated in the attached chart. Conversely, the share of home solar installations under direct customer ownership (DCO), with or without a loan, rose to 57% in the first half of 2017 and is projected to continue on this trajectory and surpass 70% by 2020<sup>4</sup>.

By owning the PV system, consumers typically save more money, but they bear more risk in case of technical and performance issues. With a PPA, a consumer only pays for energy production, so the third-party owner pays for maintenance and carries the risk of failures and underperformance. Similarly, most leases come with a production guarantee that shields the consumer.

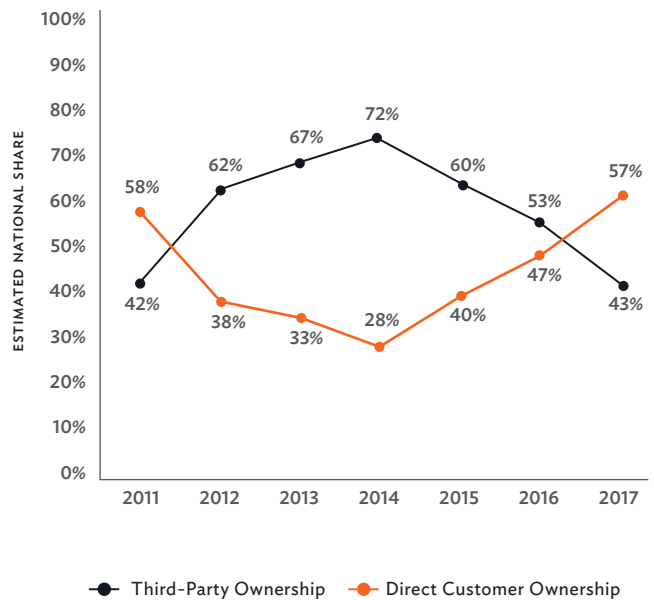
**Fundamentally, leases and PPAs are service contracts that provide the consumer with a risk-free experience.** Even in catastrophic scenarios like the bankruptcies of residential TPO firm Sungevity, most customers saw little difference: over time, the PPA or lease operations were transferred to other parties. Direct ownership, however, is a different story. Some national installers that lead the TPO model include service plans and/or production guarantees for customer-owned systems, but **the majority of residential PV installations sold directly to homeowners do not include such protections.**

## Solar Turns Homeowners into Power Producers

Despite the steep decline in equipment prices, a residential solar installation remains a major investment for a homeowner, in the order of \$20,000 for a typical 7 kW system, the same as a minor kitchen remodel<sup>5</sup>, three times the cost of a new roof<sup>6</sup>, and almost five times the cost of new furnace<sup>7</sup>. All these purchases compete for homeowners' money and attention, but solar is not a must-have like a

new furnace or a new roof, and it does not improve the consumer's quality of life or comfort level like a kitchen or bathroom remodel. While environmental values will sway some innovators and early adopters, **savings on electricity bills remain the top reason why consumers purchase residential PV<sup>8</sup>.**

**RESIDENTIAL SOLAR: THIRD-PARTY OWNERSHIP VS. DIRECT CUSTOMER OWNERSHIP**



Source: GTM Research U.S. Downstream Distributed Solar Service

**Owning a solar installation turns homeowners into power producers. Most solar customers do not understand what it entails: the system on their roof is a power plant that can generate a payback if it performs well but can also burden them financially if it breaks down, underperforms, or requires out-of-warranty service.**

Unfortunately, this reality is often hidden from consumers when solar companies attempt to sell them solar, sometimes touting the ‘maintenance-free’ nature of PV systems that have ‘no moving parts’ and ‘carry a twenty-year warranty’.

## Solar Is Complex, and Not ‘Maintenance-Free’

Solar is ‘maintenance-light’ but not ‘maintenance-free’. Inverters and modules can fail. Thermal expansion and contraction can cause mechanical and electrical connections to loosen and wiring to break over time. Beyond the solar system itself, roof penetrations can cause leaks, soiling and shading will reduce performance. **Unexpected things happen.**

Homeowners are not electricians, and while they are comfortable changing light bulbs, a PV system is far more complex than any other electrical system in a home (except energy storage systems, which are even earlier in the adoption cycle). It has many components beyond the ‘panels’ that consumers are totally unfamiliar with, from junction boxes to inverters, DC disconnect, and racking.

**Most consumers do not understand at all how a solar PV system works.** Common enquiries received by solar PV call centers include: ‘Why is my system not producing at night?’ And the basic question ‘Is my system performing normally?’ is a complex topic that the industry at large still struggles with.

## Warranties Are Not Enough

Equipment warranties should cover basic failures, assuming that 1) the problem is detected, 2) the installer helps with the warranty claim, 3) the defect is actually covered by the warranty without falling into the fine print exclusions, and 4) the manufacturer is still in business.

Conversely, workmanship warranties cover defects assuming that 1) the problem is detected and confirmed as an installation issue, and 2) the installer is still in business, which is not a given. In California, over the first three quarters of 2016 alone, more than 7% of residential solar systems were installed by solar companies that went out of business in 2017<sup>9</sup>. In such cases, consumers are left without any workmanship warranty.

Even when they are enforceable, **warranties put the onus on the consumer to detect the issue and drive a claim.** While innovators and some early adopters may be savvy enough to navigate this process, the majority of consumers are neither willing nor qualified to do so. Homeowners are also left to bear the losses of any equipment failure until it is repaired.

Finally, **warranties deal with straightforward failures but rarely cover underperformance scenarios,** which are a material risk with a complex system like a solar installation.

**Power producers deploy professional staff and systems to quantify, reduce and actively manage warranty and performance risks across solar generation asset portfolios, because it is part of their business. But mainstream consumers are neither equipped nor willing to do so.**

# Protection Plans Increase Solar Purchase Intentions

**Omnidian** contracted a consumer research study to investigate how the addition of a protection plan would impact purchasing behaviors for potential solar buyers. The research, conducted in 2017 by an independent third-party, includes almost 800 U.S. consumers nationwide, geographically spread in proportion to the size of residential solar markets. All participating consumers were qualified to meet the basic profile of a solar buyer (age and income criteria). Some of them already owned a PV system while others intended to purchase one (“intenders”). For owners, the survey tested purchase intentions in the event that they moved and had to replace the solar system.

## Three plans were introduced, matching the service levels currently offered by **Omnidian**:

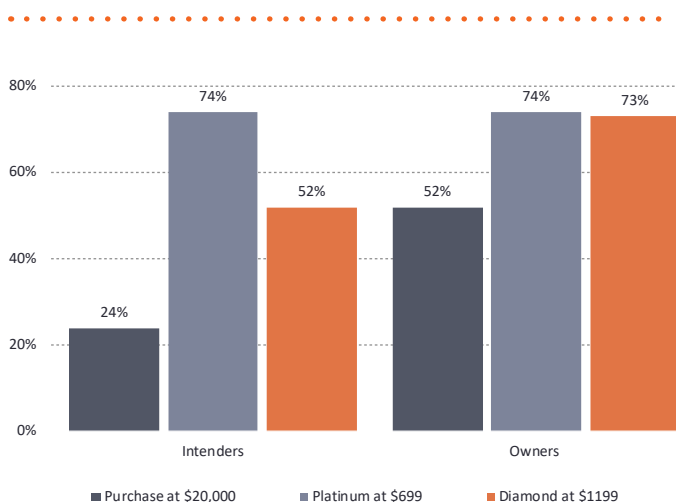
- **Gold Protection:** 24/7 monitoring and proactive service alerts
- **Platinum Protection:** Adds service and repair calls for 12 years (all system components are free)
- **Diamond Protection:** Adds 100% guarantee of promised energy generation for 12 years (plan pays for losses)

The survey presented the PV system as a \$20,000 purchase, and the 12-year Platinum and Diamond protection plans as \$699 and \$1,199 adders, respectively. Higher price points were tested as well. Actual Omnidian plan prices will vary based on the nature and scope of services provided.

Among ‘intenders’, the research found that **the Platinum Protection plan triples purchase intentions** (lift from 24% to 74%) and **the Diamond Protection plan doubles purchase intentions** (lift from 24% to 52%).

The survey also shows that **current owners are more likely to purchase a system with Diamond plan (with 100% production guarantee)** than intenders (73% vs. 52%). This clearly shows that consumers experienced with solar PV are aware of the performance risks and willing to pay for a higher level of risk protection.

**PURCHASE INTENTIONS FOR RESIDENTIAL SOLAR SYSTEM, WITH AND WITHOUT SERVICE PLAN**



## Beyond the Transaction: A Relationship

Solar PPAs and leases are service contracts that involve a long-term relationship. For customer-owned systems, however, this relationship is replaced by a transaction (with warranty support). If the consumer contracted a loan to finance the transaction, they are now in a relationship with the lender. The nature of this relationship, however, is often purely financial and distinct from the physical system that will live on their roof for 15 to 20 years or more.

Bundling a residential solar PV system with a long-term protection plan introduces a relationship with a service partner. Homeowners can enjoy the economic and environmental benefits of their new solar system without fear of breakdowns.

# Conclusion

Peace of mind comes from trusting that you will be protected when the unexpected happens. It should be no surprise that protection plans increase solar purchase intentions by a factor 2x to 3x for new customers, as shown by the new Omnidian nationwide consumer research. Yet few residential solar consumers are offered the option to purchase such plans. In order to cross the chasm and become a mass market, residential solar must become a mainstream product, and protection plans are paramount to this effort. Consumers want to buy solar without fear.

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*Omnidian's mission is to protect and accelerate capital invested in the residential solar industry.*

*Our state-of-the art proprietary technology provides continuous monitoring for residential solar systems and large-scale residential portfolios and offers the industry's only end-to-end performance guarantee including proactive service alerts and field service for the life of residential solar systems. We give thousands of homeowners peace of mind, and we liberate the capital and resources of large scale residential portfolios for our Fortune 1000 clients.*

*Omnidian is supported by the DOE SunShot Program which accelerates the development of highly impactful solar technologies.*

1. Geoffrey A. Moore 'Crossing the Chasm' 1991
2. Average 2016 retail electricity rates in cents/kWh: 23.87 in Hawaii vs. 10.27 Nationwide (source: U.S. Energy Information Administration)
3. Residential PV cost of sales projection for 2017: \$3,898 for a 7 kW system (source: GTM Research U.S. Downstream Distributed Solar Service)
4. Share of third-party ownership by 2020: under 30% (source: GTM Research U.S. Downstream Distributed Solar Service)
5. Average cost of a minor or partial kitchen remodel in 2018: \$20,000 (source: www.homeadvisor.com)
6. Average cost of a new roof in 2018: \$6,660 (source: www.homeadvisor.com)
7. Average cost of a new furnace in 2018: \$4,200 (source: www.homeadvisor.com)
8. In the 2017 Residential Solar Industry Study, 41% of those surveyed say that the primary reason for choosing solar is potential savings over time and protection against rate increases from the utility company (source: Provoke Insights)
9. In Q1-Q3 2016, 2,515 residential systems were installed in California by companies that went out of business in 2017 out of a total of 35,239 installations (source: GTM Research U.S. Downstream Distributed Solar Service)