

AMERICAN **MADE**

U.S. DEPARTMENT OF ENERGY



Solar Data Bounty Prize: Official Rules

THESE RULES ARE EFFECTIVE SEPTEMBER 2023

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Modification Summary

Date	Modifications
Revision 1 August 9, 2023	Page 8, 15, and 16: Modified dates of contest to allow for additional time for competitors to submit their Stage 1 Intent To Compete Package. Overall timeline for contest is extended.
Revision 2 September 13, 2023	Page 8, 15 and 16: Removal of Important Dates and specific deadline dates – competitors may see the most up to date information on deadlines and events at https://www.herox.com/solardatabounty . Page 17 and 18: Modified selection language for Stage 2.

1 Introduction

The American-Made Solar Data Bounty Prize is designed to incentivize photovoltaic (PV) system owners to share information-rich data sets from their assets so the industry and research communities can continue to develop, validate, and fine-tune modeling tools for solar applications. Owners of U.S.-based PV systems will be invited to submit their historical time series data with five or more years of operation at a minimum 15-minute time resolution. The winning data sets will be shared on a publicly available archive with their metadata for researchers and developers to use for model development, validation, and evaluation. This prize will award over \$1.4 million prize funds to competitors in two stages.

Building a clean energy economy and addressing the climate crisis are top priorities of the Biden administration. This prize will advance the Biden administration's goals to achieve carbon-pollution-free electricity by 2035, "deliver an equitable, clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050"¹ for the benefit of all Americans. The U.S. Department of Energy (DOE) is committed to pushing the frontiers of science and engineering; catalyzing clean energy jobs through research, development, demonstration, and deployment; and ensuring environmental justice and the inclusion of disadvantaged communities.

The activities incentivized by this prize will support the governmentwide approach to the climate crisis by supporting innovation in clean energy technologies. In turn, this will result in wider adoption of these technologies, which is critical for climate change mitigation. DOE's Solar Energy Technologies Office (SETO) in the Office of Energy Efficiency and Renewable Energy (EERE) is launching the Solar Data Bounty Prize to support the solar industry and academic research and development (R&D) communities in their efforts to develop, validate, improve, and evaluate models of real-world PV system performance. Regional diversity of the data sets used for these models can help ensure that all Americans benefit from these efforts, as the accuracy and fidelity of such models is critical for asset valuation and operation of solar power plants.

Institutions, companies, and nonprofit organizations based in the United States are eligible to compete. DOE expects to select 25 winners in Stage 1 that will each receive \$5,000 in cash. These winners will be eligible to compete in Stage 2, where DOE expects to select up to nine grand prize winners that will each receive up to \$130,000 in cash, as well as up to six runners-up that will each receive up to \$50,000 in cash, based on the richness and potential utility of their data.

Competitors will submit their data to the prize administrator at the National Renewable Energy Laboratory (NREL) to compete. In Stage 1, competitors will submit their metadata and one month or more of irradiance time series data, and in Stage 2, competitors will submit their complete time series data. The richness and quality of the submitted data will be evaluated by NREL on behalf of DOE, according to the details presented in the following sections.

¹ Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" (Jan. 27, 2021).

2 Background

As of summer 2022, solar accounted for about 5% of [U.S. electricity generated on an annual basis](#). This means that to combat climate change, the nation's solar capacity will likely need to grow by hundreds of gigawatts in the next 15 years, with an annual deployment rate three to four times higher than today's rate. The [Solar Futures Study](#), released by SETO and NREL in September 2021, found that with aggressive cost reductions, supportive policies, and large-scale electrification, solar could account for as much as 40% of the nation's electricity supply by 2035 and 45% by 2050.

Solar PV system performance directly affects project cash flows, which largely determine the value of those systems. It also affects operation and planning activities for the electric grid. Therefore, to reduce financial risk (relevant to the asset owners) and reliability risk (relevant to the electric power system), it is important to accurately model the operation of PV systems before and during their operation.

Because PV systems involve components with complex electrical, thermal, and mechanical behavior, creating models for their operation is a challenging task. This task, as well as the validation, evaluation, and improvement of existing models, is supported by access to critical performance data from installed systems. Easy access to high-quality information about the real-world performance of solar PV systems and their components would also help shape DOE and SETO priorities for PV-system-related research.

However, the broader R&D community has typically found it difficult to obtain this type of data. While owners and operators of PV systems may have access to such data, its availability for R&D is either limited or the outputs are proprietary. Data-owning entities have also been slow to provide broad access to even limited sections of their data sets for a variety of reasons, such as confidentiality concerns and the labor cost of curating the data.

To better understand some of the challenges related to acquisition, access, and sharing of PV system performance data, as well as the value associated with these data sets, SETO issued a request for information² (RFI) in October 2022. Based on the responses provided by stakeholders, SETO is launching this Solar Data Bounty Prize.

Through this prize, PV asset owners will be incentivized to publicly share a subset of data from one of their U.S.-based PV systems. The data from the winning systems, subject to several optional anonymization features, will be made accessible to the public via the [Open Energy Data Initiative](#) (OEDI) data lake and a supporting web-based interface.

The ultimate goal of this effort is to assist commercial and academic R&D efforts seeking to improve the accuracy of PV system modeling, and thus lower the risk associated with developing and operating those PV assets. This de-risking is one of the necessary conditions for decarbonizing the power grid by 2035.

² <https://www.energy.gov/eere/solar/articles/request-information-performance-data-solar-photovoltaic-systems-acquisition>

3 Prize Overview

The Solar Data Bounty Prize comprises two stages, and each stage has two tracks: Track A for small to medium PV systems (100–5,000 kW_{dc}), and Track B for larger systems (>5,000 kW_{dc}).

To enter Stage 1, competitors will submit metadata about the time series data from a system of their choice along with a minimum of one month of irradiance time series data from that same system. Competitors will be scored based on the richness of their metadata (length of record, temporal resolution, number of time series, etc.) according to a predetermined and transparent formula. The top 25 selected competitors across the two tracks in Stage 1 will share a pool of \$125,000 in cash prizes and will become eligible to compete in the next stage.

In Stage 2, competitors will be asked to submit the complete time series data corresponding to the metadata shared during their Stage 1 submission. The administrator will score the data according to its actual contents and completeness, so that the Stage 1 scores are validated and corrected as necessary (for more details, see [Section 9.4, Step 7](#), and [Section 10.2](#)). Competitors will have the opportunity to increase their score and improve their ranking by waiving certain anonymity features. This adjusted score will form the basis for the final ranking and the selection of Stage 2 winners. The top two competitors in each track who agree to share six years of future data from the winning systems will be offered bonus prizes (for more details, see [Section 9.4, Step 9](#)). Competitors in Stage 2 will have the opportunity to join the PV Fleet Performance Data Initiative³ project to receive focused performance analysis by researchers at NREL.

The winners’ data sets will be shared publicly after the end of the competition via a dedicated platform. Any anonymity features not waived by the winners will remain in effect.

The Solar Data Bounty Prize offers a total prize pool of \$1,415,000 in cash:

		Track A (System size: 100–5,000 kW _{dc})		Track B (System size: >5,000 kW _{dc})	
Stages		Number of Prizes Awarded	Prize	Number of Prizes Awarded	Prize
Stage 1	Winners	Up to 15 cash prizes	\$5,000	Up to 10 cash prizes	\$5,000
Stage 2	Winners	Up to six cash prizes	\$80,000	Up to three cash prizes	\$130,000
	Runners-up	Up to four cash prizes	\$30,000	Up to two cash prizes	\$50,000
	Bonus	Up to two cash awards in six installments	\$40,000	Up to two cash awards in six installments	\$60,000

³ <https://www.nrel.gov/pv/fleet-performance-data-initiative.html>

SETO anticipates making up to 25 awards in Stage 1 and up to 19 awards (nine winners, six runners-up, and four bonus prizes) in Stage 2 but may or may not award winners and runners-up, depending on the performance of the competitors and the discretion of the judge. However, the total prize purse will not exceed \$1,415,000.

Only winners from Stage 1 will be allowed to compete in Stage 2.

To learn more and sign up, go to <https://www.herox.com/solardatabounty>.

4 Important Dates

- **Stage 1:**

- ~~Program Announced and Registration Opens: June 27, 2023~~
- ~~Solar Data Bounty Prize Informational Webinar: July 11, 2023~~
- ~~Stage 1 Intent To Compete Package Deadline: September 6, 2023, 5:00 p.m. ET~~
- ~~Stage 1 Winners Announcement: No later than September 22, 2023 (anticipated).~~

- **Stage 2:**

- ~~Solar Data Bounty Prize Stage 2 Opens: September 25, 2023 (anticipated)~~
- ~~Solar Data Bounty Prize Stage 2 Technical Webinar: October 3, 2023 (anticipated)~~
- ~~Stage 2 Intent To Compete Package Deadline: October 26, 2023, 5:00 p.m. ET (anticipated)~~
- ~~All Data Sets Ingested at NREL: November 16, 2023 (anticipated)~~
- ~~Stage 2 Winners and Awards Announced: December 2023 (anticipated).~~

For the most up-to-date information on prize deadlines and events, please visit our website: <https://www.herox.com/solardatabounty>.

5 Prize Administrator

The National Renewable Energy Laboratory (NREL) will support competitors by cultivating resources and building connections through the American-Made Network that enhance, accelerate, and amplify competitors' efforts.

NREL will also receive all data sets submitted during this competition, including metadata and specifications files, and will offer technical assistance during Stage 2. NREL will assess the submitted data and maintain the scores. Finally, NREL will support the infrastructure to share the winning time series publicly.

Any nonwinning data set from Stage 2 will not be shared publicly without the explicit consent and direction of the data set's owner.

6 Eligibility Requirements

To compete in the Solar Data Bounty Prize, competitors must comply with the following eligibility requirements. By uploading an Intent To Compete submission package, a competitor certifies that they are in compliance with these eligibility requirements. Eligibility is subject to verification before prizes are awarded. As soon as the prize administrator becomes aware that a competitor is not eligible to win the prize, the competitor may be disqualified. The competitor is the legal entity that is registered to compete in HeroX by their representative.

- Private entities (for-profits and nonprofits) and nonfederal government entities (such as states, counties, tribes, municipalities, and academic institutions) are eligible to compete, subject to the following requirements:
 - Academic institutions must be based in the United States.
 - Private entities must be incorporated in and/or maintain a primary place of business in the United States with majority domestic ownership and control. This includes U.S.-based subsidiaries of entities incorporated in foreign countries.
- Individuals and teams of individuals are not eligible to compete.
- Submissions to the prize should only concern PV systems installed in the United States.
- Current DOE employees, current DOE support service contractors, individuals who have been employed by DOE, or individuals working for DOE as a support service contractor within six months prior to the submission deadline of this contest are not eligible to participate in this program.
- Non-DOE federal entities are not eligible to win any prize in this program.
- Federal grantees may not use federal funds to develop submissions.
- Federal contractors may not use federal funds from a contract to develop a prize competition submission or fund efforts in support of a prize competition submission.
- A participating entity shall not be deemed ineligible because the entity used federal facilities or consulted with federal employees during a competition if the facilities and employees are made available to all entities participating in the competition on an equitable basis.
- Evaluation entities are ineligible to compete as prize participants.

- Individuals participating in a foreign government⁴ talent recruitment program sponsored by a country of risk⁵ and teams that include such individuals are not eligible to compete.
- Entities owned by, controlled by, or subject to the jurisdiction or direction of a government of a country of risk are not eligible to compete.
- Entities and individuals publicly banned from doing business with the U.S. government, such as entities and individuals debarred, suspended, or otherwise excluded from or ineligible for participating in federal programs, are not eligible to compete.
- DOE may conduct a review, using government resources, of the competitor and project personnel for foreign interference. The result of the risk review may result in the submission being deemed ineligible for the prize competition. This risk review, and potential determination of ineligibility, can occur at any time during the prize competition. The results of a risk review are not appealable.
- As part of teams' submission to this prize, teams will be required to sign the following statement:

I am providing this submission package as part of my participation in this awards program. I understand that in providing this submission to the Federal Government, I certify under penalty of perjury that the named competitor meets the eligibility requirements for this awards program and complies with all other rules contained in the Official Rules document. I further represent that the information contained in the submission is true and contains no misrepresentations. I understand false statements or misrepresentations to the Federal Government may result in civil and/or criminal penalties under 18 U.S.C. § 1001 and § 287.

- Only the Stage 1 winners will be eligible to compete and win cash awards in Stage 2 of the competition.

6.1 Number of Submission Packages Allowed

Multiple submissions to the same track are not allowed. Competitors are allowed only one submission for each of the two tracks (Track A and Track B.)

⁴ A foreign government talent recruitment program is defined as an effort directly or indirectly organized, managed, or funded by a foreign government to recruit science and technology professionals or students (regardless of citizenship or national origin, and whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to physically relocate to the foreign state for the above purpose. Some programs allow for or encourage continued employment at U.S. research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms, including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

⁵ Currently, the list of countries of risk includes Russia, Iran, North Korea, and China.

7 Program Goal Requirements

Only submissions relevant to the goals of this program are eligible to compete. DOE will review all submissions to ensure that the following statements are **true**:

- The submitted data and metadata are procured from a solar PV system, which may include components such as energy meters, environmental sensors, inverters, combiners, etc.
- The submitted data and metadata are procured from a solar PV system installed in the United States and its territories.
- The registered competitor has the right to manage the disposition of the submitted data, including its dissemination from a public website, without a fee.
- The submitted data are consistent with the operation of real-world PV systems.

8 Additional Requirements

Please read and comply with the additional requirements in [Appendix 1](#).

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

9 Rules

9.1 Introduction

The Solar Data Bounty Prize is a two-stage, two-track program with \$1,415,000 in cash prizes. This competition focuses on the following:

- Identifying high-quality time series data of significant length and adequate resolution from PV assets in the United States.
- Validating the metadata and completeness of such data sets.
- Rewarding the decision to make these data sets publicly available for the benefit of the solar industry and the R&D community.
- Providing a pathway to partnership in the PV Fleet Performance Data Initiative.⁶

Cash Prizes
<ul style="list-style-type: none">• Up to 25 anticipated winners in Stage 1 receive \$5,000.• Up to six anticipated winners in Track A, Stage 2 receive \$80,000.• Up to four anticipated runners-up in Track A, Stage 2 receive \$30,000.• Up to three anticipated winners in Track B, Stage 2 receive \$130,000.• Up to two anticipated runners-up in Track B, Stage 2 receive \$50,000.• Up to two \$40,000 bonus prizes will be given to two winners in Track A.• Up to two \$60,000 bonus prizes will be given to two winners in Track B.

The following rules are for potential and actual competitors in the Solar Data Bounty Prize.

9.2 Prizes To Win

The prize offers cash prizes of \$5,000 each for 25 anticipated winners in Stage 1; 15 prizes will be awarded to Track A participants, and 10 prizes will be awarded to Track B participants. In addition, the 25 winners will be eligible to compete in Stage 2 and will be offered the opportunity to join the PV Fleet Performance Data Initiative project to receive focused performance analysis by researchers at NREL.

In Track A of Stage 2, the prize offers ten cash prizes:

- \$80,000 to six anticipated winners
- \$30,000 to four anticipated runners-up.

In Track B of Stage 2, the prize offers five cash prizes:

- \$130,000 to three anticipated winners
- \$50,000 to two anticipated runners-up.

Finally, two bonus prizes of \$40,000 each will be offered to the winners and runners-up in Track A, and two bonus prizes of \$60,000 each will be offered to the winners and runners-up in Track B. These bonus prizes, if awarded, will be paid annually in six equal installments over six years.

⁶ <https://www.nrel.gov/pv/fleet-performance-data-initiative.html>

9.3 How To Enter

Competitors must submit an Intent To Compete package on HeroX by the submission deadline.

See [Section 4](#) (“Important Dates”) for information about submission deadlines and [Section 9.4](#) for more information on the overall prize process.

9.4 Prize Process

The prize requires the following steps:

1. **Enrollment (Stage 1)** – To sign up and prepare for the prize, competitors are asked to complete the following steps by **September 6, 2023, at 5 p.m. ET**:

1A: **Create a HeroX account** and follow the prize on HeroX for updates and notifications.

1B: **Submit an Intent To Compete package** via the HeroX platform before the registration deadline. The submission page can be accessed after creating an account on HeroX by clicking “Solve this Challenge” and then “Begin Entry” on the HeroX prize website. The package should include a cover page and documentation showing that the registered competitor has the right to share data originating from the PV system specified in the metadata, including its dissemination from a public website without a fee (see [Section 9.5.1](#)).

2. **Data submission (Stage 1)** – Only competitors who successfully complete the following steps are eligible to receive a prize:

- Upload a completed copy of the template for system specifications and time series metadata. The template is described in [Section 10](#) and is available to download from the “Resources” tab on the HeroX website for the prize.
- Upload a minimum of one month of irradiance data at a resolution of 15 minutes or less (i.e., resolutions of 15, 10, 5, etc. minutes are all acceptable) from the location of the solar asset entering the competition. Global horizontal irradiance (GHI) data are preferred, if available, but plane-of-array (POA) irradiance data will also be accepted. Data sets longer than one month are welcome but will not increase a competitor’s score in Stage 1.

3. **Evaluation (Stage 1)** – Competitors will be scored according to the following criteria (details in [Section 10](#)):

3A: **Metadata** – The content of the metadata in the template submitted to HeroX will be scored according to the formula in [Section 10.1.1](#). The template contains formulas that automatically calculate the score. This score will be identified as the basic score (B1).

3B: **Regional diversity** – Systems installed in the same U.S. territory or state will share a 20% bonus modifier. The actual value of the modifier will depend on the number of competing systems that are installed in that state or territory.

Example: In Stage 1, five systems ($j = 1, 2, \dots, 5$) enter from Oregon, whereas seven systems ($k = 1, 2, \dots, 7$) enter from Alabama. If their respective basic scores are $B1_j$ and $B1_k$, then their adjusted scores will be calculated as follows:

$[\text{Adjusted Score}]_j = (1 + 0.20/5) * B1_j$ (for each of the systems in Oregon)

$[\text{Adjusted Score}]_k = (1 + 0.20/7) * B1_k$ (for each of the systems in Alabama)

4. **Selection (Stage 1)** – The top 15 selected competitors from Track A and the top 10 selected competitors from Track B will be the winners of the prize in Stage 1.
5. **Announcement (Stage 1)** – Approximately two weeks after the submission deadline, the prize administrator expects to notify winners and will request the necessary information to distribute cash prizes. The prize administrator will then publicly announce winners.
6. **Enrollment (Stage 2)** – To sign up and prepare for Stage 2, Stage 1 winners are asked to complete the following steps **by the submission deadline**:

6A: **Submit an Intent To Compete Stage 2 package** via the HeroX platform before the registration deadline. Only Stage 1 winners will have access to the Stage 2 submission form, which will be available when the competitor is logged into their HeroX account. Only Stage 1 winners (as recognized in Step 4 above) are eligible to compete in Stage 2.

6B: **Elect whether to apply any of the anonymity waivers** in order to boost their basic score (see Step 8 below.)

7. **Time series data submission (Stage 2)** – All data sets should be submitted by **the data set ingestion deadline (see HeroX for important dates and deadlines)**. There will be two options for submitting time series data. Competitors can choose the most suitable option for them:
 - Upload the files containing the time series data that correspond to the metadata from Stage 1 to the location designated by the prize administrator, or
 - Supply the prize administrator with the credentials to a monitoring service where the prize administrator can access and copy the data corresponding to the metadata from Stage 1.

8. **Evaluation (Stage 2)** – Competitors will be scored according to the following criteria (details in [Section 10](#)):

8A: **Validated data** – The actual data submitted for evaluation in Stage 2 will be scored according to the method outlined in [Section 10.2](#). The result of this calculation is the validated score 1 (V1 score). The V1 score may be different from the basic score if the actual time series data do not fully correspond to the metadata submitted in Stage 1.

8B: **Anonymity waivers** – At the time of registration for Stage 2, competitors will have the opportunity to improve their score by waiving one or more confidentiality or anonymity features of the data set in case it is awarded one of the winner or runner-up prizes. Waiving all three anonymity features will effectively double the corresponding score.

- **System location** – The V1 score will be multiplied by 1.26 if competitors waive the precision limit for the system's published longitude and latitude. (The default precision limit scales with the size of the system, according to the table in [Appendix 2](#).)

- **Inverter and module metadata** – The V1 score will be multiplied by 1.26 if the system’s inverter and module metadata (technical specifications or make and model) are made publicly available.
- **Electric data** – The V1 score will be multiplied by 1.26 if the raw values of AC and DC time series are made publicly available ([see Section 9.5.5](#)).
- The score calculated after the application of the waivers is the validated score 2 (V2 score).
- The waivers can be applied consecutively.

Example: A competitor has agreed to waive (a) the precision limit for the system’s published coordinates and (b) the normalization of the AC and DC time series data. Their V2 score will be calculated as follows:

$$V2 \text{ Score} = [V1 \text{ Score}] * 1.26 * 1.26 = [V1 \text{ Score}] * 1.5876$$

8C: Data completeness – The supplied time series must have numerical values for all daytime timestamps. Daytime comprises all timestamps (at the supplied resolution) for which the solar elevation angle is higher than five degrees at the location of the system. A reference implementation of the solar position calculation (including elevation angle) is included in the `pvlib.solarposition`⁷ function of `pvlib-python`. The data completeness will be calculated as the fraction of valid daytime timestamps—called the completeness factor (see [Section 10.2.3](#))—and will be used to calculate the validated score 3 (V3 score) as follows:

$$\text{Completeness Factor} = [\text{Valid Daytime Timestamps}] / [\text{All Daytime Timestamps}]$$

$$V3 \text{ Score} = [\text{Completeness Factor}] * [V2 \text{ Score}]$$

8D: Regional diversity – Systems installed in the same U.S. territory or state will share a 20% bonus modifier. The actual value of the modifier will depend on the number of competing systems that are installed in that state or territory.

Example: In Stage 2, five systems ($j = 1, 2, \dots, 5$) enter from Texas, whereas seven systems ($k = 1, 2, \dots, 7$) enter from Massachusetts. If their respective V3 scores are $V3_j$ and $V3_k$, then their final scores will be calculated as follows:

$$[\text{Final Score}]_j = (1 + 0.20/5) * V3_j \quad (\text{for each of the systems in Texas})$$

$$[\text{Final Score}]_k = (1 + 0.20/7) * V3_k \quad (\text{for each of the systems in Massachusetts})$$

9. **Selection (Stage 2)** – **The Judge may select up to six of the top-ranking competitors from Track A and up to three of the top-ranking competitors from Track B as winners of the Prize.**

The Judge may select up to three competitors from Track A and up to two competitors from Track B as runners up.

⁷ <https://pvlib-python.readthedocs.io/en/stable/modules/pvlib/solarposition.html>

The total number of winners and runners up may depend on the number of competitors and the range of scores in each Track.

10. **Bonus (Stage 2)** – The top two competitors in each track will be offered the opportunity to share updated time series from their winning system for another six years, under the same conditions of anonymity as applied to the winning system. Should they accept, they will become eligible for the bonus prize of \$40,000 in Track A and \$60,000 in Track B, payable in six installments. Should they refuse, the offer will be made to the next ranked competitor in the track until the last runner-up.

Payment of the bonus prize is contingent on the updated data containing the same list of time series data as the winning data set, at the same temporal resolution, and with a completeness factor no less than 95% of the completeness factor for the winning data set.

11. **Announcement (Stage 2)** – DOE expects to announce the Stage 2 winners approximately one month after the submission and successful ingestion of the data sets.
12. **Public data sets** – The data sets submitted by the prize winners are anticipated to become publicly available in the final quarter of the 2023 calendar year. By default, the winning data sets will be published with the applied anonymization features (system location, inverter and module metadata, and electric data), unless their owners elected to waive one or more of those features during their original Stage 2 submission. DOE will make the announcement and provide instructions for access to the data sets at an appropriate time.

9.5 What To Submit

Competitors will need to submit the following:

Item	Content	Will Be Made Public	Scored
Intent To Compete HeroX Package	Cover page	No	No
	Evidence of PV system ownership or authorization to access and share data from the system. See Section 9.5.1 for details.	No	No
System Metadata and Specifications	See Section 9.5.2 for details.	No	Yes
Irradiance Timeseries Data	See Section 9.5.3 for details.	Yes	No

Stage 1 winners who want to compete in Stage 2 will need to complete a second Intent To Compete HeroX package after winning Stage 1:

Item	Content	Will Be Made Public	Scored
Intent To Compete HeroX Package for Stage 2	Cover page	No	No
Anonymization Waiver Form	Selected waivers (if any) to data anonymization (see Section 9.5.5)	No	Yes
PV Timeseries Data	See Section 9.5.6 for details.	Yes, only if competitor wins a prize	Yes

Note: Portions of the submission package are made available to the public. These have been denoted as such, and DOE does not intend to release the remaining parts of the submission to the public. See [Appendix 1](#) for additional details.

All documents, except for the metadata and the time series data, must be uploaded as a PDF.

9.5.1 Intent To Compete HeroX Package (Stage 1)

Competitors are required to submit the following items for Stage 1:

Cover Page – List basic information about your submission.
<ul style="list-style-type: none">• Nickname of PV system from which data will be submitted• The entity that owns the PV system• The state where the PV system is located• Address, city, state, and nine-digit zip code of the competitor (the legal entity competing in the prize)• The registrant’s affiliation with the entity that owns the PV system.

Evidence of PV System Ownership or Authorization To Access and Share Data From the System
Provide documentation showing that the registered competitor has the right to share data originating from the PV system specified in the metadata. This documentation should be a signed letter from an officer of the corporation that owns the system clearly stating that the signatory has the authority to share the data and is giving permission to share the data in accordance with the rules of this prize.

9.5.2 System Metadata and Specifications (Stage 1)

Competitors are required to submit a completed template in Excel (.xlsx) or OpenDocument spreadsheet (.ods) format. The template contains protected cells with formulas calculating the basic score of the submission. Details are included in [Section 10](#). Although most types of time series metadata are optional (and, if present, will increase the basic score), there are some mandatory system specifications and a minimum set of time series metadata:

- Mandatory PV system specifications:
 - System nickname⁸
 - System location with a precision of four decimal points (latitude and longitude)
 - System size in kW_{dc} and kW_{ac}
 - System commercial operation date
 - Tracking type (list all that apply)
 - POA or tracking axis orientation (list all that apply)
 - Mounting type (list all that apply)
 - Solar cell technology (e.g., a-Si, mc-Si, sc-Si, CdTe, CIGS—list all that apply).
- Minimum set of time series metadata:
 - POA irradiance (any sensor type)
 - Ambient temperature
 - Output power at the inverter
 - Output power at the revenue-grade meter.
- Other minimum requirements:

⁸ Consider a name that is compatible with your choices regarding the anonymity of the data set, should you win a prize.

- A record of at least five years (1,826 calendar days)
- A temporal resolution of 15 minutes or less for all time series.

Submissions that don't meet the minimum and mandatory requirements above will not be eligible to win a prize.

9.5.3 Irradiance Time Series Data (Stage 1)

Competitors are required to submit, at a minimum, one month of irradiance data collected at the location of the system described in the metadata template. Longer (i.e., multi-month) time series are welcome. The data can be either GHI, which is the preferred orientation, or POA irradiance. The competitor may choose any full calendar month(s) since the commercial operation date of the system. The acceptable temporal resolution is 15 minutes or less.

Please save the irradiance values in a CSV format, with two columns. The basic template for the file is shown below:

Timestamp (local date and time in ISO 8601 format, example given for EST time zone)	Irradiance (watts per m ²)
...	...
2017-03-05T07:35:00-05:00	435.2
2017-03-05T07:40:00-05:00	453.1
...	...

If the file contains GHI values, save the file as `GHI-System_Nickname.csv`.

If the file contains POA irradiance values, save the file as `POA-System_Nickname.csv`.

Upload the file to the HeroX website.

9.5.4 Intent To Compete HeroX Package (Stage 2)

Competitors are required to submit the following items for Stage 2:

Cover Page – List basic information about your submission.
<ul style="list-style-type: none"> • Nickname of PV system from which data will be submitted • The entity that owns the PV system • The state where the PV system is located • Address, city, state, and nine-digit zip code of the competitor (the legal entity competing in the prize) • The registrant's affiliation with the entity that owns the PV system.

9.5.5 Anonymization Waiver Form (Stage 2)

By default, winning data sets will be published with certain anonymization features. These features are:

- **System location:** The precision of the system's published location is reduced according to the size of the system. A detailed formula is listed in [Appendix 2](#).
- **Inverter and module metadata:** The specifications and make and model of the inverter and the PV modules are not made public.
- **Electric data:** The published values of electric output (current and power) from PV modules, combiners, inverters, and revenue-grade meters are normalized (i.e., divided) by their respective DC or AC capacity value.

Competitors have the option of waiving certain or all default anonymization features. The results of waiving any of these features on winning data sets will be the following:

- **System location:** The waiver will result in making the system's location public using the nominal precision (a minimum of four decimal points).
- **Inverter and module metadata:** The waiver will result in the disclosure of the make and model of the inverters and PV modules or of their basic specifications (for inverters: AC capacity, maximum DC current, and minimum DC voltage; for PV modules: nameplate capacity, I_{sc} , V_{oc} , temperature coefficient of maximum power, and solar cell technology).
- **Electric data:** The waiver will result in the disclosure of the raw values of electric output.

Competitors may indicate on their Intent To Compete HeroX online form which, if any, of the waivers they would like to be applied to their data sets. Applying waivers will boost the validated score 1 (V1 score) of the uploaded and evaluated data by the factors listed in [Section 9.4](#).

9.5.6 PV System Time Series Data (Stage 2)

Competitors are required to supply the time series data described in the metadata template used to win a prize in Stage 1. The data can be supplied to the prize administrator in one of two ways:

- Upload the files containing the time series data to the location designated by the prize administrator. The data must be formatted according to the templates provided under the "Resources" tab on the web page of the prize. Alternatively,
- Supply the prize administrator with the credentials to a monitoring service where the prize administrator can access and copy the time series data.

The competitor will select their desired option, and the administrator will contact the competitor to help with the implementation of their choice.

10 How We Score

10.1 Stage 1

10.1.1 Basic Score

The basic score reflects the richness of the metadata submitted in Stage 1. In general, a higher basic score corresponds to more channels of time series data, longer data sets, and higher temporal resolution. Each channel is weighted in points according to an estimate of its significance in modeling the performance of the system. The points scored by each type of channel described in the metadata template are calculated using the following formula:

$$\text{Channel-Type Points} = [\text{Number of Channels}] * [\text{Weight of Channel}] * \\ ([\text{Length of Record in Days}] / 1826^9) * \\ (15^{10} / [\text{Temporal Resolution in Minutes}])$$

The basic score is the sum of the channel-type points across all channel types.

To participate in Stage 1, competitors will need to complete a metadata template provided in the Resources tab of the HeroX website. This template will be used to calculate the basic score. In the template, competitors will enter values into the yellow cells, and the white cells will not be editable. The red font signifies the minimum set of data required to qualify for the prize.

Below is an example of a hypothetical 3-MW_{dc} fixed-tilt, ground-mounted system, which has been monitored for over 2,000 days, with temporal resolutions ranging from 5 to 10 minutes. The system is equipped with the following sensors:

- 21 irradiance sensors:
 - 3 channels of GHI data from Class¹¹ A sensors
 - 5 channels of GHI data from Class B sensors
 - 1 channel of direct normal irradiance (DNI) data from a pyrheliometer
 - 2 channels of POA irradiance data from Class A sensors
 - 10 channels of POA irradiance data from sensors that are either Class C or unclassified.¹²
- 5 temperature sensors:
 - 2 channels of ambient temperature data
 - 3 channels of back-of-module temperature data.
- 2 wind speed and direction sensors
- 10 inverter temperature sensors
- 10 tracker inclinometers

⁹ Minimum number of days in a five-year timespan

¹⁰ Lowest acceptable temporal resolution in minutes

¹¹ Pyranometer classification according to ISO 9060 standard

¹² Reference cells are unclassified sensors for the purposes of this prize.

- 10 inverters with two DC inputs each
- 20 DC combiners with 16 strings each
- 1 revenue-grade meter.

System Nickname	System Latitude	System Longitude	System Size (kW _{dc})	System Size (kW _{ac})	Commercial Operation Date
Fidgety Fox	40.1234°N	90.5678° W	3,000	2,000	2016-01-01
Tracking Type or Fixed Tilt	Azimuth(s)	Tilt Angle(s)	Mounting Type(s)	Cell Tech	
Fixed Tilt	180°	20°	Ground	sc-Si	
BASIC SCORE (total points):					3036
Type of Data	# of Channels	Channel Weight	Length of Shareable Record (days)	Time Res. (min)	Points (rounded up to the next integer)
					(# channels * channel weight) * (# days / 1826) * (15 / time resolution)
GHI (Class A)	3	5	2000	10	25
GHI (Class B)	5	2	2000	5	33
DNI (Class A)	1	5	1000	10	4
POA Irradiance (Class A)	2	5	2000	5	33
POA Irradiance (lower than Class B)	10	1	2000	10	16
Ambient Temperature	2	1	2000	5	7
Back-of-Module Temperature	3	2	2000	5	20

Wind Speed	2	2	2000	5	13
Wind Direction	2	2	2000	5	13
Inverter Temperature	10	2	2000	5	66
Tracker Inclinometer	10	0.1	2000	5	3
Inverter DC Input (amps)	20 (e.g., 10 inverters with two DC inputs each)	2	2000	5	131
Inverter DC Input (volts)	20	2	2000	5	131
Inverter AC Output (amps)	10	1	2000	5	33
Inverter AC Output (volts)	10	1	2000	5	33
Inverter AC Output (kW)	10	1	2000	5	33
Inverter AC Output (power factor)	10	1	2000	5	33
Combiner DC Input (amps)	320 (e.g., 20 combiners with 16 strings each)	2	2000	5	2103
Combiner DC Output (amps)	20	2	2000	5	131
Combiner DC Output (volts)	20	2	2000	5	131
Revenue-Grade Meter AC Output (amps)	1	2	2000	5	7
Revenue-Grade Meter	1	2	2000	5	7

AC Output (volts)					
Revenue-Grade Meter AC Output (kW)	1	5	2000	5	16
Revenue-Grade Meter AC Output (Hz)	1	2	2000	5	7
Revenue-Grade Meter AC Output (power factor)	1	2	2000	5	7

10.1.2 Adjusted Score

Systems competing in Stage 1 that are installed in the same U.S. territory or state will share a 20% bonus pool. If a state or territory is represented by only one system, then that system's scores will get the full bonus. In general, if N systems are installed in the same state, then each of those systems will share 1/N of the bonus.

The adjusted score for each of the competing systems installed in the i^{th} U.S. territory or state will be calculated as follows:

$$[\text{Adjusted Score}]_m = [1 + 0.20 / N_i] * [\text{Basic Score}]_m$$

where

- N_i is the number of systems competing in this prize that are installed in the i^{th} U.S. territory or state.
- $m = 1, 2, \dots, N_i$.

The adjusted score will be used to rank the competitors in Stage 1.

10.2 Stage 2

10.2.1 V1 Score

The V1 score is calculated using the same methodology as the basic score, but it pertains to the time series data uploaded in Stage 2. If the uploaded data set corresponds exactly to the metadata in the template from Stage 1 (i.e., it contains from the same type and number of channels with the same temporal length and resolution as the self-reported metadata), then the two scores will be identical. If there are any discrepancies, these will be reflected in the V1 score.

For example, if the metadata in Stage 1 described five temperature sensors, but the actual time series data uploaded in Stage 2 contains information from only four sensors, or if the Stage 1 reported

resolution was 5 minutes and the actual resolution is 10 minutes, then the V1 score will be lower than the basic score.

10.2.2 V2 Score

The V2 score reflects the effect of waiving one or more anonymity or confidentiality features. There are three waivers—one for the published precision of the geographical position, one for the published information about the inverter and modules installed in the system (technical specifications or make and model), and one for the published values of AC and DC time series (raw values of the quantities measured).

For each waiver agreed to by the competitor, the competitor’s score will be multiplied by a factor of 1.26. The table below shows how the V2 score is calculated based on the number of waivers applied.

Please recall that the competitor has the opportunity to choose which waivers will be applied to their data during the registration for Stage 2 ([Section 9.5](#)).

Number of Waivers Applied	V2 Score =
0	V1 score
1	[V1 Score] * 1.26
2	[V1 Score] * 1.5876
3	[V1 Score] * 2.0004

10.2.3 V3 Score

The V3 score accounts for the completeness of the time series uploaded in Stage 2. Each time series uploaded will be checked for missing timestamps and invalid timestamps (i.e., timestamps with missing or nonnumeric values) during daytime. Daytime comprises all timestamps (at the supplied resolution) for which the solar elevation angle is higher than five degrees at the location of the system. The completeness will be calculated as the fraction of valid daytime timestamps—called the completeness factor—and will be used to calculate the V3 score as follows:

$$\begin{aligned} \text{V3 Score} &= [\text{Valid Daytime Timestamps}] / [\text{All Daytime Timestamps}] * [\text{V2 Score}] = \\ &= [\text{Completeness Factor}] * [\text{V2 Score}] \end{aligned}$$

10.2.4 Final Score

The final adjustment in the score is based on the regional diversity of the competitors. Systems competing in Stage 2 that are installed in the same U.S. territory or state will share a 20% bonus pool. If a state or territory is represented by only one system, then that system’s scores will get the full bonus. In general, if N systems are installed in the same state, then each of those systems will share 1/N of the 20% bonus.

The final score for each of the competing systems installed in the i^{th} U.S. territory or state will be calculated as follows:

$$[\text{Final Score}]_m = [1 + 0.20 / N_i] * [\text{V3 Score}]_m$$

where

- N_i is the number of systems competing in this prize that are installed in the i^{th} U.S. territory or state.
- $m = 1, 2, \dots, N_i$.

Appendix 1: Additional Terms and Conditions

A1.1 Universal Prize Requirements

Each competitor's submission for the Solar Data Bounty Prize is subject to the following terms and conditions:

- You must post the final content of your submission by the deadlines established by the prize administrator/U.S. Department of Energy (DOE). Late submissions or any other form of submission may be rejected.
- All submissions that you wish to protect from public disclosure must be marked according to the instructions in [Section A.10](#). Unmarked or improperly marked submissions will be deemed to have been provided with unlimited rights and may be used in any manner and for any purpose whatsoever.
- You must include all the required elements in your submission. The prize administrator may disqualify your submission after an initial screening if you fail to provide all required submission elements. Competitors may be given an opportunity to rectify submission errors due to technical challenges.
- Your submission must be in English and in a format readable by Microsoft Word, Microsoft Excel, or Adobe PDF. Scanned handwritten submissions will be disqualified.
- Submissions will be disqualified if they contain any matter that, in the sole discretion of DOE or the National Renewable Energy Laboratory (NREL), is indecent, obscene, defamatory, libelous, and/or lacking in professionalism, or demonstrates a lack of respect for people or life on this planet.
- If you click "Accept" on the HeroX platform and proceed to register for any of the prizes described in this document, these rules will form a valid and binding agreement between you and DOE and are in addition to the existing HeroX Terms of Use for all purposes relating to these contests. You should print and keep a copy of these rules. These provisions only apply to the prize described here and no other prize on the HeroX platform or anywhere else.
- The prize administrator, when feasible, may give competitors an opportunity to fix nonsubstantive mistakes or errors in their submission packages.

A1.2 Verification for Payments

The prize administrator will verify the identity and role of all competitors before distributing any prizes. Receiving a prize payment is contingent upon fulfilling all requirements contained herein. The prize administrator will notify winning competitors using provided email contact information for the entity that was responsible for the submission. Each competitor will be required to sign and return to the prize administrator, within 30 days of the date on the notice, a completed NREL Request for ACH Banking Information form and a completed W-9 form (<https://www.irs.gov/pub/irs-pdf/fw9.pdf>). In the sole discretion of the prize administrator, a winning competitor will be disqualified from the competition and receive no prize funds if (1) the person/entity does not respond to notifications, (2) the person/entity fails to sign and return the required documentation within the required time period, (3) the notification is returned as undeliverable, or (4) the submission or person/entity is disqualified for any other reason.

In the event of a dispute as to any registration, the authorized account holder of the email address used to register will be deemed to be the competitor. The authorized account holder is the natural person or legal entity assigned an email address by an internet access provider, online service provider, or other organization responsible for assigning email addresses for the domain associated with the submitted address. All competitors may be required to show proof of being the authorized account holder.

A1.3 Teams and Single-Entity Awards

The prize administrator will award a single dollar amount to the business entity designated by the primary submitter, whether consisting of a single entity or multiple entities. The winning business entity is solely responsible for allocating any prize funds among its member competitors as they deem appropriate.

A1.4 Submission Rights

By making a submission and consenting to the rules of the contest, a competitor is granting to DOE, the prize administrator, and any other third parties supporting DOE in the contest a license to display publicly and use the parts of the submission that are designated as “public” for government purposes. This license includes posting or linking to the public portions of the submission on the prize administrator or HeroX applications, including the contest website, DOE websites, and partner websites, and including the submission in any other media worldwide. The submission may be viewed by DOE, the prize administrator, and judges and reviewers for purposes of the contests, including but not limited to screening and evaluation purposes. The prize administrator and any third parties acting on their behalf will also have the right to publicize competitors’ names and, as applicable, the names of competitors’ team members and organization who participated in the submission on the contest website indefinitely.

By entering, the competitor represents and warrants that:

1. The competitor’s entire submission is an original work by the competitor, and the competitor has not included third-party content (such as writing, text, graphics, artwork, logos, photographs, likenesses of any third party, musical recordings, clips of videos, television programs, or motion pictures) in or in connection with the submission, unless (i) otherwise requested by the prize administrator and/or disclosed by the competitor in the submission, and (ii) the competitor has either obtained the rights to use such third-party content, or the content of the submission is considered to be in the public domain without any limitations on use.
2. Unless otherwise disclosed in the submission, the use thereof by the prize administrator, or the exercise by the prize administrator of any of the rights granted by the competitor under these rules, does not and will not infringe on or violate any rights of any third party or entity, including, without limitation, patent, copyright, trademark, trade secret, defamation, privacy, publicity, false light, misappropriation, intentional or negligent infliction of emotional distress, confidentiality, or any contractual or other rights.
3. All persons who were engaged by the competitor to work on the submission or who appear in the submission in any manner have:
 - a. Given the competitor their express written consent to submit the submission for exhibition and other exploitation in any manner and in any and all media, whether now existing or hereafter discovered, throughout the world.
 - b. Provided written permission to include their name, image, or pictures in or with the submission (or, if a minor who is not competitor’s child, competitor must have the permission of the minor’s parent or legal guardian), and the competitor may be asked by the prize administrator to provide permission in writing.
 - c. Not been and are not currently under any union or guild agreement that results in any ongoing obligations resulting from the use, exhibition, or other exploitation of the submission.
4. The individual providing the submission for consideration in this competition has the necessary authority, permission, and support of the organization that has rights to all submission content.

A1.5 Copyright

Each competitor represents and warrants that the competitor is the sole author and copyright owner of the submission; that the submission is an original work of the applicant or that the applicant has acquired sufficient rights to use and to authorize others, including DOE, to use the submission, as specified throughout the rules; that the submission does not infringe upon any copyright or upon any other third-party rights of which the applicant is aware; and that the submission is free of malware.

A1.6 Prize Subject to Applicable Law

This competition is subject to all applicable federal laws and regulations. Participation constitutes each participant's full and unconditional agreement to these official rules and administrative decisions, which are final and binding in all matters related to the competition. This notice is not an obligation of funds; the final awards are contingent upon the availability of appropriations.

A1.7 Resolution of Disputes

DOE is solely responsible for administrative decisions, which are final and binding in all matters related to the contest.

Neither DOE nor the prize administrator will arbitrate, intervene, advise on, or resolve any matters between team members or among competitors.

A1.8 Publicity

The winners of these prizes (collectively, "Winners") will be featured on DOE's and NREL's websites.

Except where prohibited, participation in the competition constitutes each winner's consent to DOE's and its agents' use of each winner's name, likeness, photograph, voice, opinions, and/or hometown and state information for promotional purposes through any form of media, worldwide, without further permission, payment, or consideration.

A1.9 Liability

Upon registration, all participants agree to assume any and all risks of injury or loss in connection with or in any way arising from participation in this contest. Upon registration, except in the case of willful misconduct, all participants agree to and, thereby, do waive and release any and all claims or causes of action against the federal government and its officers, employees, and agents for any and all injury and damage of any nature whatsoever (whether existing or thereafter arising, whether direct, indirect, or consequential, and whether foreseeable or not) arising from their participation in the contest, whether the claim or cause of action arises under contract or tort.

In accordance with the delegation of authority to run this contest delegated to the judge responsible for this prize, the judge has determined that no liability insurance naming DOE as an insured will be required of competitors to compete in this competition, per 15 U.S.C. § 3719(i)(2). Competitors should assess the risks associated with their proposed activities and adequately insure themselves against possible losses.

Competitors, by competing, agree to indemnify the federal government and the prize administrator against third-party claims for damages arising from or related to prize competition activities.

A1.10 Records Retention and Freedom of Information Act (FOIA)

All materials submitted to DOE as part of a submission become DOE records and are subject to the Freedom of Information Act. The following applies only to portions of the submission not designated as public information in the instructions for submission. If a submission includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the application. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act. Without assuming any liability for inadvertent disclosure, DOE will seek to limit disclosure of such information to its employees and to outside reviewers when necessary for review of the application or as otherwise authorized by law. This restriction does not limit the government's right to use the information if it is obtained from another source.

Submissions containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

The submission must be marked as follows and must identify the specific pages containing trade secrets or confidential, proprietary, or privileged information: "Notice of Restriction on Disclosure and Use of Data: Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. [End of Notice]"

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: "Contains Trade Secrets, Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure." In addition, each line or paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets.

Competitors will be notified of any Freedom of Information Act requests for their submissions in accordance with 29 C.F.R. § 70.26. Competitors may then have the opportunity to review materials and work with a Freedom of Information Act representative prior to the release of materials. DOE does intend to keep all submission materials private except for those materials designated as "will be made public." Further, data submitted by competitors that are selected as winners of any prize in Stage 2 of this competition will be made public. By entering Stage 2, competitors consent to their data being released to the public if they are selected as winners.

A1.11 Privacy

If you choose to provide HeroX with personal information by registering or completing the submission package through the contest website, you understand that such information will be transmitted to DOE and may be kept in a system of records. Such information will be used only to respond to you in matters regarding your submission and/or the contest unless you choose to receive updates or notifications about other contests or programs from DOE on an opt-in basis. DOE and NREL are not collecting any information for commercial marketing.

A1.12 General Conditions

DOE reserves the right to cancel, suspend, and/or modify the competition, or any part of it, at any time. If any fraud, technical failures, or any other factor beyond DOE's reasonable control impairs the integrity or proper functioning of the competition, as determined by DOE in its sole discretion, DOE may cancel or modify the competition.

Although DOE indicates that it will select up to several winners for the competition, DOE reserves the right to only select competitors that are likely to achieve the goals of the prize. If, in DOE's determination, no competitors are likely to achieve the goals of the prize, DOE will select no competitors to be winners and will award no prize money.

ALL DECISIONS BY DOE ARE FINAL AND BINDING IN ALL MATTERS RELATED TO THE COMPETITION.

A1.13 Program Policy Factors

While the scores of the expert reviewers will be carefully considered, it is the role of the prize judge to maximize the impact of the prize funds. Some factors outside the control of competitors and beyond the independent expert reviewers' scope of review may need to be considered to accomplish this goal. The following is a list of such factors. In addition to the reviewers' scores, the below program policy factors may be considered in determining winners:

- Whether a project or group of projects represent a diversity of technical approaches and methods under this competition or the overall program.
- It may be desirable to select different kinds and sizes of organizations for award in order to provide a balanced programmatic effort and a variety of technical perspectives under this competition or the overall program. For example, it may be desirable to select a project or group of projects that exhibit team member diversity, with participants including but not limited to those from disadvantaged communities.
- Whether a project or group of projects with a broad or specific geographic distribution and potential economic impact under this competition or the overall program.
- Whether the use of additional DOE funds and provided resources are nonduplicative and compatible with the stated goals of this program and DOE's mission generally.
- The degree to which the submission exhibits technological or programmatic diversity when compared to the existing DOE project portfolio and other competitors.
- The degree to which the submission is likely to lead to increased employment and manufacturing in the United States or provide other economic benefits to U.S. taxpayers.
- The degree to which the submission will accelerate transformational technological, financial, or workforce advances in areas that industry by itself is not likely to undertake because of technical or financial uncertainty.
- The degree to which the submission supports complementary DOE-funded efforts or projects, which, when taken together, will best achieve the goals and objectives of DOE.
- The degree to which the submission expands DOE's funding to new competitors and recipients who have not been supported by DOE in the past.
- The degree to which the submission enables new and expanding market segments.
- Whether the project promotes increased coordination with nongovernmental entities toward enabling a just and equitable clean energy economy in their region and/or community.

A1.14 Return of Funds

As a condition of receiving a prize, competitors agree that if the prize was awarded based on fraudulent or inaccurate information provided by the competitor to DOE, DOE has the right to demand that any prize funds or the value of other noncash prizes be returned to the government.

A1.15 Definitions

Prize administrator means both the Alliance for Sustainable Energy, operating in its capacity under the Management and Operating Contract for NREL, and SETO. When the prize administrator is referenced in this document, it refers to staff from both the Alliance for Sustainable Energy and SETO. Ultimate decision-making authority regarding competition matters rests with the director of SETO.

Judge is the DOE official who makes the final decision of the winners and runners-up, taking into consideration total scores and the program policy factors listed in [Appendix 1](#).

Competitor is an organization that registers to compete in the prize and submits the required items to be considered eligible for a cash prize.

Appendix 2: Location-Masking Formula

This table shows the rounding that will be used to obfuscate the location of a prize-winning PV system as a function of its size. This applies to prize-winning systems **without** a location anonymization waiver.

Table 1. Examples of the precision with which the location of winning systems will be published, for various system size ranges. Exact location of hypothetical winning system: 34.4662°N, 117.5828°W.

Size Range (kW _{dc})	Published Precision	Example	Rounding Action
100–1,000	2 decimals	34.47°N, 117.58°W	Round to nearest second decimal degree
1,001–5,000	1.5 decimals	34.45°N, 117.60°W	Round to nearest 0.05 decimal degree
5,001–20,000	1 decimal	34.5°N, 117.6°W	Round to nearest first decimal degree
>20,000	0.5 decimals	34.5°N, 117.5°W	Round to nearest 0.5 decimal degree
>100,000	0 decimals	34°N, 118°W	Round to nearest integer degree

###

This is the end of the rules document; thank you for reading.