POWER POLICY

ALTERNATIVE and RENEWABLE ENERGY

A policy in the portfolio of policies comprising the
National Electricity Policy

GOVERNMENT OF PAKISTAN
2019

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FOREWORD

Nature has blessed Pakistan with enormous renewable energy potential which can be utilized for power generation and to meet energy needs of the country. The Government of Pakistan (GOP) initiated development of Alternative and Renewable Energy (ARE) Sector under a phased, evolutionary approach constituting a strategic policy implementation roadmap under Policy for Development of Renewable Energy for Power Generation, 2006 (RE Policy 2006) to increase the deployment of ARE technologies (ARETs) in Pakistan. ARE promises a higher proportion of the national energy supply mix and helps ensure universal and affordable access to electricity in all regions of the country.

The GOP's strategic objectives of energy security, affordability of electricity, availability for all, environmental protection, sustainable development, social equity and mitigation of climate change are further harnessed under the ARE Policy 2019, developed by the Ministry of Energy (Power Division) in consultation with key stakeholders. ARE Policy 2019 aims to create a conducive environment for the sustainable growth of ARE sector in Pakistan.

AREs have seen significant growth in different parts of the world in the last decade in terms of deployment, technological advancements and cost competitiveness. Experience under RE Policy 2006 coupled with international best practices provides the basis for a more comprehensive framework for ARE Policy 2019. It has an expanded scope encompassing all major alternative and renewable energy sources, competitive procurement and also addresses areas like distributed generation systems, off-grid solutions, B2B methodologies, and rural energy services. It carries forward most of the liberal and attractive incentives of RE Policy 2006 to maintain the investors' confidence, and places greater emphasis on aggressive growth of grid-connected ARET applications as well as a programmatic development of distributed ARE power generation market on more competitive terms.

It has been decided that rather than inducting RE projects on a reactive basis, a new policy direction is being set whereby Pakistan intends to have at least 20% of its generation capacity as ARE technologies by 2025 and 30% by 2030 (20X25 and 30X30 target). It is estimated that such targets can be achieved but will require upgradation of the transmission infrastructure; this exercise will be undertaken in parallel and, where necessary, as a pre-requisite. This target, together with over 30% hydel, will result in one of the most environmentally friendly and affordable

electricity mix compared to the heavily dominated mix of imported fossil fuels in the past.

Salient features of the ARE Policy 2019 include variety of investment options for tapping different ARE resources for on-grid and off-grid applications as well as encouraging consumer driven applications and initiatives. Attractive policy instruments supplement GOP's open door initiatives for private investment in ARE sector in Pakistan as it is envisaged to contribute its share in strengthening and improving the power supply position of the country and help fueling rapid and environmentally sustainable economic growth.

The measures introduced in the ARE Policy 2019 are expected to set the requisite processes in place so that ARE is fully mainstreamed and integrated within the country's energy planning as well as the country's economic and social development for the eventual benefit of the people of Pakistan.

GOP is determined to pursue the stated policy objectives and strategies with the participation and collaboration of the private sector. The goal is to continue the envisaged sustained transition towards greater use of indigenous, clean and abundant ARE resources, which must be tapped in a meaningful and timely fashion and utilized towards the social and economic advancement to assist the country's overall development strategy.

GLOSSARY

AEDB	the Alternative Energy Development Board
AEDB Act	the Alternative Energy Development Board Act, 2010
ARE	alternative and renewable energy
ARE Policy 2019 or this Policy	this Alternative and Renewable Energy Policy 2019
AREP	a project for electricity generation using ARETs
ARET	alternative and renewable energy technology
B2B	business-to-business
CYREPP	current fiscal year RE procurement plan (1st July to 30th June)
DISCOs	the ten (10) Federally owned distribution companies
EDB	Engineering Development Board
EPA	energy purchase agreement
FBR	Federal Board of Revenue
FPUs	Federally-owned public power utilities
GOP	the Federal Government of the Islamic Republic of Pakistan
IA	implementation agreement
IGCEP	the Indicative Generation Capacity Expansion Plan
IPPs	independent power producers
IRN	Interconnection Ready Nodes, being the nodes on the transmission system where the NGC confirms its readiness to deploy the required transmission capacity and interconnection within the timeframes envisaged for commercial operations of AREPs in the upcoming auctions
K Electric	K-Electric limited
LESs	localized energy systems

LMM	locally manufactured machinery
Market Operator	the company licensed as a 'market operator' by NEPRA, currently being the Central Power Purchasing Agency (Guarantee) Limited (CPPA-G)
Mature technology	an ARET for which such number of AREPs are under construction or operation in the country as determined by AEDB on recommendation of the Steering Committee
MG	mini / micro grid
NEP	National Electricity Policy
NEPRA	National Electric Power Regulatory Authority
New technology	an ARET other than mature technology. For the avoidance of doubt, new technology does not include a hybrid AREP of mature technologies.
NGC	The national grid company licensed by NEPRA, currently being the National Transmission & Dispatch Company Limited (NTDC)
PSP	Power system planning, a licensed function carried out by NGC
RE	for the purposes of this Policy, electricity generated using ARETs
REPA	Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997
REPA Amendment 2018	Regulation of Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018
RE Policy 2006	Policy for Development of Renewable Energy for Power Generation, 2006
RFP	request for proposals (bids)
SECP	the Securities and Exchange Commission of Pakistan
SO	System Operator, a licensed function under REPA
Steering Committee	the ARE steering committee constituted under paragraph 2.8 of this Policy

1 INTRODUCTION

1.1 BACKGROUND

Power generation in Pakistan is sourced through a mix of thermal, hydel, renewables and nuclear power plants, with thermal power generation comprising the bulk, followed by hydel, renewable and nuclear. The initial Policy for Development of Renewable Energy for Power Generation, 2006 (the "RE Policy 2006") expired in March 2018 after having successfully launched the development of ARE projects in the country. Initially, GOP introduced strong economic incentives in order to attract investment, remove barriers to project implementation and hand-hold pioneering projects. The Policy for Alternative and Renewable Energy, 2019 (the "ARE Policy 2019") provides the roadmap for further realizing the full potential of ARE in Pakistan yet promoting competitive pricing.

This ARE Policy 2019 is one amongst the portfolio of policies together comprising the National Electricity Policy (NEP).[i]

The legislative mandate for this Policy arises out of section14A of REPA that stipulates "*special provisions for ensuring the development of a sustainable renewable energy market with a dedicated and gradually increasing share in the electricity power sector*".

This Policy is primarily oriented towards the use of ARETs identified herein for power systems; separate policies may be made for other applications of ARETs.

1.2 POLICY OBJECTIVES

The long-term integrated energy plan of Pakistan envisages four guiding principles: sustainability, affordability, responsibility (of use) and availability. The ARE Policy 2019, as a component of the overall plan, has the vision of the development of an efficient, sustainable, secure, affordable, competitive and environment friendly power market while promoting indigenization of technology and the development of skilled human resource and local manufacturing capabilities in ARET.

The main objectives of the ARE Policy 2019 are:

- protect the environment by increasing the share of green energy in the overall energy mix
- least cost on-grid power generation
- fast track and transparent procurement of AREPs through auctions
- develop and open up the power market
- develop ARET local manufacturing, skilled human resource and technology transfer

- enable private sector investment and participation in on-grid and off-grid AREPs and innovative supply solutions, and
- ease pressure on the public purse for investments in power system expansion.

1.3 POLICY SCOPE

1.3.1 *Technologies*

The following ARETs are covered under this Policy:

- biogas using any organic material
- biomass (including but not limited to bagasse, agricultural waste, and other waste)[ii]
- energy from waste (including but not limited to municipal waste, industrial waste, sewage, refuse derived fuel)
- geothermal
- hydrogen
- synthetic gas (made from any source except fossil fuels)
- ocean/tidal wave energy
- solar (PV or thermal, or any technology that uses heat and/or light of the sun to make electricity)
- storage technologies (including but not limited to battery systems, cells of all types, compressed gas)
- wind (on-shore and off-shore), and
- hybrids of any of the above technologies.

The Policy also extends to projects entailing retrofitting of existing bagasse, solar and wind projects to convert them into hybrid units.

Any technology not identified above but determined by AEDB from time to time to be an ARET for the purposes of this Policy shall also be included.

Small hydro projects (less than 50 MW) are not covered under this Policy. A separate policy is under consideration for small hydro.

1.3.2 *Application*

This Policy extends to both on-grid and off-grid AREPs, as well as net-metering, subject to the specific conditions applicable to each in the respective sections of this Policy.

While the Policy in on-grid scenario is oriented primarily towards the system owned and operated by NTDC/DISCOs, the incentive regime will also apply to AREPs inducted in K-Electric Limited (KE) and in any other utility privatized in the future, with the caveat that the GOP will not

assume any contractual obligations under the contracts between the AREPs and KE or the privatized utilities.

This Policy binds all public sector entities in the exercise of their functions falling within the scope of this Policy.

1.4 SALIENT POLICY MEASURES

1.4.1 *20 x 25 and 30 x 30 target*

The on-grid generation capacity will be at least 20% by 2025 and at least 30% by 2030.

For the purposes of this Policy, the GOP has set the target of at least 20% on-grid RE generation by capacity by the year 2025 and at least 30% by 2030 (20x25 and 30x30 target). For the purposes of the aforesaid target, the expression "on-grid" includes mini/micro grids (MGs). In order to achieve these targets, a larger percentage of new capacity additions and retiring plant replacements will be AREPs, keeping in view the constraints of base load, reactive power support, spinning reserve requirements and transmission system constraints, while keeping also in view the technological solutions to address these constraints such as RE forecasting capabilities, hybrid AREP solutions and distributed generation.

1.4.2 *Competitive Bidding*

Procurement of AREPs will be done through auctions, preferably on annual basis.

Procurement of new RE capacity, displacement energy capacity, and replacement capacity (for retiring plants) will be done through auctions. The Market Operator (and to the extent the purchaser is a DISCO contracting directly, such DISCO) and the NGC's consents for the capacity addition will therefore be available before the auction.

Steady annual procurement of manageable volumes of capacity is preferred over procurement of large volumes after years of inaction.

1.4.3 *IGCEP's Primacy in Procurement Decisions*

IGCEP outputs will form the basis of all on-grid capacity procurements (except net-metering).

Power system planning (PSP) and procurement of capacity for system generation expansion are distinct but synergetic functions. PSP is a function of the NGC under law and will be carried out by NGC using state-of-the art system planning tools, updating IGCEP on annual basis.[iii] The procurement decisions to respond to IGCEP will be made in accordance

with this Policy with the objective to give visibility for expected auctions for the next two years.

The IGCEP is a regulatory obligation of NGC arising under the Grid Code, as a subset of the PSP function of NGC. The current IGCEP was prepared in February 2019 for the period 2018 to 2040.

State-of-the art software tools for IGCEP will be used that recognize ARETs [iv]. A revised IGCEP will be in place by year-end 2019 keeping in view the on-grid ARE targets in this Policy.

1.4.4 *Displacement of expensive energy*

AREPs' induction in the system will also be driven by the objective of displacement of more expensive electricity of thermal plants where such displacement enables lowering the average system generation cost, as determined by the IGCEP outputs.

In addition to generation capacity expansion, AREPs shall also be solicited for displacement of expensive electricity generated using fossil fuels (thermal plants). This is a major directional change from the past, stemming from the twin advantages of AREPs, namely, a significant drop in the AREP deployment prices over the past few years and that the AREP tariffs do not include capacity payments. Henceforth, displacement of fossil fuels enabling lowering of average system generation cost becomes one of the drivers for AREP procurements along with new capacity additions and replacements of retiring plant.

The AREPs shall be added (i) where there is a demonstrable lowering of the average basket cost of generation for the system, (ii) where they rank higher in merit order dispatch over the to-be-displaced thermal plants, and (iii) keeping in view any contractual commitments for thermal plants signed by the GOP or the Market Operator (or any DISCO) and guaranteed by the GOP.

A demonstrable lowering of the average basket cost of generation for the system will be shown to exist where the levelised tariff for the mandatory purchase period (see paragraph 2.4) of the AREP is lower than the energy purchase price of the thermal plant at the forecast fuel prices for the calendar quarter of the target commercial operations date of the AREP.

Each annual iteration of the IGCEP will include a section on the displacement options to be fed into the annual auctions for capacity additions. The prices in the modelling for displacement options will be the ones fetched in the last auction for the respective ARETs preceding the modelling; pending the first auction, the last tariff for the relevant ARET awarded by NEPRA will be used. The displacement option will be

modelled for the timeframes when the displacement AREP capacity is targeted to achieve commercial operations.

1.4.5 *Tariffs*

Tariffs will be denominated in Rupees. Upfront or cost-plus tariffs for mature technologies will be discontinued.

Tariffs will be denominated in Pakistan Rupees. Consistent with the current practice, the tariff for AREPs will comprise energy purchase price only (no capacity payments), coupled with a 'mandatory-purchase obligation' for the duration determined in accordance with paragraph 2.4.

For mature technologies, public utility procurement of AREPs will be through competitive bidding only and not on upfront or cost-plus tariffs.

In order to promote new technologies, NEPRA may allow upfront or cost plus tariffs for new technologies if it deems appropriate.

1.4.6 *Indigenisation and local content*

AEDB will move the FBR and the EDB to withdraw the import duty exemptions on ARET based consumer items which the local industry is capable of manufacturing or undertakes to manufacture, and such exemptions will be withdrawn on the conditions specified in this Policy being met. AEDB will engage with the Chambers of Commerce and Industry to pursue this end on an ongoing basis.

Plant and machinery imported by an existing or new industrial concern shall be free of import duties where the plant and machinery is imported for manufacture of AREPs or components thereof or ARET consumer items or components thereof.

The exemption from the 'locally manufactured' condition for duty free import for AREPs above 25MW will be abolished for items that the local industry is capable of supplying to the required specifications and, where applicable, with the requisite certification.

AEDB will maintain proactive ongoing oversight over taxation anomalies that discriminate against the local industry, and will make interventions with the Federal Government to remove the anomalies.

1.4.7 *Simplification of regulatory and contract frameworks*

The legacy contract structures will be reviewed to remove overlap with subjects covered by regulation in order to avoid overlap with regulation.

The licensing framework for non-utility procurement will be simplified and rationalized to minimize regulatory fee, compliance costs and timeframes.

1.4.8 *Proactive AEDB*

AEDB's role will be transformed from a passive responder to unsolicited projects to an active promoter for ARET and AREP penetration, buttressed by interventions for progressive indigenization.

1.4.9 *Renewable Energy training and skill development*

AEDB will set up an Institute of Renewable Energy Technologies under the aegis of academic or institutional frameworks, with the flexibility to set up sub-campuses of the institute across the country.

The aims of the institute will extend to imparting academic qualifications and practical/marketable skills, undertaking research, testing and certifications. These activities and the research output will also be used for commercial applications in order to make this institute a financially self-sustaining body. The institute can be co-sponsored by the industry for needs-based trainings and job-creation.

2 PUBLIC UTILITY PROCUREMENT

2.1 FEDERALLY OWNED PUBLIC POWER UTILITIES

The national power system is owned and operated by the NGC and 10 distribution companies that are owned by the Federal Government and are referred to in this Policy as Federally-owned Public Power Utilities (FPUs). K-Electric, though connected to the national grid, is not included in FPUs.

Procurement of AREPs by FPUs will be done primarily through competitive bidding, using IGCEP outputs for

- new capacity additions (including retrofitting of existing AREPs)
- dispacement of expensive fossil-fuel based generation, and
- replacement of retiring capacity,

keeping in view the policy objectives and targets set under ARE Policy 2019.

Listed below are the three modes for procurement of RE by FPUs.

2.2 MODES OF PROCUREMENT

2.2.1 *Competitive Bidding – Mode One*

The first mode, and the one expected to be the most commonly used, is open and transparent competitive bidding, that will entail the following broad steps:

a) AEDB will announce the auction volumes annually based on IGCEP outputs, with the purchase and interconnection commitments from FPUs in place before bidding

b) the interconnection commitments by FPUs for the purposes of auction will be in view of regulatory prescription from time to time for FPUs to provide interconnection for AREPs within prescribed distances (the RFP may solicit subsidiary bids for constructing interconnection facilities by the AREP in appropriate cases)

c) the auctions shall correspond to locations or “interconnection ready nodes” (IRNs) confirmed in advance by NGC keeping in view the targets under this Policy and the target commercial operations dates of the AREPs

d) the locations will be geographically spread based on multiple considerations, including resources mapping, load centers, interconnection availability at affordable cost, technical reasons and distribution to support balanced development footprint across the country

e) intermittency of variable AREPs will be kept in view, requiring conformance to the grid code for grid stability

f) tenders may be for single or multiple technologies

g) bid guarantees and performance guarantees will be furnished by the bidders according to the bid documents

h) feasibility studies are not required (though some sites may have feasibility studies carried out by public sector entities)

i) the bid evaluation method will be stated in the bid documents, with the lowest evaluated tariff being the primary method

j) annual auctions will be conducted based on the IGCEP outputs

k) auction schedules will be available online at AEDB's website, with the objective to give visibility for expected auctions for the next two years

l) all equipment deployed in the AREP shall be new, unused and compliant with international standards

m) the variability/availability risk of underlying renewable energy resources shall be borne exclusively by the AREP, and

n) other details relating to auctions including but not limited to the qualification criteria, tariff preference if any for use of locally manufactured items and share of local sourcing will be part of the bid documents.

The RFP and the associated contract package will be prepared by the Steering Committee and approved by the Board of AEDB. Requisite approvals of NEPRA and other competent forums will be obtained. The Provincial Energy Departments will then conduct the bidding using the RFP and the contract package approved as afore-said. One represenative of AEDB will be associated with the bidding process conducted by the Provincial Energy Departments. The outcome of the bidding will be processed by the Provincial Energy Departments with NEPRA for approval and award of tariff to the successful bidders.

Thereafter, the GOP acting through AEDB will award the concessions to the successful bidders, who will then be required to sign the contract package and furnish performance guarantees within the timeframes stated in the bid documents.

NEPRA has made regulations on competitive bidding[v]. To the extent required, NEPRA will revisit its regulations to make the approval process aligned with the key auction parameters and steps outlined in this Policy.

2.2.2 *Government To Government (G2G) – Mode Two*

In certain cases, the GOP may find it strategically important to execute projects under Government to Government (G2G) frameworks for underdeveloped areas of the country. Such commitments will result after negotiations with the foreign governments under applicable framework agreements, where such procurement is commercially viable based on the national priorities and is in accordance with the laws of Pakistan, and

where it does not result in a preferential award of a project that may have been the subject of competitive procurement. To qualify as a G2G project, the resultant tariff must be below the tariff that would have been achieved on a commercial basis and must be below the average basket price of generation. Limited exceptions to the requirement of the G2G projects' tariff remaining below the average basket price of generation may be made for such new technologies which confer substantial environmental benefits (such as waste-to-energy), provided, the tariff shall remain subject to approval of NEPRA.

Such proposals will be brought to AEDB for implementation under the same process as was followed for unsolicited projects in the RE Policy 2006 that, for the purposes of G2G projects, is hereby incorporated by reference as if set out herein, with such modifications as may be approved by the Federal Government. AEDB will list the process steps for G2G projects on its website.

2.2.3 *Unsolicited Projects – Mode Three*

Projects for new technology shall require a feasibility study and shall be allowed on a cost-plus method, if approved by AEDB as qualifying and shall be treated as unsolicited project. An unsolicited AREP's tariff must be below the average basket price of generation.

Unsolicited AREPs may be proposed to AEDB by the Provinces or by private sponsors for interconnection with the national grid and power off-take by FPUs only for new technologies. Such proposals will be brought to AEDB for processing and, if approved, for implementation under the same process as was followed for unsolicited projects in the RE Policy 2006 that, to the extent of unsolicited AREPs based on new technologies, is hereby incorporated by reference as if set out herein, with such modifications as may be approved by a resolution of the Board of AEDB. AEDB will list the process steps for unsolicited AREPs on its website.

2.3 TARIFF

For all modes, the tariff shall be denominated in Pakistan Rupees.

For competitive bidding mode:

- NEPRA will determine the indexations allowed for any round of competitive bidding in consultation with GOP, that will be specified in the bid documents. While NEPRA retains the jurisdiction in this regard, it is expected that it will continue to follow its precedent to maintain, to the extent it considers practicable, the tariff value in real terms for the AREPs.
- Foreign bidders may bid with indexation to a foreign currency (USD, GBP, JPY, CNY, or Euro) in respect of tariff components specified for this purpose by NEPRA. The evaluation

methodology in such cases will impose a factor on the bid price, adjusting for a notional devaluation of PKR against the bid currency using a devaluation factor specified in the bid documents. The evaluation will however be done in USD using cross-currency rates of the same reference date to set the base rate for indexation to the bid currency if other than USD. The reference benchmark currency rate will be the interbank rate for USD and, where applicable, the foreign bid currency, in each case prevailing 30 days prior to the date of bid submission.

- Indexation of tariff components will be automatic, based on predetermined formulae and reference parameters specified in the bid documents; AREPs will not have to approach NEPRA periodically for tariff indexation.

2.4 CONTRACTUAL FRAMEWORK

The current contractual structure comprising an Implementation Agreement (IA) with the GOP, an Energy Purchase Agreement (EPA) with the Market Operator (as agent for DISCOs), and a GOP guarantee for payment obligations of the Market Operator (together, the **concession package**) will continue to be followed.

The factor of rapid obsolescence of ARETs (with technology efficiency and output increasing every few years with concomitant reduction in deployment costs) militates against long-term EPAs. The concession package in vogue stipulates a 25 year term for the EPA on a take-or-pay basis. On the other hand, bid prices will likely be higher for shorter term EPAs. Balancing the two, this Policy proposes that the bid documents solicit bids for such term as may be decided by the Board of AEDB on recommendation of the Steering Committee, with (i) a "must-purchase obligation" for a duration not less than the debt-repayment period and not more than the period stated in the RFP from time to time, and (ii) the balance term being on a take-and-pay basis at the option of the power purchaser; provided, the AREP will continue to be dispatched on merit order dispatch criteria for the balance term of the EPA after the expiry of the must-purchase obligation period.

Subject to the proposed 'trim-down' of the concession package discussed in the next paragraph, the rights and obligations profile in the current standard concession package will continue to be followed by-and-large.

The current standard concession package is founded on the legacy package developed about two decades ago, when the regulatory framework under REPA was not in place. The IPPs were then regulated through contract. With a prolific primary and secondary regulatory legislation in place, such as NEPRA's licensing rules, the grid and distribution codes, the performance standards, the market operator rules, the commercial code, and others, it is time to revisit the concession

package to remove the overlap with the regulatory instruments so as to have leaner contracts that incorporate the regulatory framework by reference. This will be an ongoing exercise to be initiated expeditiously. The revised concession package approved by the Federal Cabinet or its designated committee will be included in the RFP.

For projects procured through competitive bidding, the sponsors' lock-in period shall be up to the commissioning of the AREP during which they shall not exit the project.

2.5 FISCAL INCENTIVES

The fiscal incentives under the laws of Pakistan prevalent on the date of this Policy for AREPs will continue to apply. Any future modification or withdrawal of such incentives in the exercise of its sovereign rights by the GOP shall be without prejudice to the change-in-tax protection clauses in the signed contracts or in the bids submitted with this assumption stated.

2.6 CARBON CREDITS

Pakistan is a signatory to Kyoto Protocol and Paris Agreement that allows accessing global carbon crediting markets, environment and climate funds and other global financing options for projects under mitigation, adaptation and a combination thereof. These financing options can be accessed by the public and private sector entities. GOP encourages the ARE project developers to apply for procuring carbon credits through various carbon crediting mechanisms including Carbon Crediting Mechanism (CDM) under compliance market, financing options under voluntary markets and mitigation & adaptation actions under Nationally Approve Mitigation Actions (NAMAs). The GOP mandates AEDB to facilitate, coordinate and assist the ARE project developers and the Designated National Authority (DNA) / National Designated Authority (NDA) of Pakistan under United Nations Framework Convention under Climate Change (UNFCCC) in reconciling the most effective approach in procuring carbon credits. AEDB may also facilitate the ARE project developers in trading the carbon credits in international carbon market and help DNA/NDA in creating national carbon credits trading scheme.

The AEDB will assist in the development of local capacities and creating awareness regarding various carbon crediting mechanisms available under UNFCCC.

Considering that efforts are on way to put in place new international climate treaties, GOP is committed to revising incentives for procuring benefits consistent therewith. AEDB is empowered to effect requisite facilitation in the event of any new international regime or protocol applicable to Pakistan.

2.7 PROVINCES' ROLE

Article 157 of the Constitution of Pakistan allows the Provinces to develop their own power generation projects, lay transmission lines, distribute electricity, and even set their own tariffs, if the power generated is for use within the boundary of the relevant Province and the AREP is not connected to the national grid. Recognizing these constitutional rights, the Provinces are free to institute their own policies for projects where neither the power off-take is by a Federal entity nor the interconnection is provided by NTDC/DISCO. The contracts in such cases shall be directly between the AREPs and the Provincial Government or its agencies, without financial or contractual commitment of the Federal Government or any of its entities.

The Provincial participation in the competitive procurement by FPUs will be through (i) their membership of the AEDB Board, (ii) their membership of the Steering Committee, (iii) making land available and extending other facilitation for the bidding process on terms that incentivize location of the AREPs in their respective territories (such as right of way, commitments to construct allied infrastructure, supply of water, etc.), (v) ensuring security and other matters related to Provincial or municipal agencies, and (iv) conducting bidding for the AREPs based on the RFP and contract package approved by AEDB.

2.8 STEERING COMMITTEE

The major directional changes in this Policy require a high level of proactive steering and coordination amongst the key players including the Provinces.

Keeping this imperative in view, this Policy announces an *ARE Steering Committee* (the Steering Committee) comprising:

i) an additional secretary of Ministry of Energy (Power Division),

ii) the CEO of AEDB,

iii) Provincial Energy Secretaries,

iv) Managing Director, NGC (non-voting member),

v) the CEO, Market Operator (non-voting member),

vi) if and when a separate legal entity is licensed as a system operator (SO) with the system generation capacity planning function, then the CEO of such SO (non-voting member) (see end-note ii), and

vii) if this Policy becomes applicable to/adopted by the Azad Jammu and Kashmir and Gilgit-Baltistan, their respective Energy Secretaries as non-voting members.

The Steering Committee shall be formed as a sub-committee of the Board of AEDB by resolution at its first meeting immediately following the promulgation of this Policy.

The Steering Committee shall, inter alia:

a) formulate its operating procedures consistent with this Policy,

b) based on the IGCEP outputs and timely availability of functional IRNs / locations confirmed by NGC by April of each calendar year as per the Grid Code, liaise with the Provinces to identify land parcels and other facilities (such as access roads) the Provinces are willing to offer to the AREPs,

c) prepare a provisional *Current Year RE Procurement Plan* (CYREPP) for the immediately following fiscal year (1st July to 30th June) by 30th September of such year, and submit it to the Board of AEDB for approval, and

d) make such revisions to the CYREPP as may be required by the Board consistent with this Policy, so as to enable the Board of AEDB to approve the CYREPP latest by 31st December for the auction to be conducted before the fiscal year end.

For mature technologies that are already deployed in the country, the mode of procurement shall be by bidding only with the sites for auction determined based on the IRNs / locations.

2.9 PROCUREMENT BY K-ELECTRIC AND PRIVATISED DISCOS

This Policy recognizes that competitive procurement has the potential to secure lower tariffs than negotiated tariffs or cost-plus tariffs awarded through a rate hearing process. To the maximum extent permitted by law and the licensing instruments, NEPRA will require that all procurements of AREPs by K Electric and the public utilities that may be privatized in the future will be done through competitive bidding, except only where a demonstrable case is made out to the satisfaction of NEPRA that competitive bidding will yield higher than directly negotiated or cost-plus tariffs set by NEPRA.

3 NON-UTILITY PROCUREMENT

3.1 INTRODUCTION

The GOP recognizes the tremendous potential mini/micro grid (MGs), off-grid, localized energy systems (LESs) and Business to Business (B2B) solutions offer to combat power scarcity. Given the constraints on the investment capacity of the public sector, it would be shortsighted not to harness the full potential of such solutions.

Policy formulation at the national level has remained largely focused on IPP-type procurement for accretions to the national generation capacity. Within the last decade or so, the revolution in AREs deployment capabilities coupled with the drastic reduction in prices makes a strong case for the FPUs to see off-grid, MGs, LES and B2B solutions as synergetic to their universal service obligation and concomitant investment needs. With the exclusivity of DISCOs gone under the REPA Amendment 2018, and with the bulk power consumers able to migrate from host DISCO's supply on one year's notice, the time has arrived for the national utilities to reorient their operations hitherto modelled on the erstwhile exclusive supply rights in their territory. The spectre of cherry-picking of lucrative consumers of the national utilities by alternative supply solutions remains a threat (that has been one of the reasons for a wheeling market not to have developed), potentially leaving the FPUs with surplus long-term power purchase obligations, but this threat requires a market-based response and can no longer be contained by fiat alone. For one, it can be argued that one of the causes of the utilities being saddled with surplus long-term power purchase obligations is the sole-purchaser-and-supplier role they continue to hold on to, without exploring the possibilities with good lead times of a part of the load requirements being served by private initiatives.

This Policy does not seek to circumscribe the multiple forms MGs, off-grid, LES and B2B solutions can take, leaving this task to the market and the ingenuity of entrepreneurs. The Policy only seeks to stipulate measures where, despite previous policy and regulatory support, such solutions have not marched in lock-step with their potential.

3.2 SIMPLER, LOW COST AND TIMELY REGULATION

The REPA Amendment 2018 has substantially modified the regulatory landscape that prevailed since REPA was promulgated in 1997. Expressly recognizing electric power markets, REPA after amendment introduces new licenses of electricity suppliers and electricity traders, introduces the market operator and system operator and stipulates abolition of generation licensing by 2023. The erstwhile three (3) year notice period for bulk consumers to migrate from their host DISCO supply stands reduced to one (1) year. The current licensing rules of NEPRA were designed two decades ago, and were written with large utilities in

view long before the renewable energy revolution made self and distributed generation ubiquitous. As of today, the distribution and generation licensing rules for a small LES are the same as for large public utilities and IPPs. With self-generation without any regulatory oversight always an option, the market for off-grid, MGs, LES and B2B solutions faces a disproportionately onerous licensing, fee and tariff regime.

It is time for NEPRA to lay down a unified or modular licensing regime, that is simple to apply for at affordable cost for non-utility procurement of AREPs, and does not require the protracted and expensive steps of a public hearing, detailed technical description of the plant specifications and a "unit-generated and/or transported" based regulatory fee, along with a consumer specific "second-tier supply authorization" each time a business consumer exits or is added to the private network. While such close oversight is justified for business-to-consumer transactions and utility scale regulation, it appears disproportionate and can constitute a barrier to entry for non-utility procurement cases, especially in B2B transactions where the contracting parties are expected to be mindful of their commercial interests.

3.3 MUNICIPAL AUTHORITIES EMPOWERMENT

Municipal authorities can work with the private sector for a variety of AREPs, such as solar parking lots (also useable for electric vehicle charging), municipal lighting, waste-to-energy projects, mosques and school lighting (which is currently offered at subsidized rates by FOPUs), and the like, under public-private partnership mode that can address civic and environmental issues in parallel. The key obstacles to such initiatives is a lack of capacity and issues of transparency.

AEDB is tasked under this Policy to develop a framework package for competitive procurement that can be adopted by municipal entities. Such projects may be identified by civic bodies and AEDB may provide support for project structuring and contracting support if required. It is up to the civic bodies to ensure conformity with their parent legislation, though AEDB will extend advice where sought.

The regulatory licensing framework will continue to apply. NEPRA's proactive role for a simplified licensing regime will also be welcome.

3.4 OFF-GRID SOLUTIONS

Consumer solar power remains the most popular form of off-grid solutions. Such initiatives constitute self-generation, which is unregulated.

Approximately 2500 MW of Solar PV (costing around USD 2 Billion) has been imported in the country over the last 5 years out of which only 430 MW was at utility scale.[vi]

MGs / LESs can operate independently or in tandem with utility grids. They are intended to cater primarily to a cluster of consumers, and ease the load on the utilities. A wide variety of configurations is possible, and this Policy does not intend to be prescriptive of the commercial or technical configurations of such systems. The Policy objective is to create an enabling environment for MGs / LESs. The market players and customers are now fairly sophisticated to structure ARE based MGs / LESs, enabling a wide array of solutions by forward-thinking technology manufacturers and entrepreneurs.

For the avoidance of doubt, any MG/LES initiates involving public sector funds or contribution in kind (such as land) will require competitive bidding.

The key concern for MG/LES is safety and security of MGs, that can be addressed by appropriate safety certifications monitored by AEDB through its approved installers.

3.5 CAPTIVE POWER

Captive power is understood to be self-generation by businesses and factories. Captive power is already unregulated. This has led to a rising trend for factories and businesses to set up ARET captive generation. Captive generation remains an option for bulk power consumers of FPUs, though most captive generators maintain back-up supply with the host DISCOs.

There are no special incentives offered nor required for captive power under this Policy.

3.6 WHEELING

As noted above, loss of high-value bulk consumers is the primary reason for resistance to wheeling by FPUs, despite NEPRA's regulation being in place for quite some time. The regulatory and contractual framework is already in place. Offers of some industrial concerns to privately finance system augmentation for wheeling have not been successful either. Another reason is the ease at which off-grid and localised solutions, especially solar, can now be deployed by the bulk consumers without the utility's involvement.

Open access now being expressly recognized in REPA after the 2018 Amendment, it is a Policy expectation that the regulator will take a more proactive approach for wheeling transactions, and will take a closer look at the reasons given by the utilities for not readily extending open access to their networks, especially where private financing for system augmentation is being offered.

It is the expectation of the GOP that NEPRA will balance the legitimate concerns of the DISCOs with the need to open up the market.

3.7 NET METERING - A SPECIAL CASE

The debate whether net-metering is on or off-grid is sterile. Net-metering is a special case, and there is no need to pigeon hole it in either category, given that a specific regulatory framework is applicable to net-metering that has functioned well since its introduction in September 2015 leading to approximately 33 MW net-metering capacity connected so far. Net-metering is not meant to be a business per se. The current 1.5x load limitation with 1 MW ceiling is considered adequate for the time being.

It may be commercially and technically feasible for a DISCO to entertain a higher than 1 MW net-metering capacity at certain locations, for reasons such as load balancing, load matching, voltage support, etc. In such cases, subject to NEPRA's regulations permitting, the DISCOS may enter into net-metering transactions for up to 5 MW. Such transactions must be demonstrably viable technically and commercially for the DISCO.

AEDB has and will continue to play its proactive role in net-metering, by its net-metering approved installers certification and rating services. AEDB is working towards enabling on-line net-metering application processing, integrating NEPRA and the host DISCO clearance processes.

3.8 FISCAL INCENTIVES

The fiscal incentives under the laws of Pakistan prevalent on the date of this Policy for AREPs not selling to FPUs will continue to apply, until revoked or modified by the GOP in exercise of its sovereign rights but without prejudice to accrued rights. To the extent the availing of such incentives is contingent on acknowledgment by AEDB, such AREPs will register with AEDB with prescribed particulars and AEDB will issue the acknowledgment. Such registration shall not be in the nature of approval, but rather the basis on which the AREP may ask AEDB for acknowledgment to avail the incentives if needed. This registration will require a simple filing of a proforma describing the proposed project and submitting it to AEDB.

3.9 AEDB'S ROLE

AEDB will deepen its coordination, information creation and sharing, regulatory intervention and contracting support functions for off-grid, MG, LES, wheeling, B2B and net-metering solutions for AREPs, municipal bodies, prosumers and entrepreneurs.

AEDB will engage with the regulator as early as possible for a simpler unified or modular licensing and regulatory framework with minimal cost for off-grid, MG, LES and B2B solutions not entailing financial outlays by

FPUs. NEPRA will modify its regulatory framework accordingly within six months of the promulgation of this Policy.

AEDB will prepare framework packages for municipal authorities and will handhold initiatives for small scale municipal level AREPs.

The Policy objective is for AEDB to play a proactive coordination role in facilitating non-utility procurement of AREPs. Such support will consist of, but not be limited to:

- product and services market portal
- off-the-shelf contractual and bidding frameworks with templates (that will be periodically updated with experience)
- alternative/crowd/community/owner-funding structures (in conjunction with SECP and microfinance institutions)
- safety certification of MGs/LESs supplying to retail consumers (other than B2B networks) through approved and rated installers, renewed on annual basis on a cost-recovery basis, and
- AEDB may charge a reasonable fee for its support and facilitation services on cost of service basis.

4 INDIGENIZATION AND LOCAL CONTENT

Deployment of local content is import substitution with multiple benefits including foreign exchange savings, local manufacturing and human resource development, job creation, and the like. With appropriate incentives, the local industry is capable of manufacturing consumer items and parts of AREPs.

4.1 LOCAL VS FOREIGN – A FALSE DISCHOTOMY

It is not correct to see local manufacturing as a foreign versus local dichotomy. Pakistan has a significant number of joint ventures between local and foreign industries for manufacturing in Pakistan. The expression 'local manufacturing' is not to be weighed as an entire value chain proposition, but at any and all levels of the value chain leading to a finished AREP.

Given some anomalies in the prevalent import tariff structure that disincentivize local manufacturing, the incentive remains mute for local industries to invest in ARET manufacturing and for foreign ARET manufacturers to move to Pakistan, alone or in joint ventures with local companies. These anomalies are to be addressed if the local industry is to march in lock-step with the ARET revolution the country and the world is experiencing.

4.2 WITHRAWAL OF DUTY EXEMPTION ON IMPORT OF ARET CONSUMER ITEMS

A significant number of consumer items based on ARET continues to be importable free of duties[vii]. While it served the market demand for some time, this continuing exemption has not helped the nascent local industry. It is time to level the playing field between local and foreign manufacturing of such items by withdrawing the exemptions in a phased manner.

Local industry in collaboration with foreign manufacturers has the capacity to respond swiftly to like incentives. A successful example is declaring LED lights as locally manufactured items in 2017[viii], that led to some foreign manufacturers setting up manufacturing of LEDs in Pakistan in a short time frame.

AEDB will therefore move the FBR and the EDB to withdraw the import duty exemptions on ARET based consumer items which the local industry is capable of manufacturing or undertakes to manufacture and such exemptions will be withdrawn. To ascertain this, AEDB will engage with the respective Chambers of Commerce and Industry. It may be kept in view that, this being the NEP, to the extent the items under consideration do not relate to sub-components of RE generation facilities, the matter may require a parallel initiative with the Ministry of Industries and Production/EDB, in which case AEDB's intervention would be undertaken under the AEDB Act and not under this Policy.

4.3 DUTY FREE IMPORT OF PLANT TO MANUFACTURE ARET EQUIPMENT

Machinery and equipment imported by an "industrial concern" is subject to 3%, 11% and 15% customs duty[ix] with concomitant sales tax and advance income tax, when the import of the finished ARET items in several cases is exempt from duties. Solar PV cell manufacturing is the only exception where there is no duty on the manufacturing equipment. This discriminates against the manufacture of AREPs or ARET end-consumer items or components thereof.

This Policy therefore stipulates that plant and machinery imported by an existing or new industrial concern shall be free of import duties and taxes where the plant and machinery is imported for manufacture of AREPs or ARET end-consumer items or components thereof.

4.4 LOCALLY MANUFACTURED EQUIPMENT FOR AREPS ABOVE 25MW

The general rule is that there shall be no exemption from import duties on import of plant, machinery and equipment that is also locally manufactured in Pakistan (the "LMM condition"). The LMM condition currently stands waived for AREPs above 25MW[x]. This waiver was set to cater primarily for the reasons that (i) there was no centralized data base available for the LMM items that could readily be substituted for imported items, and (ii) there were no '*fit for use*' assurances of locally manufactured sub-components with the rest of the imported systems.

This waiver did make sense when it was first introduced, but with many years now passed with several projects of mature technologies in the country, it is time to phase out this exemption and to work proactively to redress the following roadblocks:

standardization/ certification	for major components, local manufacture has to meet standardization/certification requirements for interoperability with foreign equipment.
scale	components not requiring standardization may nonetheless require a minimum scale of orders with required specifications justifying investment in design and fabrication.

This Policy stipulates that:

a) AEDB will engage with the Chambers of Commerce and Industry, EDB and other organization to prepare a user-friendly database of LMM and AREP and ARET products or parts thereof together with the quantitative demand the local industry can meet from time to time

b) this database will be available online on AEDB's web-site

c) the database will be differentiated between 'items requiring certification' and 'items not requiring certification'. For the latter category, interoperability or 'fitness for use' with foreign equipment will be identified (e.g. casings or hoist poles for solar panels may not require international certification, but will need to conform to specifications for 'plug and play' capability)

d) to the extent such LMM items start becoming available in the country, the import of such items will have to satisfy the LMM condition to avail exemption from import duties, regardless of the scale of the AREP, unless the local manufacturing capacity is insufficient to meet the required demand, in which case only the excess demand may be imported duty free for above 25MW AREPs. The AREPs will have to furnish certification to this effect, that can be facilitated by AEDB by notifying the demand on its portal and contacting the manufacturers listed on its database, and

e) AEDB will update its databases periodically as and when the local industry acquires further manufacturing capabilities.

The foregoing process being followed, the exemption from the LMM condition for duty free import for AREPs above 25MW will be abolished for items that the local industry is capable of supplying to the required specifications and, where applicable, with the requisite certification.

4.5 ONGOING OVERSIGHT

AEDB will maintain ongoing oversight of import duty regime and will take swift interventions with the Federal Government and the competent authorities where the local manufacturing industry is placed at a disadvantage vis-à-vis imports, noting always the balance to be struck between the lead times the local industry would require to respond to the demand and the imperative for rolling capacity additions of ARETs in the national energy mix to meet the targets set in this Policy.

It is expected that the RE targets in this Policy will yield positive outcomes for progressive capabilities of the local manufacturing industry.

5 MISCELLANEOUS

5.1 POLICY DIRECTIVES

This Policy also serves as a policy directive to AEDB for the purposes of section 16 of the AEDB Act to the extent of the activities assigned for performance by AEDB.

5.2 INDUSTRY STRUCTURE

Information on the FPUs and other key public and private sector players in the electric power sector is available on the Ministry of Energy's (Power Division) web site http://mowp.gov.pk/, and on NEPRA's web site https://www.nepra.org.pk/.

5.3 FEES AND CHARGES

AEDB may prescribe and revise from time to time fees and charges for processing and providing facilitation under the ARE Policy 2019.

5.4 SAVINGS

Notwithstanding the expiry of the RE Policy 2006, the projects granted letters of intent/letters of support under the RE Policy 2006 before its expiry shall continue to be governed by the Cabinet Committee on Energy's (CCOE) decision in case number CCE-12/04/2019(V) (as amended from time to time) and shall be dealt with accordingly. The first bidding round shall be for the category-III projects holding valid letters of intent per the aforesaid CCOE's decision, and the subsequent rounds of bidding shall be open and per ARE Policy 2019.

5.5 REMOVAL OF DIFFICULTIES

The Federal Government may from time to time issue directives not inconsistent with the express terms of this Policy as may be required for clarification or removal of difficulties in the implementation of this Policy.

Annex

Incentives for AREPs

- Exemption from corporate income tax
- Exemption from import duties[1]
- Repatriation of dividends and disinvestment proceeds[2]
- 100% foreign equity permitted
- Foreign currency accounts permitted
- Protection against change in law
- Robust market-tested contractual framework
- Protection against expropriation
- International dispute resolution
- Project land made available by the Provinces

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[i] Section 14A of NEPRA does not confine the NEP to a single policy instrument. The express use of the plural 'policies' at several places in section 14A supports this position. There does not appear a legislative intent in section 14A to confine the Government to a monolithic, all-encompassing policy instrument given the breadth of the subjects the REPA covers that can take years to formulate and perhaps go out of date in material respects by the time of its completion, requiring a never ending reiteration. Section 14 does however entail that the Federal Government designate the 'policies' from time to time as its NEP in relation to the subjects covered by such policies, and in that case the *NEP on those subjects shall be as laid down in the designated policies*. The Federal Government may make other policies too on such subjects (e.g. a policy to convert all parking lots of Federal offices in a locality to solar parks servicing the offices), but such a policy in and of itself would not qualify automatically to be a part of the NEP unless the Federally Government expressly so designates, the oversight over such designation being under the aegis of the Council of Common Interests.

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[1] subject to applicable conditions
[2] on registration with the SBP

[ii] Biomass is not variable RE fuel but useable as a RE base load fuel as long as such fuel is available. This distinction results in various operational differences compared to typical variable RE projects. Recognizing such differences, the GOP may develop a separate framework for implementation of such projects if deemed expedient.

[iii] The REPA Amendment 2018 stipulates a System Operator License, to come into force in April 2023. 'System planning' is included in the functions of the SO under section 23G(e) of REPA. At the same time, under section 32(4) of REPA, the NGC and the DISCOs are required to have their investment and power acquisition programmes approved by NEPRA to enter into long term contracts for power purchase. The NGC for the time being also acts as the SO. All references in this Policy to the current role of NGC in the context of the responsibility for system generation capacity planning are to be read subject to the evolution of the regulatory framework and, if carved out by the regulator for performance by a separate entity licensed as SO, are to be read as references to such SO.

[iv] As and when it becomes reasonably quantifiable, a carbon-pricing factor will be added in the IGCEP outputs for capacity procurement decisions.

[v] NEPRA Competitive Bidding Tariff (Approval Procedure) Regulations, 2017

[vi] CPPA-G figures.

[vii] Customs Act, 1969, 5th Schedule

[viii] Item 1096, PCT heading 9405.1090, CGO 02/2017, 19 April 2017

[ix] Item 16, Customs Act, 1969, 5th Schedule

[x] Para 1, Customs Act, 1969, 5th Schedule