Unit Rates

EDPR (Electricity Distribution Price Review)

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1 Introduction

- The purpose of this document is to provide the unit rates that been applied to forecast capital expenditure for the 2026-2031* EDPR and to explain the basis of each of the rates.
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- All rates are P50 and are presented in $2024. A P50 estimate is an estimate prepared at any stage of a project that has a 50% confidence factor of the cost not being exceeded at completion.

2 Basis of Rates

- The basis of the unit rates used to develop the capital expenditure forecast is described in the following sections.

2.1 Methodology

2.1.1 Lines & Enhanced Safety Programs

- The unit rates used to forecast costs of most lines related works, including much of the safety related expenditure, are based on the historical rates. Data has been captured from since the introduction of SAP in the business to around the end of 2018 to determine average actual historical costs for each item.
- Where possible more recent project cost have been sourced for Lines assets addressed as discrete projects
- All rates are the direct cost of undertaking the activity and do not include overheads or finance charges

2.1.2 Substations

- The approach to forecasting capital expenditure categories is explained in the *Project Cost Estimating Methodology*. This document details the unit rates used in each category of capital expenditure.
- The unit rates are compiled based on the project cost estimating spreadsheet (Top-down distribution estimate for option selection only). This spreadsheet is built up using a bottom-up approach, with labour and materials itemised individually.
- The following have been adopted in the preparation of the unit rates for works within the substation:
- Material costs are based on period contract pricing from suppliers
- Design Delivery Partners (DDP) panel rates have been used to estimate design costs
- Construction Delivery Partners (CDP) services agreement rates for labour and plant rates have been used to estimate construction costs
- AusNet internal cost i.e. Project Management, Quality Assurance and Engineering support rates are based on DDP panel rates
- Further explanation of the project cost estimating database and methodology is contained in the *Project Cost Estimating Methodology.*
- All rates are the direct cost of undertaking the activity and do not include overheads or finance charges.

2.1.3 Risk allowances

- Unit rates based on the actual, historic costs of recently delivered projects have had their Risk allowances, where possible, mitigated as far as far as practicable. This generally applies to proactive, risk-based replacement programs that will be delivered by our DDP and CDPs
- For inspection-based replacement programs where unit rates are based on our Operations and Maintenance Services Agreement with Zinfra, a risk allowance has been added to the contracted rates to reflect AusNet's exposure to the additional costs (over and above the contracted, unitised rates) that may be passed onto AusNet under these arrangements. This risk allowance adjustment is necessarily to ensure unit rates for these programs reflect expected costs and is consistent with accepted regulatory practice. The risk allowance has been calculated as the difference between the contracted, unit rates and an industry average rate, based on proposed rates from Zinfra and one other, comparable service provider.

3 Unit Rates

3.1 Lines

- The rates in this section have been used to estimate programs of expenditure associated with replacement of lines assets.

3.1.1 Assumptions

- Lines asset replacement works are delivered by a combination of internal and external resources depending upon task and skill set. The unit rates are the average across the network and are not reflective of highest or lowest rates.

3.1.2 Limitations

- Financial information is not captured at the works specification level. This limits the ability to calculate a historic unit rate specific to some of the asset categories.
- It was not possible to split the historic rates between the 3 different pole types, Wood, Concrete or Steel.
- Distribution substation replacement costs have been calculated as an average across all types. The cost of replacing a distribution substation varies greatly. A 25 kVA pole type transformer is an order of magnitude less expensive than a 500 kVA kiosk. A change in the mix of substations replaced could result in a materially different replacement cost.

3.1.3 Contractor overheads

- A delivery partner is engaged to deliver lines related capital work. The contract with this supplier specifies that AusNet will pay a component of the supplier's overhead. The overhead is not included in the unit rates paid to the contractor and is not incorporated into the historical direct costs used to develop the unit rates.
- The rates shown in the table do not incorporate contractor overheads. The overheads have been incorporated into the total costs in the Capex model.

3.1.4 Rates

Table 1- Lines Unit Rates

Category	Description	Rate	Basis and Unit of Measure
Poles - Sub transmission (66kV)	Complex Structure HV/LV structures including Substation Poles, Switch Poles, Cable Head Poles, Regulator & ACR Poles – Open Wire and ABC (Aerial Bundled Cables) conductor	[C.I.C]	Per pole Includes pole top hardware
	Simple Structure Single Circuit Intermediate or angle structure - Open Wire and ABC (Aerial Bundled Cables) conductor		Per Pole Includes pole top hardware
Poles Distribution (22/11/6.6kV)	Complex Structure HV/LV structures including Substation Poles, Switch Poles, Cable Head Poles, Regulator & ACR Poles – Open Wire and ABC (Aerial Bundled Cables) conductor		Per Pole Includes pole top hardware
	Simple Structure HV/LV Structures – Intermediate/Angles, Strains, Terminations, and small substation poles (Single Phase & SWER Distribution) – Open Wire and ABC (Aerial Bundled Cables) conductor		Per Pole Includes pole top hardware
	Low Voltage (<1kV) Intermediate, Strain, Termination, Anchor, Tee-off – LV (Low Voltage) Open Wire or LVABC		Per Pole Includes pole top hardware
	Aerial Guy Pole/Public Lighting Pole/Column/Service Pole		Per Pole
Pole – Staking or Reinforcement	Installation of RFD Pole Stakes to reinstate an Unserviceable or Limited Life pole – Sub-transmission, HV (High Voltage) and LV (Low Voltage) poles Re-butting of an Unserviceable or Limited Life pole – Sub-transmission, HV and LV poles		Per Pole
Crossarms	Sub transmission (66kV) Intermediate, Strain, Termination, Anchor		Per Crossarm Includes associated hardware
	High Voltage (22/11/6.6kV) Intermediate, Strain, Termination, Anchor, Angle, Tee-off, Dressing-Down Crossarm		Per Crossarm Includes associated hardware
	Low Voltage (<1kV)		Per Crossarm Includes associated hardware
Conductor[1]	Span OF Defective Conductor (1 Phase or 3 Phase)		Per span (based on reactive

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Category	Description	Rate	Basis and Unit of Measure
	Replacement Of HVABC Conductor (Per Span > 3 Metres in Length) Replacement Of LVABC Conductor - Per Span		replacements – e.g. emergency)
Distribution Substation Transformers	Replace Defective or Faulted Transformer on Pole Type Substation, or Ground Type Substation		Per Substation
Switches and ACR (Auto Circuit Recloser)	High Voltage		Per Switch
Low Voltage Services	Overhead Service Line from Pole to Installation		Per Service Average of proactive (planned) and reactive (replace on failure)
Surge Arresters	Line Class		Per Surge Arrester
Voltage Regulators	All		Per Regulator (3 phases)

3.2 Stations

- The rates in this section have been used to estimate programs of expenditure associated with replacement of stations assets. These assets are located within the zone substations used to transform sub-transmission voltages to distribution voltages. Rates in this section are inclusive of civil, primary equipment and associated secondary works, unless otherwise specified.

3.2.1 Allowances

- The following items have been allowed for within the stations unit rates:
- Decommissioning and removal of existing equipment
- Supply, installation, testing and commissioning of equipment
- Earthworks, foundations, and structures (where applicable)
- Cabling (secondary and power) (where applicable)
- Protection and control associated with the equipment including interfacing works (where applicable)
- Interplant connections
- Earthing modifications
- Operational outage costs (i.e. planning preparation of outages & network switching)
- Design
- AusNet internal labour costs (i.e. Project Management, Quality Assurance, Site Supervision and Engineering support)
- Contractor indirect costs.

3.2.2 Exclusions

- The following items have been excluded from the stations unit rates:
- Planning and building permit applications
- Land acquisitions and easement creation
- Site surveys, geotechnical investigations, and reports
- Additional cable ducts or cable trenches - assume existing is suitable and sufficient capacity
- Removal of contaminants such as asbestos, PCBs and contaminated soil
- Costs associated with any environmental works
- Communication systems and schemes
- Management reserve[2]
- Cost escalations
- Financing cost and corporate overheads
- Written-down values
- Spares
- Operations and maintenance costs.

3.2.3 Primary Rates

- Table 2 provides the unit rates for 22 kV stations primary equipment.

Table 2 - 22kV Primary Equipment Unit Rates

Unit	Rate	Basis
Capacitor Bank - 6MVAr with 7% (19.3mH) current limiting series reactor	[C.I.C]	○ Based off recent project costs
Reactor (For Capacitor Bank) - 7% (19.3mH) current limiting series reactor		Based off recent project costs
Circuit Breaker: Dead Tank – Outdoor, 22kV 2000A 31.5kA, 4 5A bushing current transformer cores per phase: 0.2PX160, R0.55 on 1600/5		○ Based off recent project costs
Neutral Earthing Resistor – 22/12.7kV, 1600A/10sec, Outdoor, single phase 8 Ωneutral earthing resistor with bypass Circuit Breaker and series Current Transformers and Voltage Transformers		• 3rd cut estimation rates Includes: ○ Neutral Current Transformers and isolator ○ New earth fault back up protection scheme and integration ○ Provision for SCADA RTU modifications ○ Provision for Digital Interface Cubicle modifications ○ Duplicated secondary cabling to ITC ○ Monitoring accessories ○ Power cable and conduit (40m)
Neutral Earthing Compensator		• Includes: ○ Power cabling (30m) ○ Termination frame ○ NEC protection and control scheme
Isolator: Underslung – 1600A, 31.5kA		• 3 phase, Hook stick operated • Includes: ○ 8.9kN station post insulators ○ Earthing receptacles (two sets)
Isolator: Rotary Double Break – 1600A, 31.5kA		• 3 phase, ganged manual operation • Includes: ○ Manually operated earth switch ○ Earthing receptacles (one sets)
Current Transformer – 2000A, 31.5kA		• Based off recent project costs (didn't have 22kv UR's) 3 phase set • Includes:

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Unit	Rate	Basis
		○ Marshalling box and secondary cabling to ITC
Voltage Transformer - 24mS, 0.5M/1P		• Based off recent project costs • 3 phase set • Includes: ○ Marshalling box and secondary cabling to ITC
Surge Arrester – 31.5kA short circuit withstand current, 10kA peak nominal discharge current		• 3rd cut estimation rates 3 phase set
Modular Switchroom – Including switchgear		• Based on recent project costs Approx. 4.5m x 12.5m steel framed building • Excludes: ○ Demolition of existing switchroom ○ 22kV power cabling ○ DC supply and batteries • Building includes: ○ Air conditioning system ○ Fire detection system ○ Control room complete with ITC • Protection panels included: ○ (4) 22kV feeder protection ○ (2) Capacitor bank protection ○ X & Y Bus protection ○ CB (Circuit Breaker) failure protection ○ Bus Tie protection ○ Provision for REFCL protections, where required • Switchgear includes: ○ One (1) 2000A, 20kA transformer panel including 5, 5A current transformer cores ○ Four (4) 1250A, 20kA feeder panels including 2, 5A current transformer cores ○ Two (2) 1250A, 20kA capacitor panels including 2, 5A current transformer cores ○ One (1) 2000A, 20kA bus tie panel including 5, 5A current transformer cores ○ Single bus with a 50VA voltage transformer 0.5M/1P

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- Table 3 provides the unit rates for 66 kV stations primary equipment.

Table 3 - 66 kV Primary Equipment Unit Rates

Unit	Rate	Basis
Power Transformer – Yyn0(d11), 66/22kV, 15/20MVA with 4hr 30MVA emergency rating, 10% nominal impedance, tapping range -26 to +5 %	[C.I.C]	• Based on recent project costs Reuse footings and firewall • Excludes protection upgrades • Includes: ○ Removal of existing transformer ○ Neutral isolator, neutral current transformers, and associated isolation structure ○ 66kV surge arresters ○ Secondary cabling to ITC
Circuit Breaker: Dead Tank – 3150A, 40kA, 4 5A bushing current transformer cores per phase: 0.1PX1000, R1.6 on 3000/5		• Based on project rate Includes: ○ Duplicated protection and control schemes, integrated into existing station ○ Secondary cabling to ITC
Isolator: Underslung – 2000A, 31.5kA		• 3 phase, Hook stick operated • Includes: ○ 12.5kN station post insulators ○ Earthing receptacles (two sets)
Isolator: Rotary Double Break – 800A, 25kA		• 3 phase, ganged manual operation • Includes: ○ Manually operated earth switch ○ Earthing receptacles (one set)
Current Transformer – 2000A, 31.5kA, 5 5A cores per phase, 0.14PX700, R1.1 on 2100/5		• Based on recent unit rates • 3 phase set • Includes: ○ Marshalling box and secondary cabling to ITC
Voltage Transformer - 24mS, 0.5M/1P		• Based on recent unit rates 3 phase set • Includes: ○ Marshalling box and secondary cabling to ITC
Surge Arresters – 31.5kA short circuit withstand current, 10kA peak nominal discharge current		• 3rd cut estimation rates 3 phase set
Bus section – 100mm OD, 6mm WT welded aluminium tube, 2500A rating.		• Includes:

Unit	Rate	Basis
		○ 8 metre section of 3 phase rigid bus ○ 12.5kN station post insulators ○ Support structure and associated footings.

3.3 Secondary

- The rates in this section have been used to estimate programs of expenditure associated with secondary assets. These assets are located within zone substations and include items such as line protection, transformer protection and capacitor bank protection.

3.3.1 Allowances

- The following items have been allowed for in the secondary unit rates:
- Decommissioning and removal of existing equipment
- Supply, installation, testing and commissioning
- Control cabling from cubicle to ITC
- Intercubicle wiring
- Cubicle earthing and cable tray
- Modification and interfacing works
- Design
- AusNet internal labour costs (i.e. Project Management, Quality Assurance, Site Supervision and Engineering support)
- Contractor indirect costs

3.3.2 Exclusions

- The following items have been excluded from the secondary unit rates:
- Building modification works
- Removal of asbestos
- Communication systems and schemes
- Non-standard / site specific installations
- Management reserve
- Cost escalations
- Financing costs and corporate overheads
- Written-down values
- Operation and maintenance costs
- Spares.

3.3.3 Secondary Rates

- Table 4 provides the unit rates for stations secondary equipment.

Table 4 - Secondary Equipment Unit Rates

Unit	Rate	Basis
66kV Line Protection	[C.I.C]	• X&Y modular scheme includes ○ Current differential protection ○ Back up distance protection ○ Auto reclose ○ Circuit breaker failure ○ Circuit breaker management ○ Circuit breaker control ○ Line instrumentation quantities
66kV Autoclose		• Four (4) bus arrangement • Tap matching scheme • Autoclose panel includes: ○ Autoclose relay ○ Interface/tap matching relay
22kV Feeder Protection		• Modular scheme includes ○ Two (2) feeders on panel ○ Overload protection ○ Sensitive earth fault protection ○ Auto reclose ○ Circuit breaker management ○ Circuit breaker control ○ Feeder instrumentation quantities
66/22kV Transformer Protection		• X&Y modular scheme includes ○ Differential Protection ○ Overload ○ Circuit breaker failure ○ 66kV circuit breaker management ○ 66kV circuit breaker control ○ Transformer instrumentation quantities
22kV Bus Protection		• X&Y modular scheme includes ○ Differential protection ○ Bus Overload ○ 22kV Transformer and bus tie: ▪ Circuit breaker failure ▪ Circuit breaker management ▪ Circuit breaker control
22kV Earth Fault Backup Protection		• Earth Fault Backup Protection

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Unit	Rate	Basis

22kV Cap Bank Protection		• Based on recent project rates
		• X&Y modular scheme
		  ○ Overload protection
		  ○ Circuit breaker management
		  ○ Circuit breaker control
		  ○ Instrumentation quantities

Zone Substation RTU		• Based on recent project rates SCIMS System – Large (3 rack RTU)
		• Includes:
		  ○ SCIMS Panel
		  ○ HMI
		  ○ GPS clock
		  ○ DSP Mapping & Design
		  ○ Testing
		  ○ NOC Review & Display Implementation

3.4 Enhanced Safety Programs

- The rates in this section have been used to estimate programs of expenditure associated with the Enhanced Safety Program.

3.4.1 Assumptions

- Safety program works are delivered by various external resources depending upon the region, the program and work delivery volumes. The unit rates selected are the average across the network and are not reflective of highest or lowest rates.

3.4.2 Rates

- Table 5 provides unit rates for enhanced safety program activities.

Table 5 - Enhanced Safety Programs Unit Rates

Category	Description	Rate	Unit of Measure	Basis of Rates
Installation of Armour Rods and Vibration Dampers	Install or replace armour rods and vibration damper on the following structures • SWER Intermediate • SWER Angle • Intermediate Single Phase • Intermediate Three Phase • Angle Single Phase • Angle Three Phase	[C.I.C]	Per Structure	• Based on the historical average rate and mix of activities.
Conductor Replacement	Proactive program to replace conductor: - Steel - Copper		Per km	• Based on recent Project PCR's • Replace 3 phase bare 22kV with covered 22kV line • Average unit rate based on historic average cost
EDO Fuse Unit Replacement	Replacement of EDO to Boric Acid unit on the following structures • SWER • Single Phase • Three Phase		Per Unit	• Based on OMSA rates • Based on reported volumes and costs in annual RINs 2011 to 2013
Animal Proofing	Animal Proofing of the following • The retrofitting of an existing concrete pole substation structure with Animal Proofing materials • The retrofitting of an existing complex (termination, strain, anchor) High Voltage or wood pole		Per Structure	• Average rate based on a mix of structure types and both full and minor animal proofing.

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Category	Description	Rate	Unit of Measure	Basis of Rates
	substation structure with Animal Proofing material • The retrofitting of an existing pole or ground type substation or Cable Head Pole structure with minor Animal Proofing materials.			
Overhang Removals	Replacement of bare overhead wire classified as a 56M with High Voltage Aerial Bundled Cable		Per 56M span	• Based on historical rate of undertaking similar activity.
Line Clearance	Rectification of Line Clearance issues		Per Span	• Based on historical cost of rectifying line clearance issues.
High Voltage Underground Cable Installation Program	Replacement of High Voltage Aerial Bundled Cable with High Voltage Underground cable		Per km	• Based on forecast expenditure from the current High Voltage Underground Cable Installation Program