Calculating the scores

To calculate the scores we first determined each indicator's target or ideal benchmark. The targets are based on best practices determined through the U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge II or through expert opinion. In the absence of recognized targets, we selected a value from one of the highest performing municipalities in the indicator as the high performance target.[1] Unless otherwise specified, we use zero as the low performance target.

We then rescaled the raw data across a 0-100-point scale, where the high and low targets indicate scores of 100 and zero respectively using a min/max transformation.[2]

Any municipalities that are at target or above receive a score of 100 for the indicator; similarly, municipalities that are at or below the low performance benchmark receive a score of zero.

Specifically, we performed the following steps:

- *Truncate the raw data*: Replace any data below the low target value with the low target value and any data above the high target value with the high target value.
- *Rescale the data based on the following formula*:

$$\mathrm{x}' = \frac{x_i - \min(x)}{\max(x) - \min(x)} \; x \; 100$$

where x_i is the original value after truncation, $\min(x)$ is the low target value, $\max(x)$ is the high target value and x' is the transformed value.

The score for each indicator represents how far a municipality is from achieving the desired target. For example, a score of 50 means the municipality is halfway there.

Finally, we weighted the 18 indicators within their respective categories and then applied statistical weights to the five categories to calculate the final score. The weightings were developed based on the importance of the category and indicator to solar deployment.

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[1] For some indicators we use the 75th, 95th or 99th percentile based on difficulty in reaching the target. For other indicators, we determine at what point a value would be considered an outlier based on the distribution of the data. Statistically, an outlier is any value that is 1.5 times the interquartile range below the first or above the third quartile.

[2] We considered using a beta transformation that would transform each dataset to a normal distribution. Applying this transformation would ensure weights applied to the indicators would translate to actual contributions of indicators to a county's overall score. After evaluating how this transformation affected the overall rankings, we decided against using it in favor of a more straightforward max/min approach.

Table 1 shows weightings for each of the five policy categories. The categories were first weighted equally and then adjusted based on importance. The Clean Energy Engagement and Permit Process categories were given heavier weights because they represent the two spheres where a municipality can most impact solar deployment and installation time: promoting clean energy and streamlining the permit process. Since Information Availability only contains two indicators and is associated with information communicated about the permit process and solar in general (aspects of which are also assessed in the Permit Process and Clean Energy Engagement categories) it was down-weighted to 15%.

Table 2 shows the indicators and their weightings. All indicators were initially weighted equally within their category and then adjusted based on importance. Further information on how individual indicators were weighted can be found in the Guide to Interpreting your Score.

Table 1: Category weightings

Category	Weighting
Solar Adoption	20%
Clean Energy Engagement	22.5%
Information Availability	15%
Permit Process	22.5%
Permit Time & Cost	20%

Table 2: Indicator weightings

Category	Indicator Name	Weighting
Solar Adoption	Residential solar PV installations per household	50%
	Total residential solar PV capacity	50%
Clean Energy Engagement	Generation of municipal solar electricity	12.5%
	Participation in solar PV training	25%
	Solar campaign success	25%
	Energy/sustainability committee engagement	12.5%
	Participation in Clean Energy Communities program	25%
Information Availability	Permit requirements online	85%
	Solar information online	15%
Permit Process	Permit submission and delivery method	30%
	Length of inspection window	10%
	Number of permit issuing departments	5%
	Number of permit reviewing departments	20%
	Number of offices visited to obtain a permit	20%
	Permit status updates	15%
Permit Time & Cost	Permit submission time	20%
	Permit turnaround time	40%
	Permit fee	40%