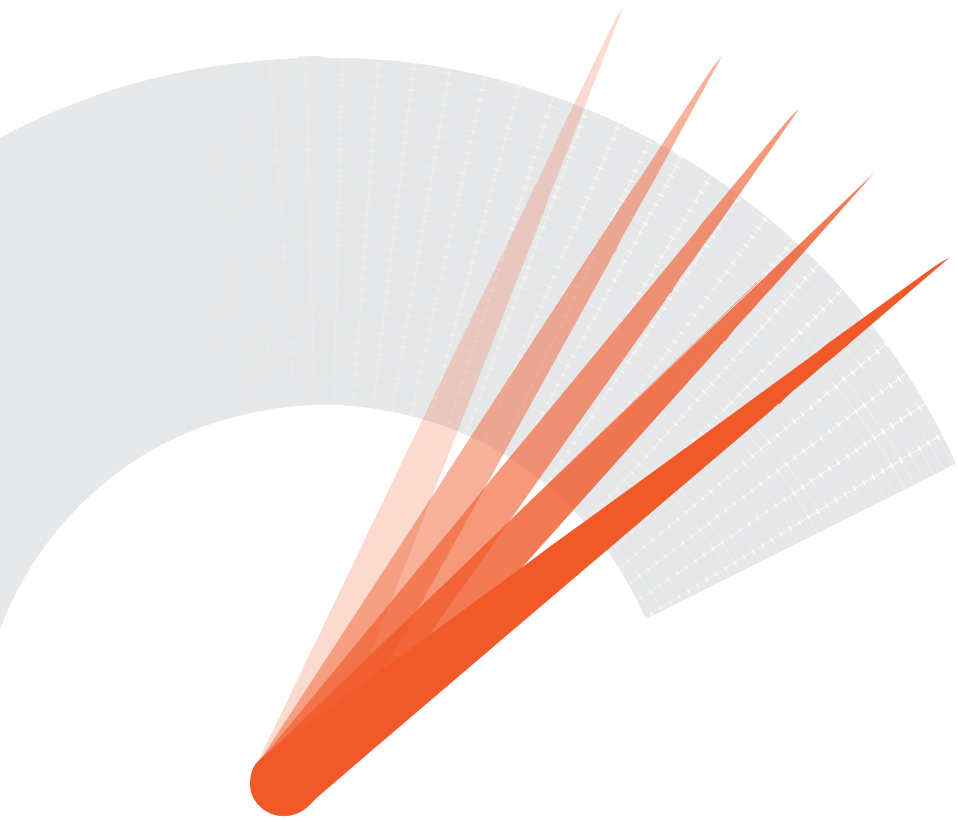
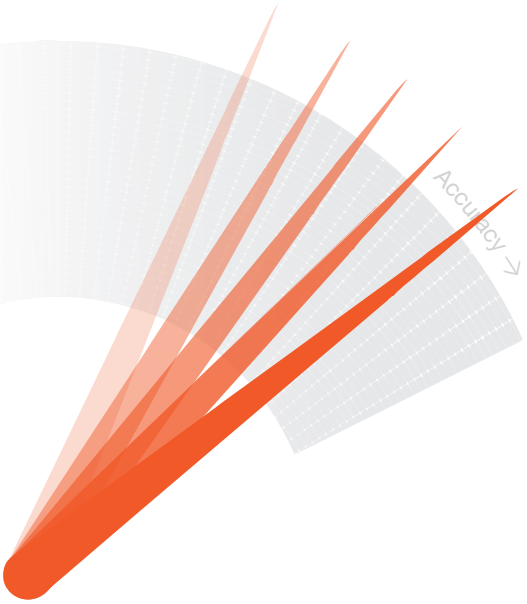
SOLSTICE
Solar for every American

EnergyScore

An Alternative to FICO Credit Requirements
for Low-to-Moderate Income Community Solar





Why do we need an EnergyScore?

Low-to-moderate income households face severely limited access to renewable energy.

While Americans earning under $40,000 annually account for 40% of households, they comprise less than five percent of solar installations.[1] Simultaneously, they bear a disproportionate energy burden, paying on average three times as much for energy as wealthier households.[2]

Credit score requirements are a primary barrier to expanding community solar access.

Industry standard minimums range between 680 and 750. These stringent cutoffs automatically exclude not only lower-credit individuals, but those with insufficient credit history.

There is also a strong relationship between income, race, and credit.

Roughly five million low-income consumers are credit invisible or have unscored records, representing 45% of consumers in low-income neighborhoods.[3] The mean credit score of African Americans and Hispanics may be as low as half that of whites'.[4]

By relying on FICO credit scores as the sole indicator of customer risk, the community solar market reproduces existing inequalities and limits potential for growth by excluding dependable consumers. Though so widely applied, credit scores are an imperfect proxy for predicting energy bill default. Our research finds that those with lower or no credit scores still pay their utility bills regularly, representing an underserved, low-risk market segment.

In partnership with researchers at MIT and Stanford, Solstice has developed the EnergyScore, a more comprehensive alternative qualifying metric for community solar customers.

The EnergyScore is a more inclusive and more accurate predictor of utility bill payment performance than a traditional credit score – positioning Solstice to extend solar to qualified low- or no-credit households while decreasing overall project risk.

1 GW Solar Institute at George Washington University
2 American Council for an Energy Efficient Economy
3 Consumer Financial Protection Bureau
4 Board of Governors of the Federal Reserve

What's in the EnergyScore?

The EnergyScore draws upon anonymized data for nearly 875,000 individuals across the U.S. The dataset includes over 5,000 variables tracked over a recent seven-year period, including utility bill payment performance and housing, financial, and demographic characteristics. Using the first 72 months of data to construct the model, Solstice can predict the probability of delinquency in the subsequent 12-month period, creating EnergyScore cutoffs that match the proportion of customers approved under various credit floors between 650 and 730.

The best-performing EnergyScore formula was developed using advanced machine learning techniques, which outperformed earlier probit and linear regression modeling approaches. We selected a random forest algorithm, averaging many decision trees to prioritize the most salient variables over those of little predictive value.

Key findings

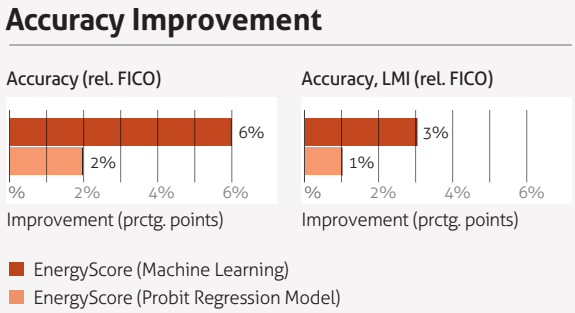
1. **The EnergyScore is a more accurate qualifying metric than FICO, reducing the risk of both approving customers who would later prove delinquent and that of rejecting qualified customers.**

Accuracy: EnergyScore vs. FICO Cutoff

Solstice compared the accuracy of the EnergyScore and FICO on two dimensions: the risk of

1. Approving customers who would ultimately prove delinquent ("false positives"); and
2. Erroneously excluding qualified customers who would not ("false negatives").

We performed this analysis for multiple definitions of utility bill delinquency - either 30 or 90+ days past due - and compared the accuracy of the EnergyScore relative to an equivalently selective FICO cutoff.



In both cases, the EnergyScore is significantly more accurate than FICO in predicting utility bill payment performance. However, the contrast is particularly stark for a 90+ day definition of delinquency, at which the EnergyScore increases overall accuracy by ***6 percentage points*** compared to an equivalent FICO cutoff of 680. [6]

5 A 650 FICO cutoff corresponds to 58.3% of the current sample being approved, whereas a 700 FICO cutoff corresponds to 50.3% being approved. Note also the current sample (individuals with 24 consecutive months of reported utility payment history) likely over-represents those with a negative record, leading to higher false positive rates than would be seen under both FICO and EnergyScore cutoffs

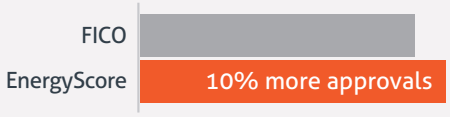
6 We also have reason to believe this 90+ day definition of delinquency is more sound than one of 30 days, which is as likely to capture noise (i.e. a misplaced bill) as indicate a pattern of financial behavior.

2. **The EnergyScore is more inclusive of low-to-moderate income customers relative to FICO, expanding access to households earning 80% or less of the sample median income of $50,000.**

   The EnergyScore increases the number of low-to-moderate income applicants approved by approximately 10% for a 90+ day definition of delinquency compared to an equivalent FICO cutoff of 700. Remarkably, it manages to do so without sacrificing accuracy. Much like for the sample at large, the EnergyScore outperforms FICO at an equivalent cutoff to 700 – here, by 5 percentage points.

Inclusion: EnergyScore vs. FICO Cutoff

EnergyScore increases the number of LMI applicants approved by approximately 10% compared to an equivalent FICO cutoff of 700.



Percent Change in LMI Inclusion, EnergyScore vs. Equivalent FICO Cutoff

30 days past due

FICO Equivalent	Probit Regression	Machine Learning
650	-3.8%	3.9%
680	-7.3%	15.0%
700	-8.9%	12.6%

90+ days past due

FICO Equivalent	Probit Regression	Machine Learning
650	-1.0%	2.7%
680	-1.2%	1.6%
700	-1.8%	9.6%

What's next?

The EnergyScore empowers solar developers to expand their pool of qualified customers and provides financiers with more accurate customer risk profiles. **Solstice now actively seeks project and financing partners to pilot the metric.**

EnergyScore Pilot Structure

PILOT PROJECT

Solar Developer

- Responsible for all aspects of project development
- Currently has a project that could serve as a pilot (either in its entirety or as a carve-out)

Solstice

- Manages all aspects of community solar customer acquisition, customer qualification, and customer management, including churn
- Collects and analyzes data on EnergyScore pilot customers

Financier

Traditional:

- Third-party equity/debt provider

Credit Enhancement:

- Philanthropic organization, community-based financial institution, insurance company that provides a loan-loss reserve to protect against downside risk of greater than expected default

Interested in learning more?

Contact our Director of Inclusion,
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