**Technical Support for Continued Support on Regional Market Framework Implementation to the Regional Electricity Regulators Association of Southern Africa (RERA)**

Model Grid Interconnection Agreement

**Prepared for:** **Prepared by:**

Office of Energy Programs Deloitte Financial Advisory Services, LLP

Bureau of Energy Resources 1919 N. Lynn Street

U.S. Department of State Arlington, VA 22209

**July 13, 2018**

This work was funded by the U.S. Department of State, Bureau of Energy Resources, Power Sector Program. This work does not necessarily reflect the views of the United States Government.

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Acronyms

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| ASEANDAM | Association of Southeast Asian NationsDay-ahead Market |
| DOS | Department of State |
| ENRESI | Bureau of Energy ResourcesElectricity Supply Industry |
| FERCGPS | Federal Energy Regulatory CommissionGlobal Positioning System |
| IEAMIF | International Energy AgencyMarket and Investment Framework |
| RERA | Regional Electricity Regulators Association of Southern Africa |
| SADC | Southern Africa Development Community |
| SAPPSAPP CCSAPP ABOMSAPP OG | Southern Africa Power PoolSAPP Coordination CenterSAPP Agreement Between Operating MembersSAPP Operating Guidelines |
| SAPP IUMOU | SAPP Inter Utility Memorandum of Understanding |
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# Executive Summary

Work under *Technical Support for Continued Support on Regional Market Framework Implementation to the Regional Electricity Regulators Association of Southern Africa (RERA)* is funded by the United States Department of State through the Bureau of Energy Resources Power Sector Program. This work will continue support to RERA, as well as three selected pilot countries – Zambia, Namibia, and Botswana – to develop tools and procedures identified by the Market & Investment Framework (MIF) and the Framework Roadmap. The primary objective is to further progress with specific generation and transmission projects, as identified by the Southern Africa Power Pool (SAPP) and RERA and to increase SAPP membership and participation in the regional electricity market.

The regional transmission capacity needed to facilitate an increase in cross border power trading in the Southern African region is highly constrained, unreliable, and does not offer redundancy. This is mainly due to the lack of investment in new transmission infrastructure and maintenance of existing capacity. Recognizing the importance of a robust transmission system in meeting electricity demand and allowing the market to operate competitively and efficiently, it is important to develop standards and rules that harmonize the effective use of the interconnected SAPP system.

This report provides one component of such harmonized standards, a Model Grid Interconnection Agreement.

# BACKGROUND ON INTERCONNECTion AGREEMENT practices

Standard and consistent rules are required to allow the interconnection of two or more electrical transmission systems. This provides individual transmission owners and system operators assurance that such interconnections will not adversely affect the workings of the individual transmission systems and, in the case of a regional power pool, the integrated system as a whole.

Within the context of the SAPP, an Interconnection Agreement is an agreement between two or more Transmission Owners, with the SAPP Coordination Center (SAPP CC) as an endorsing party, that sets out the necessary terms and conditions upon which two or more transmission systems are interconnected.

## Existing Practice used by the SAPP

Although the SAPP CC is usually involved in the coordination and management of new transmission interconnectors, they do not mandate any specific requirements or provide Member States with a model Agreement for use across the region.

Various new interconnection projects are being pursued within the SAPP (see Annex 1) due to high congestion on the interconnected transmission system and little redundancy. This has created an immediate need for a standard approach to interconnect new and existing transmission systems.

## Review of International Leading Practices

To establish the backdrop for developing a Model Interconnection Agreement, the Team reviewed the following reports:

* A 2016 report from the International Energy Agency (IEA) - *Large-Scale Electricity Interconnection: Technology and Prospects for Cross-regional Power Networks*

IEA’s report provides detailed case studies of interconnections on the European continent, an analysis of interconnection practices in Central America through the SIEPAC interconnector, and ongoing plans towards power grid integration in the Association of Southeast Asian Nations (ASEAN).

* The US Federal Energy Regulatory Commission’s (FERC) *2016 Standard Large Generator Interconnection Agreement*

The FERC document, while specifically prepared for generators to connect to grids rather than grid to grid interconnections, provides a model nonetheless of the typical clauses and conditions that must be included in an agreement of this nature.

* The United Nations 2006 report *Multi-Dimensional Issues in International Power Grid Interconnections*

The United Nations report acknowledges that international grid interconnections can be very complex legal undertakings, involving a variety of national, sub-national, and even international parties to the agreements required for planning, building, and operating power lines used to buy and sell electricity across borders.

All documents reviewed confirmed the critical nature of a harmonized approach to the development of new interconnectors, particularly those that may have an impact on the interconnected regional transmission system. Clear regulations, agreements and consistent grid codes are necessary to enable different power systems to operate together efficiently and allow parties to reap the benefits that a shared power system may provide.

## Elements for Consideration in a Model Grid Interconnection Agreement

A model Grid Interconnection Agreement should provide guidance and minimum requirements for entities that want to construct new interconnectors that will connect with the interconnected SAPP transmission system. Such an Agreement should contain at a minimum the following information:

* the GPS coordinates of the Points of Connection;
* information regarding the owners of the assets involved (the portion of transmission systems being connected as well as the interconnector);
* diagrams of the ownership boundaries; and
* a detailed description of the arrangements on how to coordinate maintenance and operation of the interconnector.

Drawing from a review of the documents listed in Section 1.2 as well as the Team’s practical experience working within the SAPP region, Section 2 below provides suggested clauses for inclusion in an Interconnection Agreement.

# MODEL GRID INTERCONNECTion AGREEMENT

**Section 1 - Applicability**

1. **The Parties**
	1. [Name and registration number of Transmission Owner] incorporated in [Country]; and
	2. [Name and registration number of Transmission Owner] incorporated in [Country].
2. **Context of and roles of the SAPP and RERA**

The Parties shall acknowledge the existence of the Southern African Power Pool (SAPP) and the Regional Electricity Regulators Association (RERA) and the need to use the following institutional documents as minimum requirements in concluding this Agreement.

a. SAPP Inter Utility Memorandum of Understanding (SAPP IUMOU);

b. Agreement Between Operating Members; (SAPP ABOM);

c. SAPP Operating Guidelines; (SAPP OG);

d. RERA’S Guidelines for Cross Border Trade; and

e. RERA’s Market and Investment Framework (MIF).

1. **DEFINITIONS**

An explanation of key terms used in this Agreement is provided in Annex 1.

1. **SUBJECT MATTER**
	1. This clause deals with the terms upon which the Transmission Owners (either side of the border/s) will interconnect with each other’s system and that of the SAPP as a whole.
2. **TERM OF AGREEMENT**
	1. This Agreement shall commence on \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and ends on \_\_\_\_\_\_\_\_\_\_\_\_.
	2. In accordance with its terms and subject to paragraph (c) below, this Agreement shall end on the date specified in point 5a., or alternatively:
	3. This Agreement shall end:
		1. if both Parties agree, or
		2. by notice given to either Party if an administrator or liquidator is appointed.
	4. When this Agreement ends, each Party shall perform all actions required, at own cost, that may be necessary to disconnect, or arrange for the disconnection of, the Interconnector from the interconnected SAPP system.
	5. Rights and obligations accrued before the end of this Agreement shall continue despite the end of this agreement.
3. **SCOPE OF AGREEMENT**
	1. Under this Agreement the Parties shall agree to provide interconnection services at the Points of Connection in either country.
	2. The Parties shall also agree to meet other obligations set out in this contract and to comply with country specific, SAPP and RERA rules, guidelines and regulations.
	3. This Agreement shall not cover the sale, purchase and wheeling of energy.
	4. The Transmission Company shall provide, install and maintain all equipment for the provision of connection services at the Point of Connection safely and in accordance with the energy laws of the relevant country.
4. **GENERAL OBLIGATIONS**
	1. The Parties shall agree to meet other obligations set out in this Agreement and to comply with country specific, SAPP and RERA rules, guidelines and regulations.
	2. Provision of information
	3. Both Parties shall provide any information that is reasonably required for the purposes of establishing this agreement. The information shall not be misleading or deceiving in relation to any information provided.
	4. Updating of information
	5. Each Party shall promptly inform each other of any:
5. change to its contact details;
6. change that it may be aware of that materially affects access to equipment involved in providing interconnection services at each other’s premises;
7. change in plant or equipment, including metering equipment; or
8. any change to the capacity or operation of connected plant or equipment that may affect the quality, reliability, safety or metering of the supply of energy to the Interconnector or to the interconnected SAPP system.
	1. Laws and other requirements

Each Party shall comply with:

1. the energy laws of its country; and
2. the SAPP and RERA rules, guidelines and regulations.
	1. Indemnities
3. In the event that any Third Party on-sells or on-supply electricity to any other SAPP Member at the Points of Interconnection, the Parties to this Agreement shall be indemnified, and held harmless against, any losses, damages, expenses and liabilities that arise as a result of any claims made against by that SAPP Member.
4. The Parties shall further agree to indemnify each other, SADC, SAPP and RERA and hold each other harmless from and against all liabilities or claims for any loss or damage to us or third parties, any death or injuries to any person, and all liabilities or claims which we may incur to any Third Party arising out of:
	* 1. the operation of the Interconnector and other equipment at the Points of Interconnection;
		2. representation or promise made by either Party, or on either behalf, to any SAPP Member;
		3. the use of electricity which has passed from each other’s transmission systems beyond the Points of the Interconnector to the Interconnector;
		4. each Parties employees’, agents’ or contractors’ failure to comply with any of your obligations under this Agreement; or
		5. each Party or its employees’, agents’ or contractors’ negligent or reckless acts or omissions.
5. **WRONGFUL AND ILLEGAL USE OF THE INTERCONNECTOR**
	1. Illegal use of Interconnector and consequences.

 Each Party shall take reasonable steps to ensure others do not:

* 1. illegally use capacity of the Interconnector;
	2. interfere or allow interference with any of equipment at either Parties premise, except as may be permitted by law;
	3. use the Interconnector capacity in a manner that:
		1. unreasonably interferes with the supply of energy to another customer or SAPP Member; or
		2. causes damage or interference to any third Party; and
1. use interconnection services provided in a way that is not permitted by law, SAPP / RERA rules, guidelines and regulations or this Agreement.
	1. Consequences for wrongful or illegal use

If a Party does not comply with the clause above, the other Party/Parties may take any of the following actions:

1. estimate the amount of Interconnector capacity obtained wrongfully or illegally and take debt recovery action against for that amount;
2. undertake (or agree that the other Party undertake) any necessary rectification work at own cost; and
3. arrange for the immediate disconnection of the Interconnector.
4. **Interconnector Owners Liability**
5. Quality and reliability of electricity supply in the different jurisdictions
6. The quality and reliability of the Interconnector shall be subject to a variety of factors that may be beyond the Parties’ control, including accidents, emergencies, weather conditions, vandalism, system demand, the technical limitations of its transmission system and the acts of other persons, including at the direction of a relevant utility.
7. Subject to the next clause, unless a Party has acted in bad faith or negligently, liability shall exclude any loss or damage the other Party may suffer as a result of the partial or total failure to avail the Interconnector capacity.
8. Subject to the next clause, all liabilities related to the loss or damage suffered by any Party that is not a result of the partial or total failure to supply electricity to each other via the Interconnector shall be excluded.
	1. Limited liability
9. Each Party’s liability shall extend only to any physical losses and damage the other Party suffers and for personal injury, due to the partial or total failure to supply energy to the Interconnector and caused by the other Party’s negligence or bad faith which includes:
	* 1. problems in the quality of supply of electricity to your premises (such as power surges and drops); and
		2. interruptions to or failures of the supply of electricity to the Interconnector.
10. Each Party’s liability to the other shall be limited to $[\_\_] as indexed annually by the SAPP Coordination Center.
11. **INTERRUPTION OF INTERCONNECTOR**
	1. The Transmission Owners may interrupt the availability of the Interconnector for planned or unplanned maintenance.
	2. Planned Interruptions
12. Planned interruption may be made for the following reasons;
	* 1. for the maintenance, repair or augmentation of a Party’s transmission system including maintenance of the metering equipment; and
		2. for the installation of new equipment or the connection of other feeder bays.
13. If scheduled transactions on the Interconnector will be affected by a planned interruption, the transmission owner requesting the outage shall provide at least [\_\_] business days’ notice to the other Party and to the SAPP CC.
	1. Unplanned Interruptions
	2. Either party may interrupt the Interconnector in circumstances where there is an immediate threat of injury or material damage to any person, property, including:
		1. for unplanned maintenance or repairs;
		2. for health or safety reasons;
		3. in an emergency as required by a relevant authority; and
		4. to restore supply to some transmission owner’s other customers.
	3. If an unplanned interruption is made, the Transmission Owners shall use all available means to restore the Interconnector as soon as possible.
	4. The Transmission Owners shall make information about the unplanned interruptions (including the nature of any emergency and where possible, an estimate of when the Interconnector will be restored) available to each other and the SAPP CC within 1 hour of the interruption.
14. **DISCONNECTION OF INTERCONNECTOR**
15. The Transmission Owners may disconnect the Interconnector if:
	1. one of the Parties uses the Interconnector wrongfully or illegally;
	2. either Party fails to pay any direct charges to the other under this agreement;
	3. in an emergency for health and safety reasons; or
	4. it is required to do so at the direction of a relevant authority which may include the SAPP CC or RERA.
16. Notice and warning of disconnection

 Either Party may disconnect the Interconnector only if:

* 1. a disconnection warning notice had been issued by either Party; or
1. the other Party fails to rectify the matter that gave rise to the right to disconnect within the time period set out in the warning notice.
2. Parties rights after disconnection

 The disconnection of the Interconnector does not limit or waive any of the Parties rights and obligations under this Agreement arising before disconnection, including any of Parties’ obligation to pay for services rendered.

1. **RECONNECTION OF INTERCONNECTOR AFTER DISCONNECTION**
2. The Interconnector may be reconnected if the reason for the disconnection has been resolved to the satisfaction of the disconnecting Party and with the consent of the SAPP CC.
3. **NOTICES AND INVOICES**
4. Notices and invoices related to this Agreement shall be sent in writing through courier, post, or electronically.
5. A notice or invoice under this Agreement shall be deemed to have been received:
6. on the date it is handed to the other Party, left at the Party’s premises;
7. [ ] business days after it is posted; or
8. on the date of transmission if sent electronically.
9. **COMPLAINTS AND DISPUTE RESOLUTION**
10. If a Party to this Agreement would like to lodge a complaint relating to the Interconnector, it shall be lodged in accordance with the standard SAPP complaint and dispute resolution process provided for in the SAPP IU – MOU.
11. **FORCE MAJEURE**
12. Effect of a force majeure event

 If either Party cannot meet its obligation under this Agreement because of an event outside the control of the Parties:

1. obligations, other than the obligation of payment, shall be suspended to the extent they are affected by the event for so long as the event continues; and
2. the affected Party shall use all available means to give the other prompt notice of that fact including full particulars of the event, an estimate of its likely duration, the extent to which obligations are affected and the steps taken to remove, overcome or minimize those effects.
3. Deemed prompt notice

If the effects of a force majeure event are widespread, the Parties shall be considered to have given prompt notice if the necessary information is made available by way of a telephone call within 30 minutes of being advised of the event or otherwise as soon as practicable.

1. Obligation to overcome or minimize effect of force majeure event

 The Party that claims a force majeure event shall use all available means to remove, overcome or minimize the effects of that event as soon as practicable possible.

1. **APPLICABLE LAW**
2. This Agreement shall be governed by the law of [Country]. (to be agreed by Parties)
3. **GENERAL**
4. Some obligations placed on the Parties under this Agreement may be carried out by another person/entity. If an obligation is placed on a Party to do something under this Agreement, then:
5. the Party shall be considered to have complied with the obligation if carried out by the person/entity acting on behalf of the Party;
6. if the obligation is not complied with, the Party that subcontracted the obligation shall remain liable for a failure to comply with this Agreement.

**Section 2- Specific Provisions**

1. **Engineering report**

If the Interconnector is connected to the interconnected SAPP system or any subsequent modification relating to the Interconnector, the SAPP CC shall provide an “engineering report” and the Transmission Companies shall ensure that the Interconnector is installed, commissioned, operated and maintained in accordance with the requirements of that engineering report.

The engineering report is a document prepared by the SAPP CC setting out technical requirements with which Transmission Companies must comply to ensure that the Interconnector is compatible with the interconnected SAPP system and that it does not adversely affect interconnected SAPP system or the systems of other SAPP Members.

1. **Compliance Monitoring Program**

By no later than 6 months after the commissioning of the Interconnector, the Transmission Companies shall prepare and have approved by the SAPP CC a compliance monitoring program which sets out the procedures the Transmission Companies will employ to monitor the compliance of the Interconnector with the National and Regional Grid Codes.

1. **Maximum entitlements**
	1. The Parties shall agree the specifications of the Maximum Transfer Limits for the Interconnector. These specifications shall be based on the line and terminal equipment capacities of the Interconnector, the capacity of the parts of the transmission systems of both Transmission Companies which service the Interconnector.
	2. If one of the Parties wishes the Maximum Transfer Limit to be increased the Transmission Company shall submit an application to the SAPP CC under the SAPP ABOM to increase the limit.
	3. The Transmission Companies and the SAPP CC shall acknowledge that if the scheduled transactions exceed the Maximum Transfer Limit:
2. this may cause damage to the Interconnector and its terminal equipment; and
3. this may adversely affect the Transmission Companies to supply services to each other and any other users of the Interconnector.
	1. The Transmission Companies shall notify each other if one Party has reason to believe the other has exceeded the Maximum Transfer Limit or if there is a material risk they may do so to ensure necessary steps are taken to ensure the Maximum Transfer Limit is not exceeded in the future.
	2. If any Party exceeds the Maximum Transfer Limit on more than one occasion the SAPP CC shall consider it reasonably required for the protection of both Parties systems and/or the security of supply of the interconnected SAPP system, to require the exceeding Party to install equipment to ensure that the Party does not exceed the Maximum Transfer Limit in the future. The exceeding Party shall comply within the time indicated by the SAPP CC any such requirement within the time the SAPP CC and provide to the SAPP CC evidence to confirm compliance.
4. **Metering**
	1. The Transmission Companies shall, at all times, ensure that there is metering installed at both sides of the Interconnector.
	2. Metering equipment shall be of the telemetering type with adequate communication facilities so as to provide the actual flows of active and reactive power at the Points of Interconnection and facilitate reconciliation.
	3. Where the communication facilities are temporarily not available the differences between locally metered figures and those quantities used in daily energy accounting shall be reconciled at agreed time periods.
	4. Metering equipment shall be tested by the owner as recommended by the SAPP Operating Sub-Committee. In addition, special tests shall be made on request by any other Operating Member. If the meter complies with specifications, then the Operating Member who has requested the tests shall bear the costs related to the testing. Otherwise, the costs of such tests shall be borne by the owner of the meter. Representatives of any Operating Member shall be given the opportunity to witness the tests.
5. **Protection schemes**
	1. As prescribed in the SAPP Operating Guidelines, the Transmission Companies shall co-ordinate the application- and maintenance of protective relays. They shall develop and implement criteria which will enhance system reliability with minimum adverse effects on the Interconnector and that of the interconnected SAPP system.
	2. Appropriate technical information concerning protective relays shall be available in the Control Centers of the Transmission Companies.
	3. System Controllers shall be familiar with the purpose, operation and limitations of protection schemes.
	4. If equipment or protection relay fails and reduces system reliability, the appropriate personnel shall be notified and corrective action shall be carried out as soon as possible.
	5. All new protective schemes and all modifications to existing protective schemes shall be coordinated between the Transmission Companies and the SAPP CC.
	6. The Transmission Companies shall inform each other and the SAPP CC of changes in generating sources, transmission, load or operating conditions which could require changes in the Interconnector protection schemes.
6. **Interruptions and Curtailments**
	1. Transactions scheduled on the Interconnector shall be fully delivered at all times as scheduled except where interruptions or curtailments are caused by Force Majeure Events, by the operation of protection schemes or by the installation, maintenance, repair and replacement of facilities where such events were unforeseeable and therefore notice could not be given.
	2. No Party can guarantee that it will be able to continuously deliver electricity to the transaction points. Without limiting the foregoing, the events which may lead to an interruption or curtailment in the supply of electricity may also interrupt, curtail, or lead to an interruption or curtailment in, its ability to deliver electricity into the interconnected SAPP system.
	3. Where there is an interruption or curtailment (for any reason) in the availability of the Interconnector, then the Transmission Companies shall:
7. comply with such directions issued to each other or the SAPP CC for the purpose of ensuring that interruption or curtailment is carried out safely; and
8. ensure the protection and safe operation, shutdown and reconnection of the Interconnector.
9. **Limitation**
10. Acknowledgement

The Transmission Companies shall acknowledge and agree that the connection of the Interconnector to each other’s system is subject to fluctuations and interruptions from time to time which may affect each other’s ability to import, export or transport electricity for a variety of reasons and, therefore, the Transmission Companies shall acknowledge and agree that:

1. they are unable to, and do not represent, warrant, or guarantee to other SAPP Members, the SAPP CC and RERA that they will be able to import, export or transport electricity into the Interconnected SAPP system at any time; and
2. such fluctuations or interruptions may damage the Interconnector or cause it to malfunction.
3. Release

 The Transmission Companies, SAPP CC and RERA shall release and discharge each other from and against any loss, cost, damage, expense or liability that may incur which arises out of, or in relation to any:

1. inability to import, export or transport electricity export electricity into its transmission system at any time; or
2. malfunction of, or any damage to, the Interconnector that arises out of, or in relation to, any fluctuations or interruptions from time to time on the Interconnector to each other’s transmission systems except to the extent that any such malfunction or damage is as a result of fluctuations or interruptions caused by negligence or bad faith in which case it is agreed that liability is limited to direct costs of repairing such malfunction of, or damage to, the Interconnector.
3. **Safety and technical requirements**
	1. The Transmission Companies shall ensure that the Interconnector complies with the:
		1. National Grid Code in each country;
		2. Regional Grid Code;
		3. National and Regional System Operating Guidelines;
		4. Any specific rules of the Joint Operating and Maintenance Committee that oversees the operation of the Interconnector (Joint Operating Protocol);
		5. SAPP IU MOU;
		6. SAPP ABOM;
		7. SAPP OG;
		8. Engineering Report, and
		9. Good engineering industry practice.
	2. The Transmission Companies shall inform each other, the SAPP CC and RERA as soon as practicable if they fail to comply with the above-mentioned requirements.
	3. Where a Party fails to comply with any requirement, SAPP CC or RERA may direct the non-complying Party to make such changes required to the Interconnector as required to address the failure.
	4. The Transmission Companies shall comply with any reasonable requirement in relation to the installation of additional equipment on or in connection with the Interconnector that may be deemed necessary by the SAPP CC or RERA to ensure the safe and reliable operation of the interconnected SAPP system.
4. **Non-compliance, notification and consequences**
	1. The Transmission Companies shall notify each other if one Party does not or may not comply with the requirements of this Agreement or if one Party has otherwise breached this agreement.
	2. If a notice is served, the receiving Party shall undertake such testing, inspection and monitoring as required to determine whether it is complying with the requirements of this Agreement and, where it does not comply, undertake such remedial action as necessary to ensure it comply with the requirements of this agreement. This includes, without limitation, undertaking such testing, inspection, monitoring and other remedial action as is reasonably required.
5. **Operation, Work and Approvals**
	1. The Transmission Companies shall ensure that the Interconnector is operated and maintained in a manner that does not compromise the safe operation of the interconnected SAPP system, does not cause damage to the interconnected SAPP system and does not interfere with the continuity or quality of supply provided by the system.
	2. The Transmission Companies shall comply with the operating protocols set out in the document titled “Joint Operating Protocols” which document must be agreed and signed as a condition to use the Interconnector.
	3. The Transmission Companies shall:
6. provide each other a copy of all government (regulator and relevant energy department), SAPP and RERA approvals relating to the Interconnector;
7. notify each other as soon as practicable if there is a change to, including without limitation a revocation of, any such approval and provide to them a copy of the revised approval or document effecting the revocation; and
8. notify each other if there is any reason to believe that an approval may be revoked and the revocation would have the effect that it would cease to be lawful for a Party to own and/or operate the Interconnector.
	1. The Transmission Companies shall ensure that they can be contacted at all times (24 hours a day, 7 days a week) and have authorized, English speaking and duly qualified personnel available who are able to attend to emergencies and other urgent situations in respect to the Interconnector and ensure up to date phone numbers and email addresses are available for such personnel.
9. **Fault reporting**
	1. The Transmission Companies shall notify each other and the SAPP CC as soon as reasonably practicable if they become aware of any fault or irregularity of the Interconnector.
	2. Where a Transmission Company notifies the other and the SAPP CC of a fault or irregularity or otherwise become aware of a fault or irregularity, then the SAPP CC shall undertake such investigation of the fault or irregularity as it considers appropriate having regard to good electricity industry practice, applicable laws and the SAPP Operating Guidelines.
	3. Where the fault or irregularity is caused by the Interconnector or by a Party’s failure to comply with this agreement, then the Party shall:
		1. take such steps in relation to the Interconnector as required to remedy the fault or irregularity and provide such evidence as require to substantiate that such steps have been successfully taken; and
10. pay the cost for investigating the fault or irregularity, for taking any action taken in respect to the Interconnected SAPP system due to the fault or irregularity and for any review the SAPP CC or the other Party undertakes to remedy the fault or irregularity.
11. **Record keeping**

The Transmission Companies shall:

* 1. keep adequate records in accordance with good electricity industry practice of all inspections, testing and maintenance undertaken with regard to the Interconnector and provide these to each other and the SAPP CC for inspection upon request.
	2. carry out such inspections and testing of the Interconnector (including its protection systems) as is reasonably require (whether because of a fault or incident which has arisen or otherwise).
	3. from time to time when requested, provide to each other and the SAPP CC such information requested to enable the other to exercise its rights or discharge its obligations under this Agreement, under applicable law or as required by the SAPP CC for the general management of the SAPP interconnected system. Such information must be provided in the form and within a reasonable timeframe after being requested.
1. **Charges**
	1. Subject to sub clause d, the Transmission Companies shall pay each other those charges specified in Annex 2, as well as any other charges, fees or amounts referred to in this Agreement and any other charge or fees they are permitted to charge by law or per SAPP obligation.
	2. If one of the Transmission Companies does not have its own control area it shall procure this service from a SAPP authorized control area and pay the associated Control Area Service Charge.
	3. In addition to the above, all SAPP Members or users shall pay a SAPP system wide users fee to the SAPP CC.
	4. All the SAPP related charges shall be as detailed in the SAPP Agreement Between Operating Members or as negotiated bilaterally.
2. **Invoicing**
	1. Except where the SAPP CC agrees to invoice and pay the Transmission Companies SAPP related charges the Parties shall be entitled to levy charges under this Agreement and to issue invoices directly to each other for amounts payable under this Agreement. Invoices must be paid within [\_\_] days of receipt.
	2. Where an invoice is not paid within the time required interest shall be paid on the overdue amount until such time as the overdue amount and any accrued interest is paid.
	3. Any unpaid amount shall bear interest from the date due until the date of payment.
	4. The interest shall be calculated at five percent per annum.
	5. All invoices under this Agreement shall be in US Dollars or [\_\_], unless otherwise agreed.
3. **Insurance**
	1. During the term of this agreement, the Transmission Companies shall maintain insurance policies as specified below:
		1. public liability for not less than $ [\_\_\_\_] per occurrence; and
		2. property insurance for any physical damage to the Interconnector and associated electrical equipment for not less than the replacement value of that infrastructure.
	2. The Parties shall provide each other and the SAPP CC with certificates of for the insurance policies within 5 business days of the Commencement Date and within 5 business days of any renewal of those policies.
	3. The insurance policies shall:
		1. be taken out with reputable insurers;
		2. contain such terms and cover such risks as would be required by a prudent operator, with a business similar to that of the Transmission Owners, from its insurers.
	4. The Parties shall notify each other and the SAPP CC, as soon as practical, of any material variation or cancellation of an insurance policy required under this agreement.
	5. No insurance policy maintained by either Party shall limit the Parties obligations under this agreement
4. **Change in law**
	1. If, due to a change in law;
		1. this Agreement ceases to comply with the requirements of the law; or
		2. this Agreement ceases to be compatible with the current SADC regulatory regime for electricity such that it is not possible or practicable for the parties to perform their obligations or exercise their rights in the manner envisaged as at the time of execution of this agreement;

either Party may propose amendments to this Agreement to ensure this Agreement complies with applicable laws and is compatible with the regulatory environment.

1. **Confidentiality**
2. Confidential Information

Each Party shall treat and keep confidential:

* + 1. the terms of this agreement; and
		2. all information disclosed to that Party, under this agreement, pursuant to the transactions contemplated by this Agreement or during the negotiations preceding the execution of this Agreement by the other Party.
1. Permitted Disclosure

Despite clause 17a, Confidential Information may be disclosed by a Party receiving that information in the following circumstances:

* + 1. when required by law or by the requirements, rules or guidelines of a Party’s national regulator, its shareholder, RERA or the SAPP CC;
		2. to any of a Party’s insurers or advisers thereto;
		3. as necessary to enable a Party to discharge its obligations, or exercise its rights, under this agreement; or
		4. as necessary to enable a Party to claim force majeure under another Agreement or to enable a Party to deal with any claim that it is in breach of another agreement.

A Party disclosing Confidential Information under this clause shall use all available means to ensure that the persons to whom it discloses that information undertake to keep the information confidential, minimize disclosure and use the Confidential Information only for the purpose for which it was disclosed to them.

1. **Credit Support**
	1. Credit Support at Commencement
		1. Unless a Party has an Acceptable Credit Rating, or its obligations under this Agreement are guaranteed on terms acceptable to the other Party by an entity with an Acceptable Credit Rating, the Party shall provide the other Party Credit Support.
		2. An Acceptable Credit Rating means a credit rating of not less than a Standard and Poor’s rating of [\_\_\_\_] (or its equivalent from another recognized credit rating agency).
	2. The Credit Support shall be:
		1. A bank guarantee, in a form reasonably satisfactory to the other Party, from an African based financial institution with an Acceptable Credit Rating and otherwise satisfactory to the other Party acting reasonably;
		2. a deposit placed with the other Party’s; or
		3. such other form of credit support as proposed by a Party and accepted by another Party at its absolute discretion.
	3. Amount of Credit Support
2. The amount shall be based on a number of months of charges and equal to a reasonable estimate of the quantum of the number of months of the charges, as estimated and agreed by the parties every two years.
	1. Recourse to Credit Support

A Party shall have recourse to the Credit Support to recover:

* + 1. any amounts due under this Agreement but unpaid;
1. any costs or expenses incurred and losses and damages suffered by a Party or which the other Party is liable under or in connection with this agreement.
	1. Replacement of Credit Support

If a Party draws upon Credit Support then the other Party shall, within 5 business days of the Credit Support being drawn upon, provide replacement Credit Support.

1. **DISCONNECTION**

Subject to and to the extent permitted by applicable law and SAPP rules, the parties may immediately proceed to disconnect the Interconnector from the Party’s transmission systems:

 a. where a Party fail to comply with this Agreement and such failure threatens the integrity or reliability of the Interconnector, the Party’s transmission systems and that of the interconnected SAPP system;

 b. if Credit Support required by this Agreement is not in force and if either Party fail to correct that breach within 10 business days of notice;

 c. where any Party commit any other breach of this Agreement and fail to remedy that breach within 30 days of notice;

 d. where a Party commit any intentional unlawful act in respect to the Interconnector or the interconnector SAPP system;

 e. where required due to health and safety reasons;

 f. to manage or address an emergency; or

 g. where required by a direction of a government agency, SAPP or RERA.

1. **RECONNECTION**
2. Where the reason for the disconnection was a Party’s failure to comply with this agreement, failure to comply with an applicable law a SAPP rule or another wrongful act or omission to the Interconnector may be reconnected if within 10 days of the disconnection the matter which led to the disconnection is remedied.

**Section 3 – National and Regional Grid Code requirements**

**Section 3A – Regional Standards**

The Transmission Company shall adhere to the “Regional Grid Code for the Interconnectors” that is being developed and adopted by RERA for the Interconnector.

**Section 3B – Access National Standards**

[This section will be completed on a case by case basis depending on the specific circumstances and National Grid Codes of the interconnecting Transmission Companies and with specific relationship to the SAPP and RERA rules, guidelines and Agreements]

**Section 3C – Quality of Supply**

[This section will be completed on a case by case basis depending on the specific circumstances and National Grid Codes of the interconnecting Transmission Companies and with specific relationship to the SAPP and RERA rules, guidelines and Agreements]

**Section 3D – Recovery of Capital**

[This section will be completed on a case by case basis depending on the specific circumstances and National Grid Codes and Pricing policies of the interconnecting Transmission Companies and with due consideration of the SAPP and RERA rules, guidelines and Agreements]

**Section 3E – Adjustment for Losses**

[This section will be completed on a case by case basis depending on the specific circumstances and National Grid Codes of the interconnecting Transmission Companies and with specific relationship to the SAPP and RERA rules, guidelines and Agreements]

**Section 3F – Maximum Export Limit and Maximum Import Limit**

[This section will be completed on a case by case basis depending on the specific circumstances and National Grid Codes of the interconnecting Transmission Companies and as determined by the Planning Sub Committee of the SAPP giving due consideration to the SAPP and RERA rules, guidelines and Agreements]

**Section 4 - SAPP and RERA requirements**

As the responsible entities for regional harmonization, SAPP and RERA may include here additional specific requirements that need to be reflected in this Agreement. These may include the notification of planned outages, change in system configurations, dispute resolution or any other matter that may have an impact on other utilities or the integrated SAPP transmission system.

**Annex 1 – Definitions**

**Wheeling** - The transmission of a contractually agreed amount of power over a specified time period via the system of a Transmission Owner, who is neither the Seller nor the Buyer of this power.

**Wheeling Path** – The path on the Wheeler’s transmission system through which the contracted power will be transported.

**Third Party** – An entity that is not a Party to this Agreement.

**Transmission Owner** – Is the owner of the of the transmission system the Load or Generator is connecting to. This may be the national utility or a private transmission company in a SAPP Member State.

**Point of Connection** – Is the point where the Load or Generator is electrically and physically connected to the Transmission Owner’s electricity network.

**Interconnector** – Is the asset used to interconnect two Transmission Owner’s electrical systems, normally across the border of two countries.

**Annex 2 - Transmission Charges**

**Connection Charge**. A charge applied to market participants to connect to the transmission system. The charges are used to cover costs and expenses as they relate to capital expenditures, overhead, return, and the costs of financing and taxes and any incidental expenses. Charges are applied to market participants for any portion of the transmission system used and as specified in the tariff schedule.

**Monthly Demand Charge**. A monthly demand charge paid to the transmission system operator for a market participant’s load on the system (including losses) at the time of the monthly peak load on the system.

**Transmission Use of System Charge**. A point-to-point transmission service charge applied as per the scheduled tariff that is applicable between specified points of receipt and delivery pf power.

**Transmission Loss Charge.** A charge to each market participant of the transmission system for the cost of energy lost in the transmission of electricity from a generation resource to load.

**Control Area Service Charge**. A charge paid to the power system operator who is managing a shared generation control scheme and maintaining balance between capacity and energy purchased and load within the system and maintaining frequency and interchange with other control areas.

**Ancillary Services Charge**. A charge for those services that are necessary to support the transmission of capacity and energy while maintaining reliable operation of the transmission System.

**Transmission Congestion Price**. A charge attributable to the increased cost of energy delivered at a given load bus when the transmission system serving that load bus is operating under constrained conditions. For real time transactions, it is the congestion component of the locational marginal price. The transmission congestion costs may be positive or negative depending on output from generators and consumption by loads.

**Locational Reliability Charge**. A charge which may be applied to market participants as specified in the tariff schedule and the reliability assurance agreement.

# Next Steps

This Model Grid Interconnection Agreement will provide all Transmission Owners that intend to establish a new interconnector within the SAPP system with a comprehensive picture of the rules and regulations put in place by the SAPP and RERA. It also provides a baseline of critical clauses, rights, and obligations that should reduce the time required for parties to conclude the agreement.

Following the Department of State’s review, the Team will share the Model Agreement with RERA, who should then consult with the SAPP and the three pilot countries to test the application of the clauses of the Agreement on the ZIZABONA interconnection project. Once approved by RERA, the Model Agreement may be presented to the SADC Directorate of Infrastructure and Services, who after further review and consideration, can table the Agreement to the SADC Energy Ministers for adoption and use across the Southern African region.

**Annex 1 – NEW TRANSMISSION INTERCONNECTION PROJECTS**

Various new transmission interconnectors are being developed in the SAPP in an attempt to reduce congestion and improve the reliability and redundancy of the interconnected system.Planned and under development projects include the following:

* DRC – Zambia
* Zambia – Tanzania – Kenya
* Zambia – Malawi
* Zambia – Mozambique
* Zambia – Zimbabwe – Botswana – Namibia
* Zimbabwe – Mozambique
* Zimbabwe – South Africa
* Botswana – South Africa
* South Africa – Namibia
* Namibia – Angola
* Mozambique - Malawi