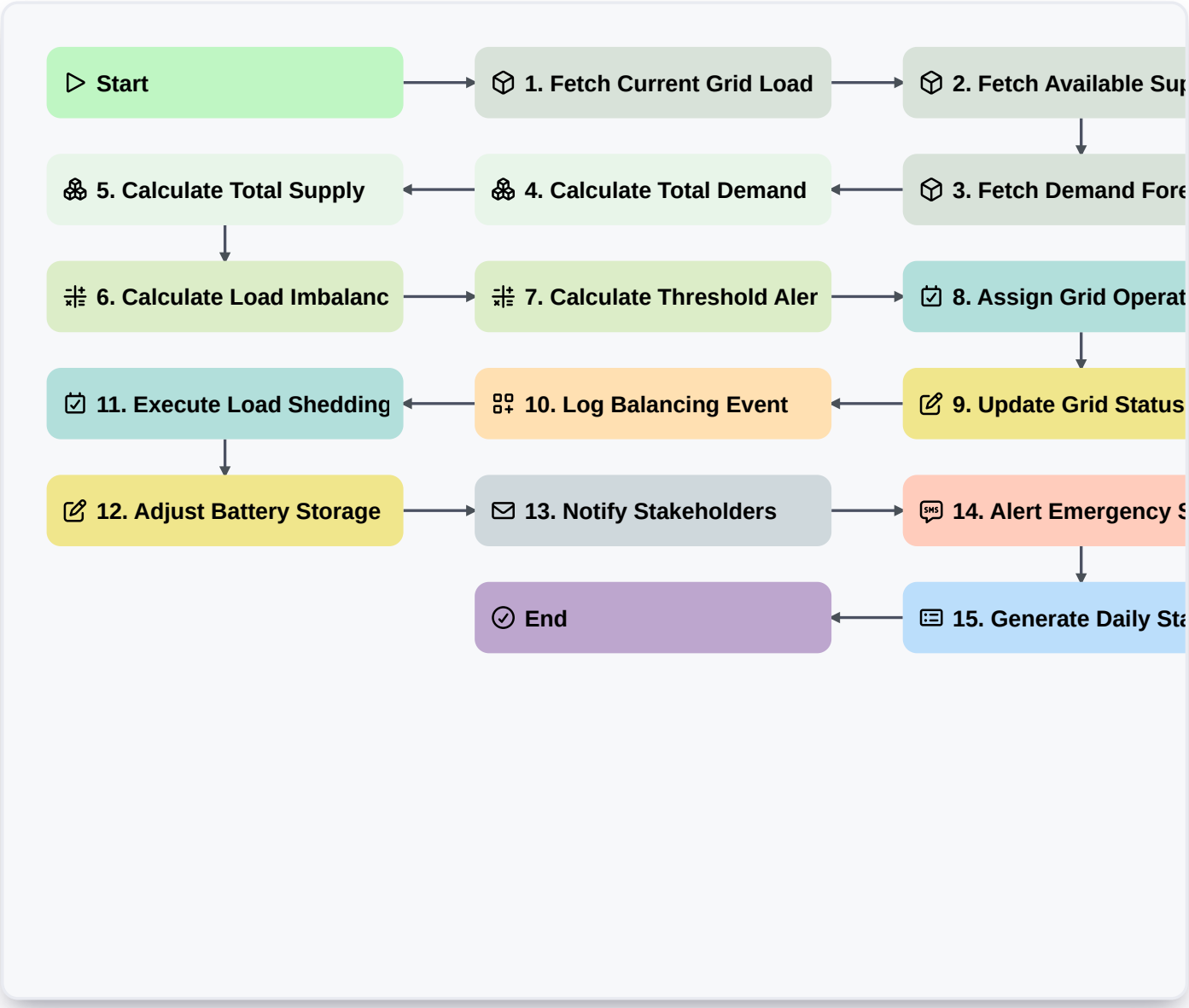
ChecklistGuro

Smart Grid Load Balancing Process



Start
Start of the Workflow/Process.

1. Fetch Current Grid Load
Retrieve real-time energy consumption data from the Grid_Status data model.

2. Fetch Available Supply
Retrieve current energy production levels from Renewable_Sources data model.

3. Fetch Demand Forecast
Retrieve predicted energy demand from Forecast_Data data model.

4. Calculate Total Demand
Sum all predicted load entries from the Demand_Forecast data model to get total required load.

5. Calculate Total Supply
Sum all available energy from the Renewable_Sources data model.

6. Calculate Load Imbalance
Subtract Total Supply from Total Demand to determine the deficit or surplus.

7. Calculate Threshold Alert
Determine if the Load Imbalance exceeds the predefined safety threshold percentage.

8. Assign Grid Operator Review
Create a task for the Grid_Engineer to review the imbalance if the threshold is exceeded.

9. Update Grid Status
Update the 'Status' field in the Grid_Status data model to 'Critical' or 'Stable'.

10. Log Balancing Event
Create a new entry in the Load_Balancing_Logs data model documenting the imbalance details.

11. Execute Load Shedding Protocol
Create a high-priority task for the Automation_System to reduce load from non-essential sectors.

12. Adjust Battery Storage
Update the 'Discharge_Rate' field in the Battery_Storage data model to inject power into the grid.

13. Notify Stakeholders
Send an email alert to the Utility_Management group regarding the load imbalance event.

14. Alert Emergency Services
Send an SMS to the Emergency_Response_Team if the imbalance threatens grid stability.

15. Generate Daily Stability Report
Create a summary report of all load balancing actions and grid stability metrics for the last 24 hours.

End
End of the Workflow/Process.