```  
additional\_considerations:  
- The AI should be able to handle situations where achieving perfect balance within  
 the given constraints might not be possible.  
- Explore incorporating additional data, such as real-time load fluctuations or time-of-day  
 pricing, to further enhance the solution's effectiveness.  
constraints:  
 limited\_load\_movements:  
 avoid\_top\_loads: 3  
 max\_moves\_per\_load: 3  
 load\_movement\_threshold: 200  
 phase\_difference\_minimization: true  
 sudden\_drop\_avoidance:  
 threshold: 500  
data:  
 August: Historical load value for August  
 July: Historical load value for July  
 June: Historical load value for June  
 Name: Unique identifier for each load  
 Phase: The phase to which each load is currently connected (A, B, or C)  
 September: The predicted load value for September  
goal: Develop an AI-powered solution to proactively optimize load balancing by intelligently  
 suggesting load movements between phases for September. The AI should analyze historical  
 data, consider specified constraints, and recommend load movements that minimize  
 the difference between the highest and lowest phase loads in September.  
output:  
 performance\_metrics: Quantitative measures of the improvement in load balance, specifically  
 the difference between the highest and lowest phase loads after the adjustments.  
 recommended\_load\_movements: A list of load names and their proposed new phases for  
 September to achieve optimal balance.  
 resulting\_phase\_loads: The total load on each phase for September after implementing  
 the recommended movements.  
problem: We have a set of electrical loads connected to a 3-phase power system. The  
 system needs to maintain a balanced load across all three phases, ideally with equal  
 or near-equal power consumption on each phase. The provided data shows the power  
 consumption (in some unit) for each load across several months. While the system  
 was relatively balanced in the preceding months (June, July, August), a potential  
 imbalance is anticipated in September.  
  
```