



Template - 2.2 Repex

Table 2.2.1 - REPLACEMENT EXPENDITURE, VOLUMES AND ASSET FAILURES BY ASSET CATEGORY

Source of Data

For replacement expenditure, quantities, and asset failures the source of the data was our asset management system (Maximo).

Estimated or actual information

The expenditure information on replacement expenditure and replacement quantities was sourced from our asset management system and our financial system. There was a significant amount of categorisation, mapping allocation and assumptions applied. We applied rules primarily based on our system data and expenditure attributes. If we started again and applied different assumptions it is likely that we would report values that are not materially different. Therefore, the RIN defines this as actual information. Asset failures in relation to pole-top structures, conductors, cables, service lines, transformers, switchgear and field devices was based on Maximo Event module data and is defined by the RIN to be actual information. Other asset failures were based on information that was manually mapped and estimated. This information is defined by the RIN as estimated information.

Methodology and assumptions

We calculated our replacement expenditure and volumes using the capex methodology described in appendix A of this Basis of Preparation. In summary, we first identified all capital expenditure projects that were repex projects by default. This included all our renewal/replacement projects excluding any that were known to be customer connections, customer augmentation and expenditure on the NT Build levy for long service leave for NT constructions workers.

There were many instances where our capital projects were not given the correct classifications in our asset management system and there were a number of projects which involved a combination of replacement and augmentation works. For these exceptions, we manually assigned the correct category for RIN reporting. All repex projects were then further classified into the relevant categories in table 2.2.1 and we made the following assumptions:



- In some cases, we replaced assets in one repex category with assets belonging to another repex category. For example, some 500kVA distribution transformers replaced by 750kVA units. The repex category of the new asset was used to report the expenditure and volumes. We did not apply this assumption when the primary driver of the project was capacity rather than asset condition.
- Where an asset replacement resulted in a new asset in addition to the replacement asset, the new asset was included in the expenditure and quantity tables.

Below we outline the treatment of each repex asset group and outlines where assumptions or estimates have been made.

Primary assets

- Poles - We included distribution poles, transmission poles and towers and we excluded refurbishments, which were reported under the 'other' category.
- Pole-top structures - Includes the replacement of a cross-arm or the replacement of all insulators on a pole-top. Applies to distribution and transmission pole-top structures.
- Staking wooden poles - We do not have wooden poles so we have reported this variable with values of zero.
- Overhead conductors - We included all overhead conductors except for service wires. We treated replacement of pole-top clamps with splices as replacement of 1m of conductor.
- Underground cables - We included all underground cables except for service cables and we reported all quantities in kilometres.
- Service lines - All service line replacements have all been reported in the category of less than 11kV, residential and simple type. We used this category because it represents the vast majority of service lines replaced and we do not have a systemised way to disaggregate into the various asset categories. We reported all quantities of service lines as the total number of services.



- Transformers - We included power transformers, distribution transformers and zone substation auxiliary transformers.
- Switchgear - We included high voltage distribution switchgear, high voltage circuit breakers and isolators, high voltage switchboards and gas insulated switchgear. We included expulsion drop out fuses as switches not fuses, in accordance with the RIN instructions which state that any fuse which is also capable of acting as a switch be treated as a switch. We included reclosers as circuit breakers.
- Public lighting - The public lighting variable has been reported with values of zero because the Framework and Approach Paper (F&A) did not classify public lighting to be either standard control or alternative control services.

SCADA assets

- Field devices - We included protection relays and SCADA remote terminal units.
- Local network wiring assets - We included the physical panels which house the protection relays and remote terminal units.
- Communications network assets - We included microwave terminals, dense wavelength division multiplexing (DWDM) systems, multiplexors, ultra-high frequency (UHF) systems, telemetry systems and teleprotection systems.
- Master station assets - We included our energy management system.
- Communications site infrastructure - We included battery systems, solar systems, shelters, towers/masts and server/equipment rooms.
- Communications linear assets - We included fibre optic cables and pilot cables and reported quantities in kilometres.
- AFLC - We do not have any AFLC so we reported this variable with values of zero.

Other

- Buildings - We included zone substation switchgear or control buildings.
- Instrument transformers - We included current and voltage transformers.



- Metering units -We included pole or ground mounted metering units for high voltage customers.
- Pillars - We included distribution pillar boxes.
- Substation auxiliary plant- We included battery systems and low voltage switchboards.
- Voltage regulators - We included pole-mounted distribution voltage regulators.
- Civil and Grounds - We included zone substation civil assets including roadway, earth grid, bunding and fencing.
- Fire systems - We included zone substation fire systems.
- Capacitor banks - We included zone substation capacitor banks.
- Cable tunnels - We included cable tunnels for entry/exit from zone substations and for the distribution network in Darwin's central business district. We reported quantities in metres due to the relatively low lengths.
- Power transformer refurbishment - We included major transformer overhauls, which includes bushing replacements, gasket replacements, protective devices, radiator replacement etc.
- Power transformer spares - We included purchase of spare zone substation power transformers.
- Pole refurbishment - We included plating and capping steel distribution poles.
- Tower refurbishment - We included earth upgrades or re-coating transmission towers.
- EDO refurbishment - We included one-off program to replace old expulsion drop out (EDO) fuses with a sparkless fuse type.

Expenditure

We calculated the annual expenditure by adding up the asset cost for those assets categorised as providing standard control services, and which were identified as repex and fit into the relevant repex category.

Asset replacements



We calculated the annual quantity of replacements by adding up the asset volumes associated with the above expenditure.

Asset failures

The volume of failures per year was calculated using the following two methods:

- Asset failure data from the Maximo Event module was used. This was our preferred source of failure data but it was not available for all categories. It was available for pole-top structures, conductors, cables, service lines, transformers, switchgear and field devices.
- Where failure data was not available from the Maximo Event module, we assigned asset replacements to a failure type category. Each replacement that was driven by a functional failure (the asset was replaced after failure) contributed to the failures reported.

Both data sources excluded externally-caused failures, as required by the appendix F definition of 'Asset failure (repex)'.

It should be noted that for cable and conductor failures in table 2.2.1, the volumes reported are quantity of failures, and not length of the failed asset.

Confidential Information

There is no confidential material in this table.

Consistency with RIN requirements

Appendix E Requirements	Consistency with requirements
6.1 (a): Where PWC provides asset sub- categories corresponding to the prescribed asset categories in table 2.2.1, PWC must ensure that the expenditure and asset replacement / asset failure volumes of these subcategories reconcile to the higher level asset category. PWC is required to use the additional rows and provide a clear indication of the asset category applicable to any new sub- category in the yellow input cells labelled 'OTHER BY DNSP DEFINED'; or report new	All of our subcategories supplied in the 'OTHER BY DNSP DEFINED' section are independent of the higher level asset categories.



<p>sub-categories against the asset category 'OTHER' in the relevant asset group.</p>	
<p>6.1 (b): In instances where PWC is reporting expenditure associated with asset refurbishments/ life extensions capex it must insert additional rows at the bottom of the table 'OTHER BY DNSP DEFINED'). PWC must provide the required data, applying the corresponding asset group and category name followed by the word "REFURBISHED".</p>	<p>We have added additional rows for refurbishments as required.</p>
<p>6.1 (c): In instances where PWC considers that both the prescribed asset group categories and the subcategorisation provisions set out in (a) do not account for an asset on PWC distribution system, PWC must use the additional rows at the bottom of the table 'OTHER BY DNSP DEFINED'.</p> <p>PWC must provide the required data, applying a high level descriptor of the asset as the category name. PWC must ensure that the sum of the individual asset categories, including any additional sub-category, additional other asset category or asset refurbishment/ life extension asset category expenditure reconciles to the total expenditure of the asset group.</p>	<p>We added new rows in the table under 'OTHER BY DNSP DEFINED' and the required data has been provided for each.</p> <p>All sub-categories are mutually exclusive and reconcile to the total expenditure of the asset group.</p>
<p>6.1 (d): Any new categories defined by PWC in table 2.2.1 of regulatory template 2.2 must also be listed in table 5.2.1 in regulatory template 5.2, and PWC must provide corresponding asset age profile data in accordance with the instructions for regulatory template 5.2. The only exception to this is if the new categories are within the asset groups 'Pole top structures', or 'Staking wooden poles'.</p>	<p>We added new categories to table 2.2.1, and also added these to template 5.2 and age profile data.</p>
<p>6.1 (e): PWC must ensure that the replacement volumes by asset group is equal to the applicable replacement volume data provided in table 2.2.2.</p>	<p>The volumes in 2.2.1 reconcile to those in 2.2.2</p>



6.1 (f): PWC must ensure that the sum of the asset group replacement expenditures is equal to the total replacement expenditure contained in regulatory template 2.1.

The expenditures in 2.2.1 reconcile to those in 2.1