Upgrading Energy Regulations for Energy Regulatory Commission of the Philippines

Third Interim Report: Issue 2

By

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CONTENTS

Appendices

EXECUTIVE SUMMARY

The Philippines, being vulnerable to global climate changes, has set an ambitious target of reducing greenhouse gas emissions by 75% (from business-as-usual case) in its second nationally determined contribution (NDC) under the Paris Agreement of the UNFCCC. The main purpose of the project is to provide technical assistance to the Energy Regulatory Commission (ERC) in the context of evolving roles of power sector regulation in addressing climate change concerns and achieving national greenhouse gas reduction ambitions. The overall goal of the project is to ensure that ERC holistically supports energy transition and transition to low carbon energy systems. The project's long-term outcome is the increased penetration of renewable energy in the Philippine grid. The strategic outcomes include strengthened enabling policy environment and enhanced capacity and increased level of awareness on green energy and climate change mitigation. The project covers 7 main components or tasks. The progress to date, the next steps and the intended final outputs and outcomes are summarised in Table 1.

Table 1. Project progress, next steps and intended outputs and outcomes

Progress to Date	Next Steps	Intended Final Outputs	Intended Outcomes
Task 1. Revisiting the existing technical, operating and performance standards for renewable energy generators The main objective of this task is to update the issued Philippine Grid Code (PGC) and Philippine Distribution Code (PDC) as well as other relative ERC resolutions, rules, and regulations on modern RE technologies			
• Ricardo carried out 3 webinars for ERC and DOE on the theoretical underpinnings of the proposed changes in PGC and PDC. • Draft PDC and PGC were prepared based on the proposed changes. • Another round of revisions was carried out responding to comments of the USAID Energy Security Project on PDC and PGC.	• Another round of revisions will be carried out for PDC and PGC once the results of the ADB study on Ancillary Service Review will be completed in Q1 2023. • Focus group discussions (FGDs) for PGC and PDC will be organised in Q1 2023. • Revised draft of PGC and PDC will be issued by end of March 2023.	• Updated Philippine Grid Code • Updated Philippine Distribution Code	• Strengthened renewable energy regulatory environment • Enhanced capacity and increased level of awareness on green energy and climate change mitigation.
Task 2. Rules and Regulations for Ancillary Services Responsive with Variable Renewable Energy Technology The main objective of this task is to establish the regulatory framework for the entry of modern RE technologies aided by ancillary services, its related features, services, functionalities, and pricing methodology			
• Ricardo is currently reviewing the draft Ancillary Services Rules - Rules, Terms and Conditions for Maintenance of Reliability, Adequacy and Security of the Grid (prepared by Deloitte Consultants).	• Ricardo is waiting for the ADB study result on Ancillary Service Review which will be completed in Q1 2023. • Ricardo will prepare a supplemental regulation on Ancillary Services for VRE integrating the results of ADB study. This supplemental regulation will be issued in April 2023.	• Supplemental Ancillary Services Regulation for VRE	• Strengthened renewable energy regulatory environment. • Enhanced capacity and increased level of awareness on green energy and climate change mitigation.
Task 3 Rules and Regulations for Smart Grid Facilities The main objective of this task is to empower the utilization of smart grid technologies to promote demand side management, and to ensure that the technology embedded in smart grid facilities are compliant with international safety standards and technical standards for device specification and network interconnection			

Progress to Date	Next Steps	Intended Final Outputs	Intended Outcomes
• Ricardo carried out a webinar on smart grid key concepts and outline of smart grid regulation • Ricardo updated the Investor-Owned Electric Distribution Utility Planning Manual and Electric Cooperative Distribution Planning Manual integrating provisions on smart grid technologies. • A list of suggested international standards for smart grid was prepared and submitted to ERC.	• The i) Investor-Owned Electric Distribution Utility Planning Manual, ii) Electric Cooperative Distribution Planning Manual, and iii) list of smart grid standards will be further updated after receiving feedback from ERC.	• Updated Investor-Owned Electric Distribution Utility Planning Manual • Updated Electric Cooperative Distribution Planning Manual • List of international smart grid standards	• Strengthened regulatory environment for smart grids. • Enhanced capacity and increased level of awareness on green energy and climate change mitigation.
Task 4 Revisions and Amendments on the Existing Philippine Small Grid Guidelines The main objective of this task is to update the issued Philippine Small Grid Guidelines to cover modern technologies used in the electric power system			
• A webinar on key concepts and international best practices was organised. • Revised Guidelines was submitted to ERC	• Another round of revision will be carried out responding to the comments from the USAID Energy Security Project and the ADB study Ancillary Service Review (The ADB study will be competed in Q1 2023).	• Updated Philippine Small Grid Guidelines	• Strengthened renewable energy regulatory environment. • Enhanced capacity and increased level of awareness on green energy and climate change mitigation.
Task 5 Power Quality and Reliability Regulations The main objective of this task is to update power quality and reliability regulations			
• Ricardo updated and submitted to ERC the Resolution No 11, series of 2006 (A Resolution Adopting the Guidelines for the Monitoring of Power Quality Standards for Distribution Utilities • Ricardo is currently reviewing 1) Resolution 12, Series of 2006, 2) Resolution 1, Series of 2013, 3) Resolution 26, series of 2016	• Further update of Resolution No 11 series of 2006 based on feedback from ERC. • To draft a new resolution consolidating 1) Resolution 12, Series of 2006 (monitoring of reliability standards), 2) Resolution 1, Series of 2013 (reliability indices standards), 3) Resolution 26, series of 2016 (online report submission) to be issued in March 2023.	• Updated Resolution No 11 • New resolution consolidating 1) Resolution 12, Series of 2006 (monitoring of reliability standards), 2) Resolution 1, Series of 2013 (reliability indices standards), 3) Resolution 26, series of 2016 (online report submission) to be issued in March 2023.	• Strengthened power quality and reliability regulatory environment. • Enhanced capacity and increased level of awareness on green energy and climate change mitigation.
Task 6. Distribution System Loss Cap Review The main objective of this task is to develop a new system loss caps based on the criteria provided in the Electric Power Industry Reform Act (EPIRA).			
• Preliminary analysis of system loss cap for private distribution utilities	• Finalisation of analysis for system loss caps for private distribution utilities and electric cooperatives	• New methodology for setting system loss cap targets for private distribution utilities and electric cooperatives	• Strengthened energy efficiency regulatory environment

Progress to Date	Next Steps	Intended Final Outputs	Intended Outcomes
	• Updating ERC Resolution 10-s2018 (System Loss Calculation)	• Updated ERC Resolution 10-s2018 (System Loss Calculation)	
Task 7. Strategic review of the regulatory framework to assess its pertinence and pursuit of energy transition The main objective of this task is to carry out a strategic overview of ERC's regulatory framework in view of the Philippine NDC, identification of strengths and weaknesses, challenges, and opportunities in reduction of the potential hindrance and amplifying the incentives in places on rapidly moving to low carbon energy systems.			
• Reference studies, reports and regulatory information are being collected and analysed.	• Finalisation of analysis and strategic review of the regulatory framework	• Strategic assessment of ERC framework and options assessment for regulatory areas.	• Strengthened ERC with comprehensive outlook on RE and EE.

1. CLARIFICATIONS, NEW REQUESTS AND PROPOSED CHANGES

Due to initial delays in receiving documents from ERC, as well as deviations from the original terms of reference, Ricardo Energy and Environment proposes to UNOPS/ETP to extend the contract to May 2023. The deviations and the new requests from ERC were finalised during the consultation meetings between Ricardo Energy & Environment and ERC on 13 October 2022 and 25 October 2022, held in Discovery Suites Meeting Room and Jin Jiang Hotel Meeting Room, respectively. The results of the consultations, Ricardo's feedback and proposed changes for contract variation including estimated costs are summarised in Table 2.

Ricardo submitted the proposed changes to ETP on 23 November 2022 and received feedback from ETP on 5 December 2022. The items highlighted in light orange are the changes with cost implications that ETP accepted for contract variation. ETP accepted items 1.2 under Task 1 and items 6.1, 6.2 and 6.3 under Task 6. The items highlighted in light blue are proposed changes that Ricardo accepted to carry out without additional cost. Other requests with additional cost requirements were not supported by ETP.

Figure 1. ERC-Ricardo Energy & Environment Consultation Meeting, 13 October 2022, Discovery Suites Hotel, Metro Manila, Philippines

Table 2. Consultation Outcome and Proposed Changes for Contract Variation

ERC-Ricardo Consultation Outcome	Ricardo Feedback	Changes for Contract Variation
Task 1. Revisiting the Existing Technical, Operating and Performance Standards for RE Generators		
1.1 new request ● USAID ESP is undertaking 3 studies and drafting related regulations: BESS, EV and DER. Draft regulations for BESS and EVs will be ready by December 2022. Draft regulations for DER will be shared soon. ● Ricardo will integrate results to PGC and PDC.	● Ricardo to deliver the proposed activities	1. Provide ERC more time and close this task by **May 2023**. This task could be completed earlier if all documents are provided sooner.
1.2 new request ● ERC requests Ricardo to organise focus group discussions (FGDs) to present PGC and PDC, and elicit recommendations from stakeholders.	● Graeme Chown will be the main expert for the focus group discussion for PGC and PDC (and micro grid – see Task 4) to be organised in February 2023. The FGD will be organised by ERC but venue will be provided by this project.	1. Additional fees for Graeme Chown (9 days renumeration fees, per diem 7 days + air ticket) 2. Additional cost for organising FGDs (PGC, PDC and Microgrid)
Task 2. Rules and Regulations for Ancillary Services Responsive with VRE Technology		
2.1 Clarification of the deliverable from the original TOR ● Draft regulation was prepared by another consulting firm. Final draft of the regulation is for approval by the Commission and will be shared to Ricardo soon. ● ADB is conducting a study on AS regulation considering VRE ● Ricardo will prepare a supplement regulation on VRE	● Ricardo to carry out the proposed tasks	**1.** Provide ERC more time and close this task by **May 2023**. This task could be completed earlier if all documents are provided sooner.
Task 3. Rules and Regulations for Smart Grid Facilities		
3.1 Deviation from the original TOR ● Update the DU planning manual for DUs and ECs – introduce a chapter on smart grids ● Suggest international standards for smart grids (provide list)	● Ricardo confirms to carry out the following: 1) updating with the manual and 2) providing the list of standards	**1.** Draft planning manual and list of standards will be ready by **December 2022.**
3.2 new request	● Ricardo will carry out the new request of updating RTWR and RDWR regulation.	1. Draft RTWR and RDWR and PIS regulation be ready by **March 2023.**

ERC-Ricardo Consultation Outcome	Ricardo Feedback	Changes for Contract Variation
● Update the Rules on Transmission Wheeling Rates (RTWR) and Rules on Distribution Wheeling Rates (RDWR) integrating smart grid investments ● Update PIS (performance incentive scheme)		2. Jonathan Hedgecock and Sarah Carter – non key experts included in the original proposal will carry out the RTWR and RDWR update. Jonathan Hedgecock 15 days and Sarah Carter 15 days, plus 2 travel tickets, per diem 2 x 5 days).
Task 4. Revisions and Amendments to the Existing Philippine Small Grid Guidelines		
4.1 new request ● Review the frequency and categorisations. ● USAID recommendations on regulations and clustering of small grids ● Consider ancillary services ● Consider setting of minimum performance standards	● Ricardo will review the draft document and will respond to the USAID expert's comments ● recommend minimum performance standards; ● integrate ancillary services;	1. Updated PSGG will be ready by **March 2023.**
4.2 new request ● Update 2 outage regulations	● Ricardo will update ERC outage regulations	1. Draft regulations be ready by **March 2023.** 2. Graeme Chow will need additional 10 days for the update of outage resolutions
4.3 new request ● Prepare technical regulations for Microgrid Act	● Ricardo will prepare technical regulation and compliance monitoring process.	1. Draft regulations be ready by **March 2023.** 2. Additional 25 days for technical regulations for Microgrid Act, as follows ○ Minimum technical and service performance standards for micro grids (Graeme Chown 20 days) ○ Compliance monitoring process (Romeo Pacudan 5 days)
Task 5. Power Quality and Reliability		
5.1 Clarification of the deliverable from the original TOR ● Power Quality. Update ERC Resolution 11 2006 (Check consistency with PGC and PDC, update PDC customer standards, link to PIS and new rules on charging stations; extend regulation to transmission and generation)	● Power Quality. Ricardo will update ERC Resolution 11 2006.	● Draft power quality reports will be ready by **December 2022.**

ERC-Ricardo Consultation Outcome	Ricardo Feedback	Changes for Contract Variation
5.2 Clarification of the deliverable from the original TOR ● Power Reliability. Review, update and consolidate 1) Resolution 12, Series of 2006, 2) Resolution 1, Series of 2013, 3) Resolution 26, series of 2016	● Power Reliability. Ricardo will respond to the requested modifications and analysis	**1.** Draft power reliability reports will be due by **March 2023.**
5.3 new request ● Review indices for on-grid ECs, extend indices to off-grid ECs, on-grid PDUs, all DUs; include CAIDI, draft separate rules for PR standards for transmission in the PGC	● Ricardo will carry out these requested tasks	**1.** Additional analysis will be due by **March 2023.** 2. Graeme Chown need additional 10 days for power reliability requested tasks.
5.4 new request ● Benchmark of reliability regulations and indices with other jurisdictions at feeder level	● Ricardo will review regulations and indices for at least 5 Asian countries, 5 European countries and 5 North American countries. ● Information of the indices at the feeder level is not available and Ricardo will not carry out review at the feeder level.	**1.** Additional analysis will be due by **March 2023.** 2. Romeo Pacudan will need additional 10 days for power reliability requested tasks.
5.5 new request ● Develop tool for monitoring, reporting, compliance of on-grid Gencos on outage standards, including outage standards for VREs)	● Ricardo does not have the expertise for tool development for monitoring, reporting, etc. Ricardo will not carry out this task.	
Task 6. Promulgation of the Distribution Systems Loss Cap		
6.1 new request Develop new system loss caps based on the criteria provided in the EPIRA. Propose more appropriate methodology (as old methodology made several assumptions). ● The original assignment was to draft the TOR but later revised to carry out system loss cap analysis for 20 Distribution Utilities excluding ECs.	● Ricardo will update the submitted analysis and will include clustering of PDUs	**1.** PDU system loss cap analysis will be ready in **December 2022.** 2. Romeo Pacudan will need additional 5 days to carry out the PDU DSL analysis
6.2 new request ● ECs - review clustering of 100+ECs	● Ricardo will carry out analysis for 100+ ECs.	**1.** EC system loss cap analysis will be ready in **March 2023.** 2. Romeo Pacudan will need additional 10 days to carry out the EC DSL analysis

ERC-Ricardo Consultation Outcome	Ricardo Feedback	Changes for Contract Variation
6.3 new request ● Update ERC Resolution 10-s2018.	● Ricardo will carry out analysis for 100+ ECs.	● Updated ERC Resolution will be ready in **March 2023.** ● Romeo Pacudan will need additional 5 days to update the resolution
Task 7. Strategic Review of the Regulatory Framework to Assess Its Pertinence and Pursuit of Energy Transition		
7.1 Clarification of the deliverable from the original TOR ● Gaps in regulations (e.g. VREs), institutional capacity	● Ricardo will carry out the analysis on gaps in regulations (as specified in the original proposal)	1. The draft report on gaps will be ready by **March 2023.**
7.2 new request ● Review and update DSOAR (in view of increasing RE penetration)	● Ricardo does not have the expertise to review and update DSOAR.	

2. PROJECT IMPLEMENTATION STATUS

This Third Interim Report covers activities carried out during the period 1 August 2022 to 15 December 2022 and presents the changes in the assignment, the status of project task implementation, and the new timeline.

ERC and Ricardo Energy & Environment (Ricardo) carried out consultation sessions on 13 October 2022 and 25 October 2022 to finalise the way forward with current project tasks and clarify key outputs of some project tasks.

Table 3: Project Status

Project Task	Progress and Current Status
Task 1. Revisiting the existing technical, operating and performance standards for renewable energy generators	
• Update of the Philippine Grid Code • Update of Philippine Distribution Code	• As previously reported, the draft of the Philippine Grid Code (PGC) and Philippine Distribution Code (PDC) were submitted to ERC and Ricardo is awaiting ERC's feedback. • During the Consultation session on 13 October 2022 and 25 October 2022 ERC requested Ricardo to carry out consultation meetings (focus group discussion) with ERC stakeholders on PGC and PDC. ERC will organise the event while ETP through this project will provide the venue and speakers. Graeme Chown will be the main expert for the consultations. The consultation event is planned to be organised in late January or early February 2023. • ERC also requested Ricardo to integrate the comments from USAID ESP project on PGC and PDC. Ricardo submitted its revisions on PGC integrating comments from USAID on 12 December 2022. Ricardo is currently undertaking revisions of PDC. • ERC also informed Ricardo to integrate study results of the Asian Development Bank study related to ancillary services to PGC. ADB and Jacobs Engineering organised an alignment meeting with Ricardo on 6 December 2022.

Key points discussed during the 6 December 2022 alignment meeting with ADB (this meeting was organised by ADB and Jacobs Engineering):

Relevance of Jacobs work to Ricardo

- Relevant for PGC revision – Task 1 included in Jacobs' Report #1 Needs and Procurement Report. Task 1 covers AS definitions and parameters.
- Draft AS regulations will be affected by all 4 Jacobs reports. Ricardo's work on AS regulations only pertain to supplemental regulations related to VRE. The rest of Jacobs reports have implications to the main draft AS Rules 2022. But to some extent may be relevant to supplemental regulations being develop by Ricardo.

Timelines and collaboration plan

- Jacobs will send report 1 to Ricardo once approved by ADB/ERC by early January 2023
- Once Jacobs sends report to Ricardo, Jacobs to organise a session between Jacobs and Ricardo to go over the recommendations
- Ricardo will review and integrate Jacobs' recommendations into Ricardo's revised document.
- Ricardo will conduct consultations by end of January/early February and close the project by May 2023.

Project Task	Progress and Current Status
Task 2. Rules and regulations for ancillary services responsive with variable renewable energy technology	
• Update of the ancillary services rules and regulations	• During the consultation meetings, ERC informed Ricardo that Deloitte Consulting has prepared the draft of Ancillary Services Regulation. ERC requires Ricardo to prepare a supplemental regulation on VRE. • ERC provided the draft *Ancillary Services Rules -Rules, Terms and Conditions for Maintenance of Reliability, Adequacy and Security of the Grid* in November 2022. Ricardo is currently reviewing the document and the review will be completed in December 2022. • The ADB study on AS regulation is expected to be received in January 2023. This will be reviewed in February 2023. • Based on the regulation for Ancillary Service Rules and the ADB AS regulation a supplemental regulation will be drafted in March/April 2023.
Task 3. Rules and regulations for smart grid facilities	
• Rules and regulations for smart grid facilities	• Ricardo organised a webinar for ERC and DOE on smart grid best practices and recommendations for smart grid regulations on 10 August 2022. • During the Consultation meetings in October, ERC clarified that ERC does not need new regulations on smart grid but rather integrate smart grid in Distribution Utility Planning Manuals and well as provide a list of international smart grid standards. • The proposed changes to Resolution No.17 Series of 2011, Resolution Adopting the Investor-Owned Electric Distribution Utility Planning Manual to include smart gird technologies and a list of suggested international standards for smart grid were submitted to ERC on 12 December 2022. • The Electric Cooperatives Distribution Planning Manual is currently under review.

Key highlights of the webinar are the following:

- Ricardo presented the following: i) Philippine Electric Power Industry framework and smart grid roadmap for distribution utilities, ii) existing and new smart grid products, iii) smart grid communications, iv) smart gird operations and economics, v) smart grid cyber security, vi) smart grid standards, testing and certification, v) draft smart grid regulations for the Philippines.
- ERC commented that they would like to see a regulation that links with the policy issued by the Department of Energy (DOE) related to smart grids, and how utilities will comply with those requirements from DOE.
- Smart grid investments by utilities are being captured in the CAPEX regulations. On the other hand, ERC has issued standards on metering. ERC through this project would like to have a list of international standards for smart grids.
- DOE commented that perhaps it would be useful to have a stocktaking of what distribution utilities and electricity cooperatives have implemented so far with respect to smart grid investments as basis for understanding and formulating regulations.
- Ricardo proposed that as a way forward, it will prepare an outline for smart grid regulations and circulate internally. ERC can provide further guidance by commenting on the draft outline.

Task 4. Revisions and amendments on the existing Philippine Small Grid Guidelines (PSGG)	
• Updated Philippine Small Grid Guidelines	• During the consultation meetings, ERC informed Ricardo to respond and integrate USAID comments to PSGG. ERC also recommended to consider ancillary services in PSGG and reflect the changes in PGC and PDC.

Project Task	Progress and Current Status
	• An update of the PSSG based on USAID comments can be performed in December 2022, but the final update depends on the progress on the ancillary service regulations and the latest changes to PGC and PDC.
Key points discussed during the consultation meeting held last 28 November 2022. • Ricardo suggested to retain nominal frequency and adopt generator operating frequency from PDC • ERC recommended to incorporate provision from Res9s2022 in the amendment; establish performance standard for off-grid gencos. • For micro-grid systems, Ricardo will review IEC TS 62898-1 to 3. • Ricardo also recommended to adopt IEC TS 62257 series. • The ideal review sequences should be to finalise PDC/PGC first then PSGG after.	
Task 5. Power Quality and Reliability Standards	
• Regulations related to Power Quality and Reliability Standards	• During the consultation meetings, ERC requested Ricardo to Update ERC Resolution 11 2006 (for Power Quality) and Review, update and consolidate i) Resolution 12, Series of 2006, ii) Resolution 1, Series of 2013, iii) Resolution 26, series of 2016 (for Power Reliability). • The ERC Resolution 11 2006 for Power Quality is currently being reviewed and updated based on PDC and PGC updates. The draft is targeted to be provided to ERC by end of December 2022. • For Power Reliability, the review has started to update and consolidate 1) Resolution 12, Series of 2006, 2) Resolution 1, Series of 2013, 3) Resolution 26, series of 2016. The target is to provide ERC the consolidated regulation by March 2023. • A consultation meeting was held on 18 November 2022 to further clarify the deliverables of this task.
Key points discussed during the consultation meeting held last 18 November 2022. • Ricardo agreed to merge three regulations on Power System Reliability into one regulation. • Ricardo will review NERC standards for system reliability and review IEEE 1666, 1547 and corresponding IEC standards.	
Task 6. Distribution System Loss Cap Review	
• Distribution loss cap review and analysis	• During the Consultations held in October, ERC informed Ricardo that they would like the analysis for Electric Cooperatives (100+ ECs) to be included in the analysis. In addition, ERC also requested Ricardo to update ERC Resolution 10-s2018. • ETP approved the inclusion of ECs in the analysis as well as updating ERC Resolution 10-s2018. Data of the ECs will be shared later to Ricardo once the methodology is finalised. • A consultation meeting was held on 9 December 2022 to present the new methodology in analysing distribution system loss caps for DUs.
Key points discussed during the online consultation with ERC • ERC agreed to the approach of using the average of the existing losses as the baseline data while the target losses will be derived from the methodology used in Resolution 10-s2018. The yearly target will be derived from the target losses to be achieved in 1 regulatory period (4 years). • ERC recommended to explore other ways to cluster DUs (the current clustering is based on the average consumption per customer). MERALCO, the country's biggest utility, should not be clustered with other medium-sized utilities. • A new analysis will be submitted before the end of December 2022.	

Project Task	Progress and Current Status
Task 7. Strategic review of ERC regulatory framework	
• Assessment of ERC's regulatory framework and options for regulatory areas	• Reference studies, reports, regulatory information are being collected and analysed. • The enlargement of scope of work in Task 6 above (as a result of ERC's modification of tasks) slightly impacted the focus of Task 7. The new timeline to complete this task is March 2023.

3. REVISED PROJECT TIMELINE

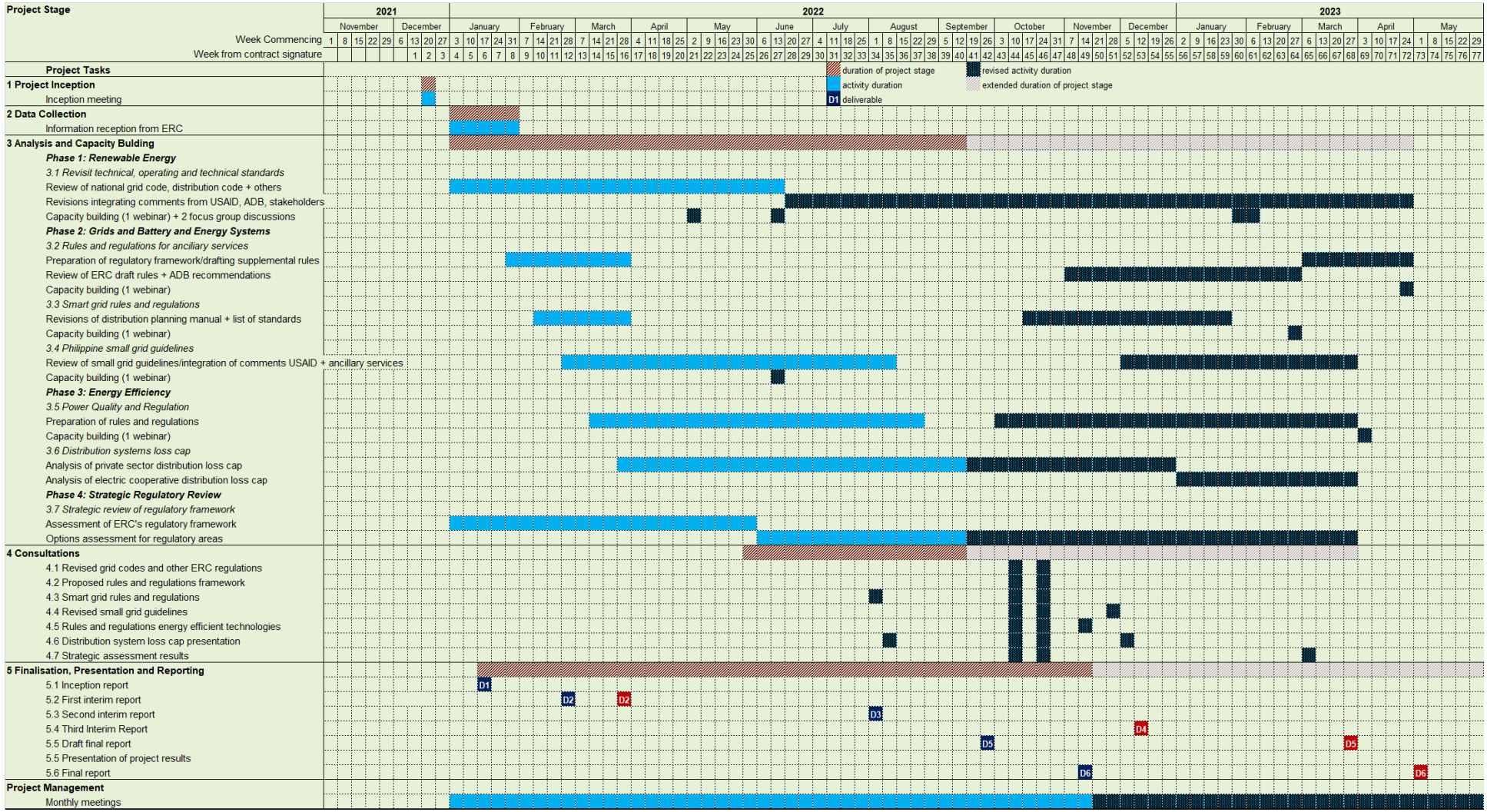

Figure 2: Revised Project Work Plan

4. UPDATED RESULTS BASED MONITORING FRAMEWORK

- see attached RBMF excel file

APPENDICES

Appendix 1 Revised PGC based on USAID ESP Comments

- See Attachment Appendix 1a for the revised PGC
- See Attachment Appendix 1b for Ricardo Response to USAID ESP Comments

Appendix 2 ADB Alignment Meeting

- See attached Appendix 2 for minutes of meeting

Appendix 3 Smart Grid Rules and Regulations

- See attached Appendix 3 for the presentation material

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Meeting Statistics

Meeting ID	Topic	Start Time	End Time
87158929976	Rules and Regulations for Smart Grid Facilities	08/10/2022 06:36	08/10/2022 08:28
Name (Original Name)	User Email	Total Duration (Minutes)	Guest
Ricardo Zoom 1	webinars.ee@ricardo.com	113	No
Marga Rivera (Margarette Rivera)		98	Yes
DOE		1	Yes
Graeme Chown		93	Yes
Diorella Joy Bobis - BOI		6	Yes
RP26		93	Yes
James Roen Soriano		89	Yes
Charles Justin Mancenido		77	Yes
ERC - Gerard D. Bobis		87	Yes
ERC | Melvin Mea (Melvin Mea)		36	Yes
ERC - NESTOR V. PADILLA		72	Yes
Jessie L. Todoc		84	Yes
Rannie Maatubang		79	Yes
ETP - Fritzie Vergel		73	Yes
Silver Navarro Jr (UL Silver Navarro Jr)		72	Yes
Aira Samantha Tantoco		43	Yes
ERC | Melvin Mea		50	Yes
DOE Luningning G. Baltazar		48	Yes
Lesly De Vera (Lesly De Vera)		44	Yes
Adrian Roy Pasion		5	Yes

Appendix 4 Revised DU Planning Manual

- See attached Appendix 4

Appendix 5. International Standards for Smart Grids

- See Attached Appendix 5

Appendix 6 Distribution System Loss Cap

- See attached Appendix 6

Appendix 7 Proposal for Contract Variation

With the proposed changes and activities accepted by ETP, the following are our proposal for contract variation.

1. Project Timeline

- The *Third Interim Report* will be submitted mid-December 2022. The *4th payment* will be made by end December 2022.
- The *Draft Final Report* will be submitted by March 2023. The 5th payment will be made by end of March 2023.
- The *Final Report* will be submitted in early May 2023. The *last payment* will be made by end of May 2023.

2. Cost Variation due to additional consultations with national experts

- This contract was signed in December 2021 during the COVID pandemic. All meetings were envisaged to be online. Due to easing of COVID measures, ERC requested to have consultations with our national experts. The first consultation was on 13 October 2022 to discuss the scope of key regulations. We envisaged around 5 consultations x 750 USD per consultations (local venue including coffee breaks and lunch)
    - Consultations (5 x US$ 750) = US$ 3,750.00

TOTAL = **US$ 3,750.00**

- Additional time for Jessie Todoc (national expert) to carry out the consultations:
    - Jessie Todoc fees: US$ 478.50 x 10 days = **US$ 4,785.00**

TOTAL = **US$ 4,785.00**

3. Cost Variation due to additional tasks under Task 1

- Graeme Chown fees: 9 days x US$ 1,237.50 = US$ 11,137.50
- Air ticket (from South Africa): = US$ 3,500.00
- Per diem: 7 x US$ 202.50 = US$ 1,417.50
- FGD costs: 3 FGDs x 30 persons x USD$ 50.00 = US$ 4,500.00

TOTAL **= US$ 20,555.00**

4. Cost Variation due to additional tasks under Task 6

- Romeo Pacudan fees: 20 days x US$1,381.25 = US$ 27,625.00

TOTAL **= US$ 27,625.00**

5. Cost Variation due to additional travel for Team Leader

(note: the original project does not cover travel for all experts)

- Air tickets (from UK): 1 x US$ 2,025 = US$ 2,025.00
- per diem: 10 days x US$ 202.5 = US$ 2,025.00

TOTAL **= US$ 4,050.00**

GRAND TOTAL **= US$ 60,765.00**

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