

STELLAR FAQs

Question 1	What are the possible reasons for model infeasibility?
Answer	<ul style="list-style-type: none">Missing or inconsistent expansion parameters in generator sheets (e.g., Thermal, MustRun, Hydro, Storage): If Planned Capacity is provided without properly defining MaxBuildTotal and MaxBuildYearly, it can lead to infeasibility. When defining Planned capacity, the following condition must hold: MaxBuildTotal ≥ MaxBuildYearly ≥ Planned CapacityIncomplete inputs for renewable energy (RE) technologies: If minimum targets are defined using MustRunTrajectoryStateMin or MustRunTrajectoryMin, corresponding MaxBuildTotal, MaxBuildYearly, and start years must also be defined in the MustRun Sheet.Logical inconsistencies between minimum and maximum RE targets: When defining min and max RE targets for a particular region, technology and year, make sure that the values entered in the sheets follow:<ul style="list-style-type: none">- MustRunTrajectoryStateMin ≤ MustRunTrajectoryStateMax- MustRunTrajectoryMin ≤ MustRunTrajectoryMaxData validation issues:<ul style="list-style-type: none">▪ Check the Error Check sheet to ensure all entries show 'OK'.▪ Avoid negative values in demand, profiles, capacities etc.▪ Eliminate duplicate entries in Zones, Regions, Fuels (Index sheet), or plant names in generator sheets (Thermal, MustRun, Hydro, Storage, Contract).

Question 2	How do I define multiple planned capacity additions for a single plant?
Answer	<ul style="list-style-type: none">Create separate entries for each phase of capacity addition, specifying the planned capacity and start year individually.Example: For a plant 'Plant 1' with 300 MW planned in three phases (100 MW in 2027, 2029, and 2030), create: 'Plant 1a' (planned – 100 MW, 2027), 'Plant 1b' (planned – 100 MW, 2029), and 'Plant 1c' (planned – 100 MW, 2030).

Question 3	How should phased retirements of a plant be represented?
Answer	<ul style="list-style-type: none"> Similar to capacity addition, define each retiring portion as a separate entry with corresponding retirement year and capacity. Example: For a plant 'Plant 2' with a total of 1000 MW installed capacity out of which some capacity will be retired in two phases (100 MW in 2028 and 200 MW in 2029), you can create: 'Plant 2a' (capacity – 500 MW, retire capacity – 100 MW in 2028), 'Plant 2b' (capacity – 500 MW, retire capacity – 200 MW in 2029)
Question 4	How do I define capacity targets for a specific must run plant?
Answer	Use the MustRunPlanned sheet to define capacity trajectory for a specific must run plant that has been defined in the MustRun sheet.
Question 5	How do I define RE targets for multiple fuels or technologies?
Answer	<ul style="list-style-type: none"> In the Index sheet: List the required fuels/technologies under MustRun. Set their respective targets in "MustRunTrajectoryStateMin" and "MustRunTrajectoryStateMax".
Question 6	Why are results missing for certain years, seasons, or days?
Answer	<p>Ensure all required years, seasons, and days are defined in the TemporalSets sheet. The model only runs for the time slices explicitly listed in this sheet.</p> <p>OUTPUTS having 0 value are not printed.</p>
Question 7	The model is too large and slow—how can I reduce runtime?
Answer	<ul style="list-style-type: none"> Use the Iteration column in the "TemporalSets" sheet to split the model horizon into smaller groups. Example: Iteration 1: 2024–2027 Iteration 2: 2028–2030

- Each group is solved sequentially, using the final year of one as input for the next. This reduces the model's complexity and decreases run time.

Question 8	How do I make a fuel or technology contribute to multiple RPO types?
Answer	<ul style="list-style-type: none"> • In the RPOMap sheet, assign fractional contributions for each fuel/technology to different RPO types. • Example: ROR contributing 0.75 to Hydro RPO and 0.25 to DRE RPO.
Question 9	The model is adding unrealistically high capacity for a technology—why?
Answer	<ul style="list-style-type: none"> • Check that capital and operating costs are defined for all candidate plants. • If CAPEX is missing, the model assumes zero cost, leading to unrealistic additions. • Ensure all technical and financial parameters are defined accurately.
Question 10	MustRun plants are not generating realistically—what should I check?
Answer	Ensure that each MustRun plant has a corresponding and well-defined profile in the MustRunProfiles sheet.
Question 11	How do I activate specific model features such as Demand Response, Monte Carlo simulations, or Carbon Emissions?
Answer	<ul style="list-style-type: none"> • Enable or disable model features using the Controls sheet. • Ensure the appropriate toggle (ON/OFF) is set before running the model.
Question 12	When AltDemand control is turned ON to generate Demand based on DemandProfile and DemandForecast, the model is unable to create Demand and shows an error. Why?
Answer	This issue is likely due to negative values being generated in the demand. It typically occurs when there is a significant mismatch between the historical data used to create the demand profile (via clustering) and the future demand projections.

For example, if the historical year used for profiling has very high peak demand and total energy consumption, but the future projections indicate much lower peak and energy values, the model may be forced to scale the profile unrealistically. In doing so, it could generate negative demand values to match the future forecasts, which results in an error.

To resolve this, ensure that the historical year used for profiling is reasonably aligned with the scale of the projected peak and energy values.