Pacific Northwest NATIONAL LABORATORY

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Energy Storage Participation Algorithm Competition Overview

Market simulation, divisions, stages, storage attributes, and scoring

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Abstract

The Energy Storage Participation Algorithm Competition (ESPA-Comp), a Laboratory Funded Research and Development (LDRD) project at Pacific Northwest National Laboratory, aims to assess the performance of participants' battery storage offer algorithms on their ability to maximize the value of battery storage resources under three different market designs: two-settlement, multi-settlement, and rolling horizon forward markets. This document describes the overall design of the competition at a high level.

Contents

1.0 Introduction

Energy storage technologies will play a critical role in providing reliable and low cost electricity in a decarbonized world. However, optimizing energy storage resources in wholesale electricity markets is a complex task, requiring sophisticated algorithms to predict electricity prices and account for the energy storage technology's physical constraints. The Energy Storage Participation Algorithm Competition (ESPA-Comp) aims to assess the performance of participants' battery storage offer algorithms on their ability to maximize the value of battery storage resources under three different market designs: two-settlement, multi-settlement, and rolling horizon forward markets. Market designs differ in when each market clearing will occur, the market time horizon, the duration of trading intervals and the settlement type of each interval.

The topology of the simulation is a zonal topology comprised of 38 balancing authorities (BAs) in the Western Interconnection (WI). The simulation will have three different high-renewables scenarios designed to reflect summer, shoulder (spring/fall), and winter seasons to gauge battery storage performance under realistic high-renewables grid conditions. To simulate realistic weather patterns and load uncertainty, Monte Carlo simulations will be implemented.

Participants will develop and submit algorithms that generate strategic offer curves, considering market competition, network congestion, and load and weather uncertainty. ESPA-Comp challenges participants to decide how to best operate their battery storage resource according to the incentives offered under each market design in order to maximize profitability in the simulation. This document describes the overall design of the competition at a high level.

1.1 Motivation

Existing electricity market simulation tools have fundamental limitations for making market design assessments. Production cost models assume perfect competition, limiting our ability to measure inefficiencies – for example, strategic behavior among participants. Game theoretic and equilibrium models – while allowing for strategic interactions – often employ simplifying assumptions, such as perfect information, that depart from real-world complexities of electricity markets. Further, models which allow for imperfect competition pick and choose specific market imperfections to include, reducing the effectiveness of potential reforms. Agent-based simulations can better reflect real world systems through detailed modeling of the interactions and interdependencies among market participants, but outcomes may be subject to manipulation from the modeler.

To address these limitations, the ESPA-Comp market simulation is motivated by the field of experimental economics, which uses real people and real monetary incentives to assess the efficacy of market mechanisms to establish efficient prices and achieve desired policy goals (Plott and Smith, 2008). Experimental methods improve on existing electricity market simulation tools by allowing for high-fidelity modeling of the market design, realistic agent behavior that is untouched by the modeler, and a consistent framework for assessing potential reforms.

The ESPA-Comp market simulation is further motivated by recent advances in optimization and artificial intelligence and machine learning (AI/ML). Unlike previous economic experiments – which can be expensive to run and take a long time to complete – ESPA-Comp's use of user-submitted algorithms expedites the time it takes to run experiments, allowing for a wide range of grid scenarios including deep decarbonization and the impacts of extreme weather events.

ESPA-Comp's detailed market clearing procedures allow both the physics of power delivery and detailed electricity market policies to be modeled in a self-contained simulation platform, resulting in a higher degree of accuracy than previous economic experiments with highly simplified networks and stylized electricity market policies.

1.2 Roadmap

2.0 provides a high level overview of the ESPA-Comp market simulation and a general process flow for registering and participating in the competition. 3.0 discusses each market design (division) and the market's protocols (offer format, clearing frequency, and forward horizon). **Error! Reference source not found.** describes the types of scenarios that will be tested. Each group of scenarios comprises a "stage" of the competition with slightly different resource portfolios. 5.0 provides a summary of the system resources in each stage, including a capacity share of each resource type. 6.0 provides an overview of the electric topology utilized in this competition. 7.0 discusses the wind, solar, and load uncertainties used in the market simulation. 8.0 provides and overview of scoring and awards.

2.0 Market Simulation

ESPA-Comp relies on a core market simulation to test to effectiveness of algorithms submitted by competitors. Several key aspects of the ESPA-Comp market simulation should be considered by the competitors:

- **Market Clearing:** The market is cleared using the general market clearing optimization model outlined in the Market Formulations document. The general market clearing optimization model is a security constrained unit commitment (SCUC) model. The market model can be instantiated in several different ways, in particular using different time scales, and these different instantiations along with individual resource operation models can be solved in sequence to simulate the ongoing workings of an electricity market under various market rules and procedures including the typical two-settlement day ahead and real time market, a multi-settlement intra-day market, and a continuous settlement rolling horizon forward market. These market clearing designs (divisions) and market protocols (offer format, clearing frequency, and forward horizon) are discussed in more detail in Section 3.0.
- **Battery Storage Device:** Each competitor in ESPA-Comp will control a single Lithium Ion battery storage resource. The resource's available state-of-charge, power conversion efficiency, operating temperature, and degradation costs are simulated by a physics-based model (an equivalent circuit model). The specific formulation of the battery storage charge reservoir model is available in the Market Formulations document. An overview of the battery storage device capacity and anticipated resource mix (including competitor battery storage device capacity) is available in Section 5.0.
- **Offer Generation:** Competitors must design their algorithms to generate valid offers for their storage devices. While there are no restrictions on the methodology used, the resulting storage offers must adhere to the offer requirements specified by the market design. The two-settlement and multi-settlement divisions allow storage offers that consider state-of-charge management while the rolling horizon forward market allows storage offers that are convex and time-separable. Offer requirements are discussed in more detail in the Market Formulations Document as well as the Participation Manual. A high level overview of offer requirements is provided in Section 3.0.

- **Strategic Freedom:** Competitors may pursue any strategy they desire. They may strive to accurately estimate their opportunity costs, attempt to exercise market power, or adopt any approach in between.
- **Market Competition:** All competitors will participate in the same market simulation and may need to consider how other storage resources will be offered into the market. Each market participant will receive the uniform market clearing price (i.e., Locational Marginal Price, or LMP) from the result of each sealed-bid auction.
- **Resource Bidding:** Conventional generators, renewable generators, and demand will bid according to their static resource attributes, forecast data (if applicable), and availability, as outlined in the Market Formulations document.
- **Virtual Bidding:** Competitors have the option to utilize virtual bidding to assist in hedging their resource's profitability, if desired. Market participants will receive (or pay) the locational marginal price for the amount of virtual supply (or demand) cleared in a forward market. The virtual bid must be zeroed out for the bid's physical dispatch. As an example, if a market participant makes an offer to provide virtual supply (an energy increment) that is cleared in forward periods, then it must purchase its forward position in the real-time market (i.e., it becomes a demand). Conversely, if an energy decrement bid is cleared to purchase energy in forward periods, then the market participant must re-sell that energy back into the real-time market (i.e., it becomes a supplier).

A thorough understanding of these aspects will aid participants in developing effective algorithms and achieving success in the competition.

The next key aspect is the process flow leading up to and after each time the competitor's algorithm is initiated. The general process flow is described below, and the specific chronologies for each market design (i.e., division) are described in Section 3.0.

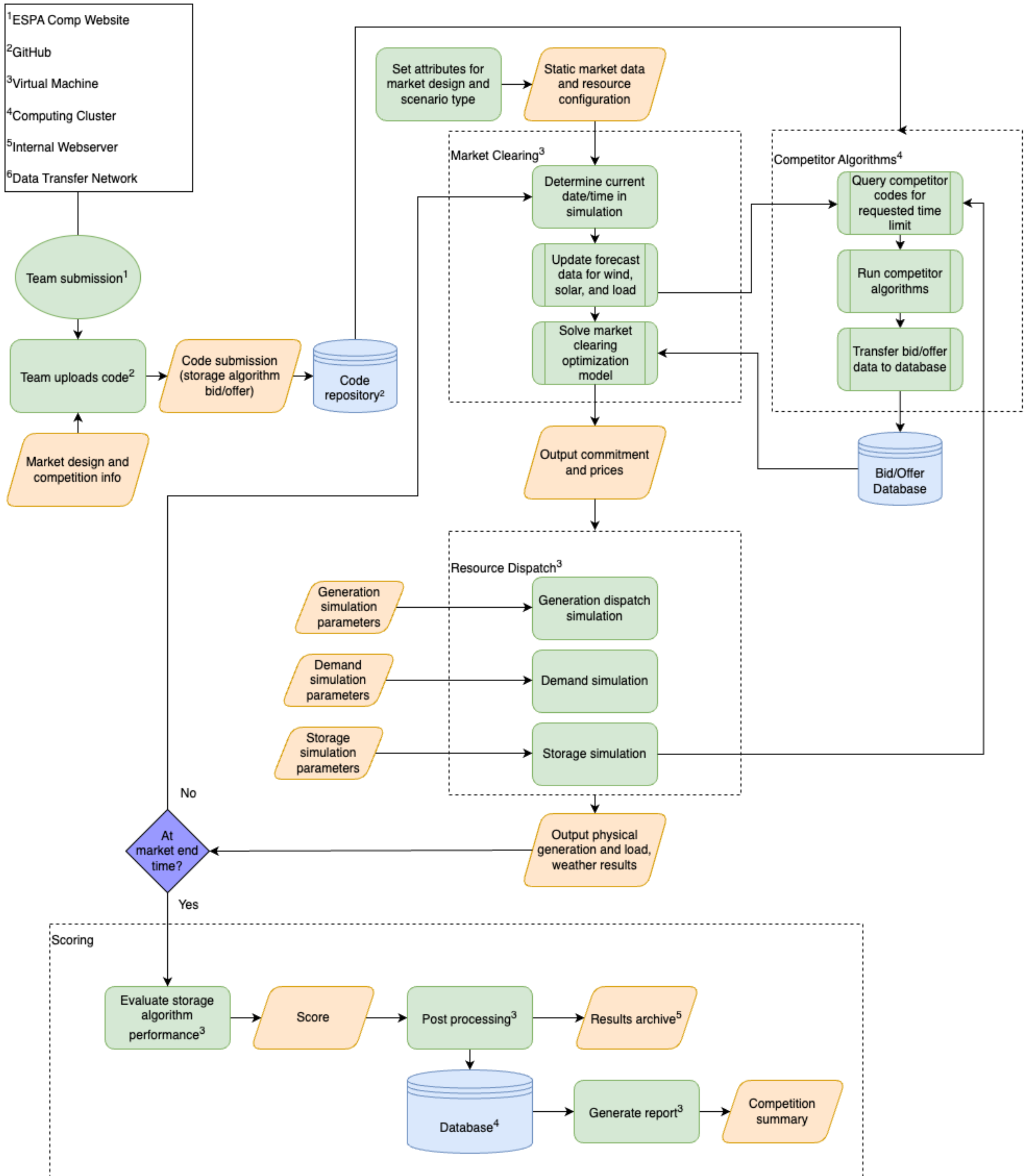

Figure 1: ESPA-Comp Process Flow

To register for the competition, participants[1] will begin on the Team Submission page on the ESPA Comp Website where a member of the team will make a submission for an open competition. In registering for the competition, each Team will provide their GitHub repository details. In this competition, participants will be provided with primitive values for the storage

[1] Each team will have one login although teams can consist of multiple participants.

resource’s physical capabilities and a resource offer format to populate with their algorithms. Different market designs will have different offer restrictions and data requirements. Tentatively, entrants will be allowed one programming language (Python, other languages may be allowed on a case-by-case basis based on available staffing/funding). Entrants will have the choice of a broad range of compiler and solver versions. Participants will submit their algorithms to the competition via GitHub.

Synthetic datasets will be available for entrants over time across the Sandbox and Challenge Events. Each dataset will have descriptive information for the storage resource and offer format, as well as historical market data based on a network model that represents a distinct geographic area and network components. Each network model will be simulated for a period of time (approximately one month) with simulated forecast and actual data, but the actual network model data will not be supplied to entrants.

The market clearing procedure will work as follows:

- **Initialization** (*in cluster*): call each competitor algorithm to generate initial bids/offers and save to JSON format.
- **Collect data** (*in VM*): generate market data GDX file in GAMS Python API
- **Publish forecasts** (*in cluster*): send updated load, renewable, and price forecasts to directories accessible to competitor algorithms.
- **Market clearing** (*in VM*): solve the market clearing optimization mixed-integer programming (MIP) model
- **Publish results** (*in cluster*): Output commitment, dispatch, and prices to JSON file in location available to competitor algorithms.

At the conclusion of each market clearing, the dispatch of conventional generators, renewable generators, and demand will be simulated based on the outcome of random variables to simulate actual supply and demand uncertainty.

- Output physical (real-time) generation and load and weather (in JSON format).

The energy storage participation algorithm will be evaluated for its performance in each scenario and assigned a scenario score. Scenario scores will be aggregated to determine the team’s submission score.

- Output scores (in JSON format).

3.0 Divisions

This section describes each market design (“division”) and the market’s protocols (offer format, clearing frequency, and forward horizon). For detailed market clearing models and market design specification see the Model Formulations documentation.

ESPA-comp will have three different divisions: two-settlement, multi-settlement, and rolling horizon forward markets. In each division, each market clearing instance will collect bids and offers for the time periods specified according to each market timeline.

Each division will include time periods that require physical delivery, forward settlement, or advisory dispatch. Each market division will also have offer restrictions that apply to the data submitted for each energy storage resource's bid or offer. Any nonconforming bids or offers will be replaced with default values.

3.1 Two-Settlement Market Division

In the two-settlement market division bids and offers are cleared in day-ahead and real-time markets, mimicking a typical independent system operator (ISO) market design. In this division, two-settlement indicates that a resource is settled twice – once in the day-ahead market and once in the real-time market. Table describes the day-ahead and real-time market protocol for forward horizon, market-clearing frequency, settlement type (physical delivery, forward settlement, or advisory dispatch) and offer format. An overview of detailed battery storage resource offer restrictions for each market design is provided in the Participation Manual.

Table 3.1: Two-Settlement Division Market Protocols

Day-Ahead Market:

Forward Horizon	36-hour horizon
Clearing Frequency	1-hour intervals for a 24-hour horizon
Settlement Type	0 physically binding periods, 24 financially binding periods, 12 advisory periods

Real-Time Market:

Forward horizon	3-hour horizon
Clearing frequency	5-minute intervals for a 60-minute horizon
Settlement type	1 physically binding period, 0 financially binding periods, 35 advisory periods

Offer format (uniform in each market protocol): *Allows battery storage offers that consider ISO state-of-charge management, applies to both Day-Ahead and Real-Time Markets*

3.2 Multi-Settlement Market Division

In the multi-settlement division, bids and offers are cleared similar to the two-settlement division but with additional trading due to additional forward market settlements in the real-time market. The look ahead horizon in the real-time market includes 23 forward market clearing intervals where each resource is settled multiple times – once in the day-ahead market and 24 times in the real-time market. Table describes the market protocol for the multi-settlement market. The Participation manual provides detailed energy storage resource offer restrictions.

Table 3.2: Multi-Settlement Division Market Protocols

Day-Ahead Market

Forward Horizon	36-hour horizon

Clearing Frequency	1-hour intervals for a 24-hour horizon
Settlement Type	0 physically binding periods, 24 financially binding periods, 12 advisory periods

Real-Time Market

Forward horizon	3-hour horizon
Clearing frequency	5-minute intervals for a 60-minute horizon
Settlement type	1 physically binding period, 23 financially binding periods, 12 advisory periods

Offer format (uniform in each market protocol): *Allows battery storage offers that consider ISO state-of-charge management*

3.3 Rolling Horizon Market Division

In the rolling horizon forward market, instead of distinct day-ahead and real-time markets, the market is always cleared every 5 minutes. Each market instance applies a model horizon and different market clearing intervals according to the regular scheduling of an Hourly Market, 15-Minute Market, and 5-Minute Market, as described in Table . The rolling horizon market division allows for more frequent market settlements than the previous two designs, which enables each resource's position to be updated and resettled many times. In comparison, the two-settlement market design clears each resource, at most, once with a forward position in the day-ahead market and once with a physical dispatch in the real time market. In the proposed rolling horizon design, a resource's forward position may be initiated and then updated 24 times in the Hourly Market, 48 times in the 15-Minute Market, and then 24 times in the 5-minute market, for a total of 95 forward positions prior to physical delivery.[1] More frequent market settlements prohibit the complex modeling software used in the previous market designs. Therefore, the battery storage resource offer formats are more restrictive for this division. As described in the Participation Manual, all bids under this market design must be convex, and no intertemporal constraints are allowed. Participants must instead utilize the additional forward markets to ensure their devices are physically capable of delivering their market clearing schedules.

Table 3.3: Rolling Horizon Division Market Protocols

Hourly Market (solved every hour at the top of the hour)

Forward Horizon	36-hour horizon
Clearing Intervals	5-minute intervals in the first two hours 15-minute intervals in the middle 10 hours (3 through 12)

[1] Note that each Hourly Market "contains" the same intervals as a 15-Minute Market and each 15-Minute Market "contains" the same intervals as a 5-Minute Market.

	1-hour intervals through the last 24 hours (13 through 36)

15-Minute Market (solved every 15 minutes at 0:15, 0:30, and 0:45)

Forward Horizon	12-hour horizon
Clearing Intervals	5-minute intervals in the first two hours 15-minute intervals over the remaining 10 hours (3 through 12)

5-Minute Market (solved every 5 minutes at 0:05, 0:10, 0:20, 0:25, 0:35, 0:40, 0:50, and 0:55)

Forward Horizon	2-hour horizon
Clearing Intervals	5-minute intervals in the two hour horizon

Offer Format (uniform in each market protocol): *Allows battery storage offers that are convex and time-separable*

A graphic depicting the 5-minute to 30-minute rolling horizon market timeline is available in Figure 2, and a graphic depicting the 15-minute to 1-hour rolling horizon market timeline is available in Figure 3. Blue squares correspond with 5-minute intervals, green squares with 15 minute intervals, and yellow squares with 1 hour intervals.

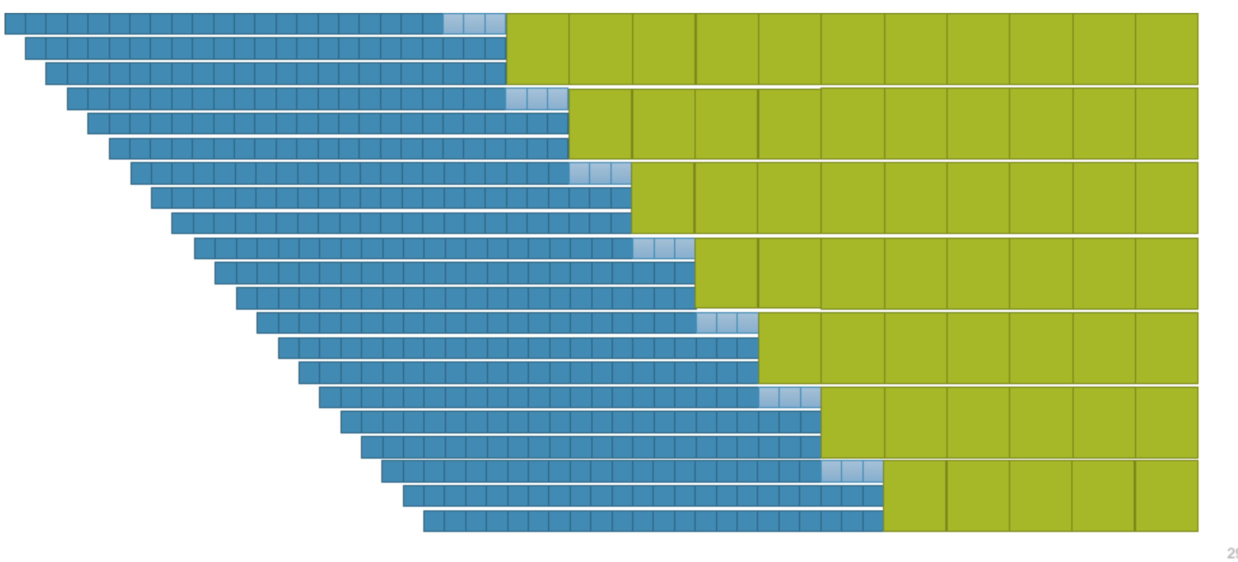

Figure 2: Rolling Horizon Division 5-Minute to 30-Minute Market Timeline

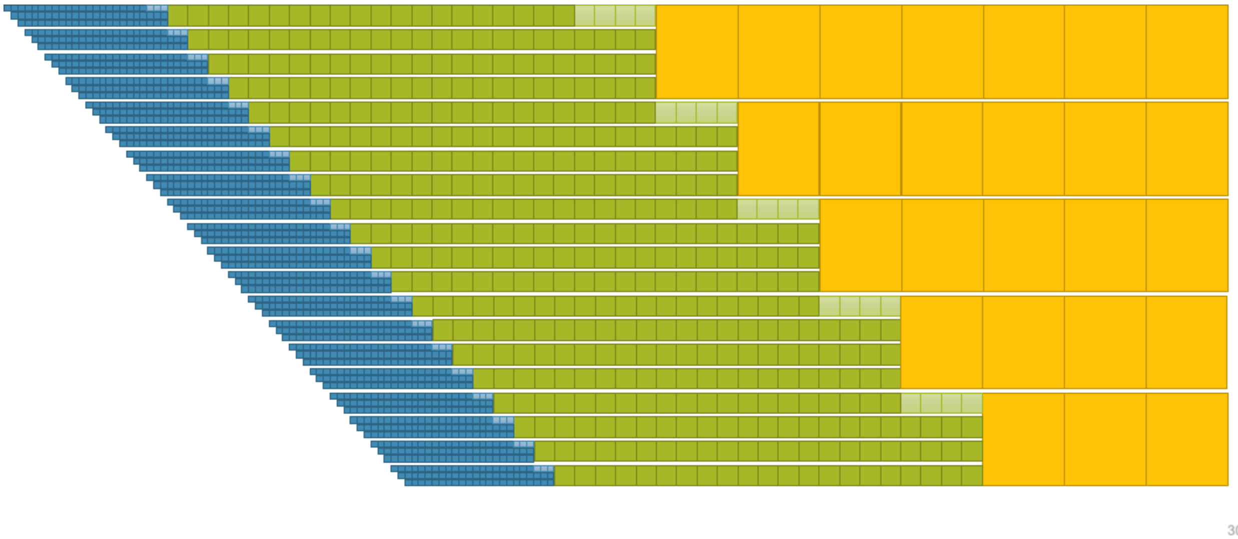

Figure 3: Rolling Horizon Division 15-Minute to 1-Hour Market Timeline

4.0 Scenarios

ESPA-Comp will include three scenarios, one scenario for each of the summer, shoulder, and winter seasons. The generation portfolio in each scenario includes a high share of renewables. Participant's battery storage algorithms will be tested for each scenario, for each market design, as shown in Figure 4. Competitor scores from each scenario are summed together to determine each competitor's overall score in each division. The scores in each division will be equal to the storage resource's profits, that is, the total market revenue received by the storage resource, minus degradation costs, and minus any penalties if the resource is unable to meet its dispatch schedule.

		Division 1 Two-Settlement	Division 2 Multi-Settlement	Division 3 Rolling Horizon
Scenarios	High Renewables Season 1: Summer			
	High Renewables Season 2: Shoulder			
	High Renewables Season 3: Winter			

Figure 4: ESPA-Comp Divisions and Stages

5.0 Resources

Two published cases were used for benchmarking purposes: The NREL LA100 2045 SB100 Stress Scenario and the CEC 2045 SB100 Core Scenario. The NREL LA100 2045 SB100 Stress Scenario from the Los Angeles 100% Renewable Energy Study (Cochran, 2021) was chosen as it includes a high penetration of renewable resources, high electric demand, and limited demand response/energy efficiency measures. The 2045 SB100 Core Scenario from California Energy Commission's (CEC) SB100 Joint-Agency Report: Achieving 100% Clean Electricity in California was also chosen for its high penetration of renewable resources and limited demand flexibility (SB100 Joint Agencies, 2021). These 2045 benchmark scenarios were both designed to comply with California Senate Bill 100, "The 100 Percent Clean Energy Act of 2018."

The ESPA-Comp Scenario uses data that has been aggregated and modified from the Western Electric Coordinating Council (WECC) 2030 Anchor Data Set (ADS), with the goal to provide a simulation of a plausible WECC future with a "realistic but not real" set of representative resources and network topology. The WECC 2030 ADS includes a high penetration of renewables (60%) with combined wind and solar resources totaling 25% of total capacity, more coal and gas capacity (totaling 36% of total capacity), and less battery storage capacity (2% of total capacity) than the two 2045 benchmark scenarios. The WECC 2030 ADS also has slightly more flexible demand.

The ESPA-Comp Scenario has a battery storage capacity that is in line with the two 2045 benchmark scenarios (15%), as well as a higher amount of wind and solar capacity than is currently planned for in the WECC 2030 ADS (15% wind and 25% solar), natural gas and coal capacity that is lower than the WECC 2030 ADS (20% gas and 2% coal), and a similar amount of demand response (3%) as the WECC 2030 ADS. The ESPA-Comp Scenario is intended to provide an opportunity to evaluate energy storage performance in the transition to the 100% clean energy future as benchmarked to the NREL LA100 2045 SB100 Stress Scenario and the CEC 2045 SB100 Core Scenario. The two 2045 benchmark scenarios, the WECC ADS 2030 for both California and the WECC system, and the ESPA-Comp resource capacities by percentage of overall capacity are described in Table .

Table 5.1: Benchmark Resource Capacity for Scenario Design

Resource	**NREL LA100 2045 SB100 Stress Scenario**[a]	**CEC 2045 SB100 Core Scenario**[b]	**CA / WECC in ADS 2030**[c]	**ESPA-Comp Scenarios**[d]
	Percentage of Total Capacity			
Battery Storage	7%	18%	2% / 1%	15%
Wind	26%	14%	6% / 12%	15%
Solar	31%	46%	17% / 13%	25%
NG-Steam/Combined Cycle	9%	9%	32% / 31%	20%
Coal	0%	0%	0% / 5%	2%
Demand Response	1%	1%	5% / 3%	3%
Other Renewables	26%	11%	38% / 35%	20%

Resource	NREL LA100 2045 SB100 Stress Scenario[a]	CEC 2045 SB100 Core Scenario[b]	CA / WECC in ADS 2030[c]	ESPA-Comp Scenarios[d]

a The 2045 SB100 Stress Scenario contains more resource categories than are shown in this table. Nuclear, Hydro, Geothermal, RE-Combustion Turbine, Pumped Hydro Storage, and H2-Combustion Turbine were categorized as Other Renewables. Customer PV, Utility PV, and Utility PV + Battery were categorized as Solar for the purposes of benchmarking our resource mix. Data was obtained from the LA 100 Study Data Viewer, available at: https://maps.nrel.gov/la100/la100-study/data-viewer?Theme=xmission&Resolution=rs&LoadScenario=stress&RpmScenario=sb100&LayerId=xmission.generation-capacity&Year=2045&Variable=mw

b The 2045 CEC SB100 Core Scenario contains more resource categories than are shown in this table. Biomass, Geothermal, Hydro, Nuclear, and Pumped Storage were included in Other Renewables. Wind includes both onshore and offshore wind. Solar includes both solar and customer solar. Data was obtained from the RESOLVE CEC Public Release Package Results Summary for CEC_B_SB100_Ref_20210204.csv, available at: https://www.energy.ca.gov/sb100/sb-100-events-and-documents

c The WECC ADS is available at: https://www.wecc.org/ReliabilityModeling/Pages/AnchorDataSet.aspx

d Resource capacities are approximate and may be adjusted.

The 15% battery capacity for the ESPA-Comp Scenario will be allocated evenly among competitors (battery sizes will be fixed). Competitors will be allowed to choose the location of their energy storage resource on a first come, first served basis from a set of predefined locations. Specific storage allocation parameters and locations are discussed in Section 6.0. A generic competitor using a battery storage algorithm developed by PNNL may also participate as needed. In the current simulation, other static resources will bid into the market at their marginal cost. As forward contracts and other market power mitigation techniques are not included in initial simulations, these techniques could be included at the discretion of PNNL with notice to competitors. Participation of virtual bidders (which drive convergence between forward and real-time markets) are based on existing participation in wholesale electricity markets.[1]

Additional resource detail will be added in future versions of this Competition Overview document.

6.0 Electric Topology

The electric topology utilized in ESPA-Comp is based on an aggregated zonal topology of the Western Interconnection (Figure 5) that contains 38 balancing authorities (BAs), also referred to as load areas, that form the 38 nodes in the ESPA-Comp topology. Generation capacity at each node is based on aggregated values from each BA in the 2030 WECC Common Case database[2]. The transmission topology, line ratings, and path limits are modified from the 2030 WECC Common Case database. To convert from a zonal to a nodal representation, the following approximations were made:

[1] For example, in the 2021 State of the Market Report, CAISO reported virtual demand and virtual supply bids of 1500MW and 2500 MW, respectively, which is about 13% of the total volume of a 30,000 MW market (CAISO, 2021).
[2] Available at: https://www.wecc.org/SystemAdequacyPlanning/Pages/Datasets.aspx (accessed 9/20/2023).

- Branches between nodes were added if the two underlying zones are physically connected by individual branches or interfaces modeled in the WECC Common Case database.

- Branch admittances are based on interface limits between connected BAs, scaled appropriately, then modified to ensure deliverability of supply resources.

The hourly load profiles are imported for each of the 38 load areas and then adjusted as needed to ensure deliverability. The wind hourly generation shapes (MW) use 2009 NREL wind data that are derived by modeling current wind turbine technologies and speed and weather data. Similarly, the solar hourly generation shapes are based on 2009 NREL irradiance and weather data. Hydro resources are modeled using monthly average generation values from the EIA 906/920 for the year 2009, which is considered a typical hydrologic year. Ancillary service (AS) requirements are determined by endogenous parameters within the market clearing model and include regulation up and down, spinning reserve, and non-spinning reserve.

Storage resources available to competitors have been determined as follows. Based on the WECC 2030 ADS, the installed nameplate capacity is approximately 300 GW, and the peak demand is about 200 GW. Total storage capacity is set at 15% of the total, or 45 GW. Each competitor is allocated a generic 3.75 GW storage facility rated to provide 4 hours of energy dispatch, that is, all storage facilities have the same attributes. The storage capacity is large, representing the aggregated capability of many storage facilities at the same location. Participants may choose from 12 storage locations, which were chosen based on the existing storage footprint in the WECC 2030 ADS. Storage resources that are not controlled by any competitors will be controlled by a default bidding algorithm. Table 6.1: Storage Resource Locations below lists the available locations, and the nodes shown in Figure 5.

Table 6.1: Storage Resource Locations

Node	Available Storage Resources
CISD	2
CISC	1
CIPV	3
NEVP	3
SPPC	2
PNM	1

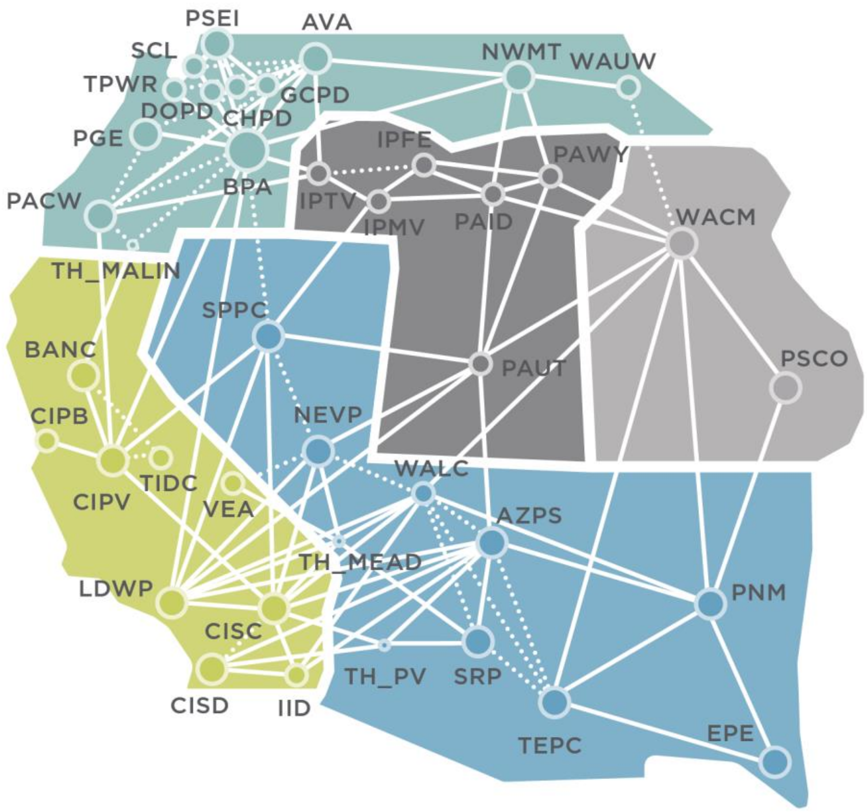

Figure 5. Western Interconnection Case study zonal topology
Source: Hart and Mileva (2022)

7.0 System Uncertainties

7.1 Wind, Solar, and Load

Wind and solar uncertainties are mostly driven by the weather, while load forecasts may reflect not only changes in the weather but also employment patterns, social events, and other random occurrences. To simulate realistic weather patterns and load uncertainty, Monte Carlo simulations will be implemented. Consistent with typical current practices, point forecasts will be available to ESPA-Comp participants' algorithms throughout the simulation. These forecasts will cover at least the time horizon included in the market clearing models and will include forecasts for wind, solar, and load at various zones in the market topology. Near-term forecasts will generally be more accurate than longer-term forecasts. However, participants are certainly welcome to identify weaknesses in the provided forecasts or to attempt to improve them.

Various methods may be used to generate the synthetic forecast and actual data to be used in the simulation. Details of specific methods may unduly influence competitor's strategies and will not be provided in this document. In general, a statistical interpolation of the forecast timeseries can be applied as new realizations are gathered (see Rutherford 1972). Synthetic realizations can also be simulated by Monte Carlo techniques that preserve temporal and geographical dependences among the data (Carmona and Yang 2022). The methods require input timeseries data of forecasted and actual wind, solar, and load. As needed, available datasets can be interpolated to 5-mintute resolution and may be modified through affine transformation or other means to obscure the original data.

The model parameters will take values from simulated forecast data. This data will be separated by resource type (wind, solar, or load) and aggregated into network locations (specifics to be determined). While each individual resource's offer to the market will contain its individual resource forecast data, only aggregated data will be available to the ESPA-Comp competitors. Future updates will provide more information about the frequency that the forecast data will be updated and how competitor algorithms will be able to access it.

8.0 Scoring and Awards

Scoring is directly proportional to profits made in the simulation, that is, the total market revenue received by the competitor's storage resource, minus degradation costs, and minus any penalties if the resource is unable to meet its dispatch schedule. Prizes are to be determined but may include small monetary amounts or internships offered to best performers.

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