SUMICSID SPRL

Post-run audit of the international transmission benchmarking TCB18 for gas

FINAL REPORT (short version)

18/12/2020

KPMG Advisory
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1   Introduction

A taskforce composed of 16 national regulatory authorities (NRAs) within the Council of European Energy Regulators (CEER) decided to undertake an international benchmarking of both electricity and gas transmission system operators (TSO) in 2017 with the project acronym TCB18. The Dutch NRA, ACM, acted as contractual counterpart and issued a Request for Quotation in 2017 for which SUMICSID was awarded the contract based on their proposal. The project operated from 01/12/2017 to 01/03/2019.

The original data were collected from the TSOs bilaterally by each NRA on a voluntary or mandatory basis. Each NRA was responsible for the endorsement of the original data. The project encompasses 17 electricity TSO from 16 countries and 29 gas TSO from 13 countries. The data collected aimed for asset and cost data, aggregated annually from 2013 to 2017. Some TSOs only delivered data for a shorter period, down to one year.

As stated in the TCB18 project plan the project is subject to a post-run audit. On behalf of the NRAs, SUMICSID invites auditors to submit proposals for this audit based on the specifications in this RFP.

SUMICSID performed the TCB18 work in collaboration with the CEER Project Steering Group (PSG), who were responsible for data collection and primary data validation. The processing of the data templates was made by Swiss Economics as subcontractors of SUMICSID. Processing of GIS data for environmental data was made by subcontractors for SUMICSID to calculate parameters.

The data processing and the calculations were made in R using a set of common codes for both electricity and gas, starting from the standardized data files in CSV format. The R codes calculate the scores and compile all process documents, data release sheets, data reports, score reports and cost reports using a LaTeX compiler.

The R-code structure consists of 8 separate codes, whereof two specifics for the norm grid calculations for electricity and gas, respectively. The actual calculation codes (4) measure around 2.500 lines, the remaining codes containing definitions and setting of parameters, documentation and formatting cover about 3.500 lines. The energy (gas or electricity) are defined as fields in a general data structure that is common for electricity and gas, making all codes streamlines and flexible.

2 Scope and objectives

SUMICSID requests KPMG to validate that the reported scores in the "Final Report TCB18 Gas" result from the application of the benchmarking methods and parameters stated in the documentation. The final report is available in Appendix 6.2.

The scope of the audit was detailed following the planning phase in which we have performed a detailed process walkthrough as described in Appendix 6.1. This process walkthrough resulted in the detailed audit test plan including the audit objectives and related audit procedures as agreed with SUMICSID.

The scope <u>included</u> the following:
- Determine the reproducibility of the benchmarking results.
- Determine whether the R code effectively executes the steps as being defined in the benchmarking methodology.
- Determine whether the reported results are the result of the R script.

As extension to this scope definition we would therefore like to refer to the audit test plan as available in section 5 infra.

Explicitly <u>excluded</u> from the scope are the following:
- Dynamic calculations for the productivity changes.
- Work by the CEER PSG, NRA or TSO in data validation prior to the delivery of the final data.
- Model specification, process and results; i.e. statistical work to derive the final model.
- Sensitivity analysis; design and simulations for various parameters documented in the final report.
- Work by the technical consultants leading up to the normalized grid reports for electricity and gas.
- Process communication prior or during the project between consultants and between SUMICSID and NRAs and/or TSOs.
- Determine whether the endorsed data is used for analysis.
- Determine whether alternative specifications of data, process, methods or models could have resulted in other scores.
- Access limitation to the WorkSmart collaboration tool.
- Correctness of benchmarking methodology.
- Configuration values in the R code (R configuration file).
- The correctness of R functions.
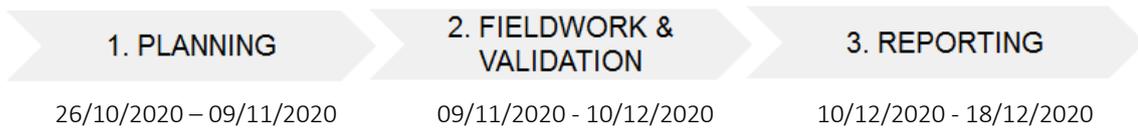
3 Executive summary

The audit of the international transmission benchmarking for Gas was performed over the period 26/10/2020 and 14/12/2020.

During the audit we have performed inquiries with key personnel from SUMICSID, inspection of documents, observations and system queries in order to determine whether reported scores in the "Final Report TCB18 Gas" effectively result from the application of the benchmarking methods and parameters stated in the documentation.

Our audit procedures revealed no exceptions concerning the application of the benchmarking methodology. Therefore we conclude that the benchmarking methodology as described in the report "Final Report TCB18 Gas" has been effectively applied.

4 Methodology and approach

4.1.1 Approach

1. PLANNING	2. FIELDWORK & VALIDATION	3. REPORTING
26/10/2020 – 09/11/2020	09/11/2020 - 10/12/2020	10/12/2020 - 18/12/2020

4.1.2 Planning

Kick-off
A kick-off meeting was held with the relevant stakeholders from SUMICSID to present the team, confirm the scope, planning and other practical arrangements.

Gain understanding
In order to establish an audit test plan to meet our audit objectives we went through the methodology together with SUMICSID knowledgeable personnel who explained us the process steps that have been performed to come to the reported scores. This 'walkthrough' enabled us to understand how it has been applied in practice (use of tools, programming, parameters, documentation etc.).

Draft audit plan
Based on the walkthrough of the methodology as proposed supra we will draft an audit plan for execution in phase 2. We refer to point 5 infra including the detailed audit test plan.
For purposes of transparency and quality control this audit test plan was agreed with SUMICSID.

4.1.3 Fieldwork & Validation

Fieldwork
During this phase the agreed audit test plan has been executed. Our audit procedures included:
— Interviews: inquiry with people knowledgeable about the applied benchmarking methodologies and how exactly the results have been produced.
— Observations (on-screen)
— Inspection of documentation: e.g. source data, review of codes and calculations, results and reports (*)
— System queries: re-run of process to come to same scores as reported

(*) In certain cases we have selected a number of items for testing only.

Validation
Our findings resulting from the above procedures have been communicated directly to SUMICSID for the purpose of validation.

4.1.4 Reporting

Presentation of the preliminary findings

The audit findings individually validated during the execution of the fieldwork have been presented to Management. We make a distinction between findings which may impact the benchmarking results and those that do not impact those results ('points of attention').

Delivery of the reports

We have agreed during the planning phase to deliver a detailed report for SUMICSID as well as a condensed one for the for the chairman of CEER TF IRB (Incentive Regulation and Benchmarking).

5   Audit test plan

1.   Data Collection
Excluded from scope
2.   Data Management/ Validation
Excluded from scope
3.   Data analysis
3.1 Determine whether the CSV files created by the Data Management team are used as input for the data analysis
Obtain a copy of the CSV files and check whether they match the input files in the run directory (selection of a sample – minimum 8)
3.2 Determine the reproducibility of the benchmarking results
Obtain a copy of the input files, configuration script and R scripts and: — walkthrough configuration script and R script — re-run the R script — obtain a copy of the results and check against the R logging and verify that the results of the re-run are the same as the ones reported (consider selection of a sample – minimum 8) — investigate whether any errors are logged by the system (execution of R script)
3.3 Determine whether the R code effectively executes the steps as being defined in the benchmarking methodology
Obtain a copy of the R script and execute the following: — selection of a number (8) of process steps as described in the Report and verify whether these are reflected in the R script — selection of a number of process steps (8) from the R script and verify whether these effectively are related to the described methodology
3.4 Assess the impact of the input on the results
Execute the following: — change an input file and/or a parameter in the configuration file and re-run the R-script — assess whether the impact of the change on the results is as expected (expectation determined through inquiry)
4.   Reporting
4.1 Determine whether the reported figures are the result of the R-script execution
Re-run the R-script and verify whether: — the results of the re-run are the same as the ones reported

6 Appendices

6.1 Final Report TCB18 Gas

TCB18_final_report_gas_190717.pdf

6.2 Contact details

6.2.1 Auditees

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