Dear Editors and Reviewers,

Thank you for your comments and the opportunity to revise our manuscript. This document contains our point-by-point responses (in blue) to your comments (in black). We believe the manuscript has improved significantly and hope that it addresses the review team’s concerns. The major changes to the manuscript are as follows:

**Major Changes to the Manuscript**

1. **Improving Writing Efficiency and Quality.**
   1. We have edited our writing to improve its efficiency and have reduced the overall length of the main manuscript from XXX pages to XXX pages (excluding the appendix material). Additional steps were taken to reduce the paper length including deleting Sections XXX, combining Sections XXX, and moving Sections XXX to the appendix.
2. **Improving Figure Quality**
   1. We standardized the presentation of all figures using the same color scheme, font sizes and typefaces, and by improving the resolution and clarity. Additional changes to specific figures were made as requested by the reviewers.
3. **Incorporating Multivariate Time Series Features**
   1. As suggested by the second reviewer, we have included some features that capture the relationships across time series, namely, XXX and XXX. We find that this had XXX effect on our results.

**Associate Editor Comments**:      
  
The authors have done a good job overall in accommodating the reviewers' comments as well as their feedback. I believe there should be a route for publication of that paper. However, as also mentioned by one of the reviewers, the paper is very long. The authors should look into potential ways to shorten it. The message can certainly be conveyed as efficiently by cutting and rephrasing some parts of the paper.

Thank you for your feedback and helpful comments. We have addressed the length of the paper by…

In addition, please make sure you place emphasis on the quality of the figures, to make sure they are not too small, easily readable, etc.

Thank you. We have XXX

**Reviewer 1 Comments:**

The authors have very satisfactorily addressed all my concerns, and the new version of the paper is very much improved. Some minor suggestions would be the following:

Thank you for your feedback. We hope the following changes are satisfactory and we appreciate your enhancements of our manuscript.   
  
I am worried that the changes of MAE are dominated by time series of larger magnitude. How did the author calculate the percentage?

We report the percentage change in mean forecast error (MAE) across all series for each data set. Letting and denote the mean absolute error of the one-step-ahead forecasts across the original and protected versions of time series, respectively, we calculated

.

A table with numbers and symbols

Description automatically generated

~~Figure 2: The presentation should be improved, for example, letter capitalization, typography...~~

~~We have carefully adjusted Figure 2 to improve its presentation. Notable changes are as follows:~~

* ~~Adjusted placement of all lines and polygons to improve typography and reduce figure size.~~
* ~~Center aligned text in all polygons.~~
* ~~Capitalized the first word of all text descriptions.~~
* ~~Removed the “Original Data Set” polygons immediately following both the “YES” and “NO” branches since this object was already referenced in the first “X = Time series to forecast” polygon.~~

Figure 12: The authors should focus on the computation time of  k-nTS+ process, and the forecasting models such as RNN, ARIMA should be omitted.

Thank you for the suggestion, we have adjusted Figure XXX (previously Figure 12) to focus on the computation time of the *k*-nTS+ process.  
  
A little proof-reading would be beneficial.

Thank you. We have carefully proof-read the paper.

**Reviewer 2 Comments:**

Reviewer 2: The reviewer appreciates the effort of the authors to improve their paper.  
However, there are still a few issues.

Thank you for your helpful comments. We hope the changes described below have addressed your concerns. Thank you for helping us improve our manuscript.  
  
The paper is long, and the presentation/analysis of results should be more concise.

Thank you for this suggestion. As per Major Changes to the Manuscript #1, we have improved the writing efficiency and quality, reducing the length of the main text from XXX pages to XXX pages.

The swapping method swaps data to maintain features like mean, kurtosis, etc. None of these metrics is designed for multivariate time series data. For example, are the cross-correlations considered/maintained?

Thank you for pointing this out. We added the computation of cross-correlations to the feature selection process. To reduce the dimensionality and maintain a manageable feature space, we performed principal components analysis on the cross-correlation matrix and kept the first five components as “cross-correlation features”. This is now stated in the last paragraph of Section 4.1.1. on page XXX. The results show that…XXX.

We also include an analysis in Section XXX of the appendix showing the change in cross- correlations that results from the different privacy methods by computing the average absolute difference in correlation coefficients across all time series between the unprotected and protected versions of each data set. We find that…XXX.

~~Detailed comments:  
- Page 3: I would represent both time series in the same plot, e.g., using different point types and colors. The same for Fig. 6, Fig.8.~~

~~Thank you, we have made the suggested changes.~~

~~- Page 4: Please clarify the contributions: authors wrote their proposal is the "[...] first to produce protected time series data with both acceptable privacy and usable forecast accuracy." This sentence should be more precise because, e.g., the "Privacy-preserving distributed learning for renewable energy forecasting" method also protects time series data, while maintaining the accuracy of the VAR model. However, their method cannot be applied to nonlinear models like neural networks.~~

~~We appreciate the suggestion and apologize for the initial ambiguity. We have revised the statement to reflect that our method enables sharing of an entire protected data set, rather than just model parameters or lagged values, and is not restricted to specific forecasting models. It now reads:~~

*~~“To the best of our knowledge, this paper is the first to produce a shareable, protected time series data set that provides acceptable privacy and usable forecast accuracy and can be customized for the desired forecast horizons, accuracy metrics, and forecasting models.”~~*

~~- Page 6: "Luo et al. (2018) simulated data integrity attacks and found that multiplicative noise". Revise this sentence; their noise is additive.~~

~~Thank you, we have changed our statement to reflect this.~~  
  
~~- Page 22: Table 3 measures % Change MAE, compared to what?~~

~~Table 3 measures the % change in MAE (averaged across the SES and DES forecasting models and across all time series) when forecasting using the protected data relative to forecasting using the unprotected data. We have added a statement at the bottom of page XXX to clarify this, and have added additional description to Table XXX to include this.~~

~~- Tables 8 and 9: I would merge these two tables; for each column, the authors could have the value for original and rate data.~~

~~Thank you for the idea, we have merged the tables as suggested (shown below) which can be found on page XXX in the manuscript.~~

~~- Table 9: "s" parameters for additive noise are not the same as in Table 8.~~

~~Thank you for pointing this out, the parameters are now consistent in the combined Table XXX (previously Tables 8 and 9).~~

- Section 5: a sentence is missing to explain the organization of the content

We have added a sentence in paragraph XXX on page XXX to explain the organization of Section XXX (previously Section 5).

- Section 5.2 is about time series features, and Section 5.7 is also about time series features. I recommend merging both sections.

Thank you for the recommendation. We have now merged the two sections (now Section XXX).

~~- Page 5: typo "error (MASE) values of the error" remove "of the errors"  
- Page 6: typo "MASE on the M, M3, and M4" > M should be M1~~

~~- Page 16: typo "subsections 4.4 and 4.4"~~

~~- Equations (10) and (11): the metrics defined are represented with the same nomenclature (bar(P))~~

~~Thank you for catching these mistakes. We have corrected them in the revised manuscript.~~