

Augex - Utility Blackspot Plan Investment Case

Background

This plan has been developed to address the frequency of vehicles colliding with power poles on sides of roadways. It is a continuation of a collaborative effort with the NSW Centre for Road Safety and the NSW State government to curb the road toll and trauma associated with pole crashes. Details of Utility pole collisions are provided by the NSW Centre for Road Safety. This data is then matched to Essential Energy pole locations. Sites can be deemed as Blackspot sites by using the historical RMS crash data to identify where multiple (3 or more) crashes were recorded at the one site, or by Planning staff identifying sites that need to be considered for projects.

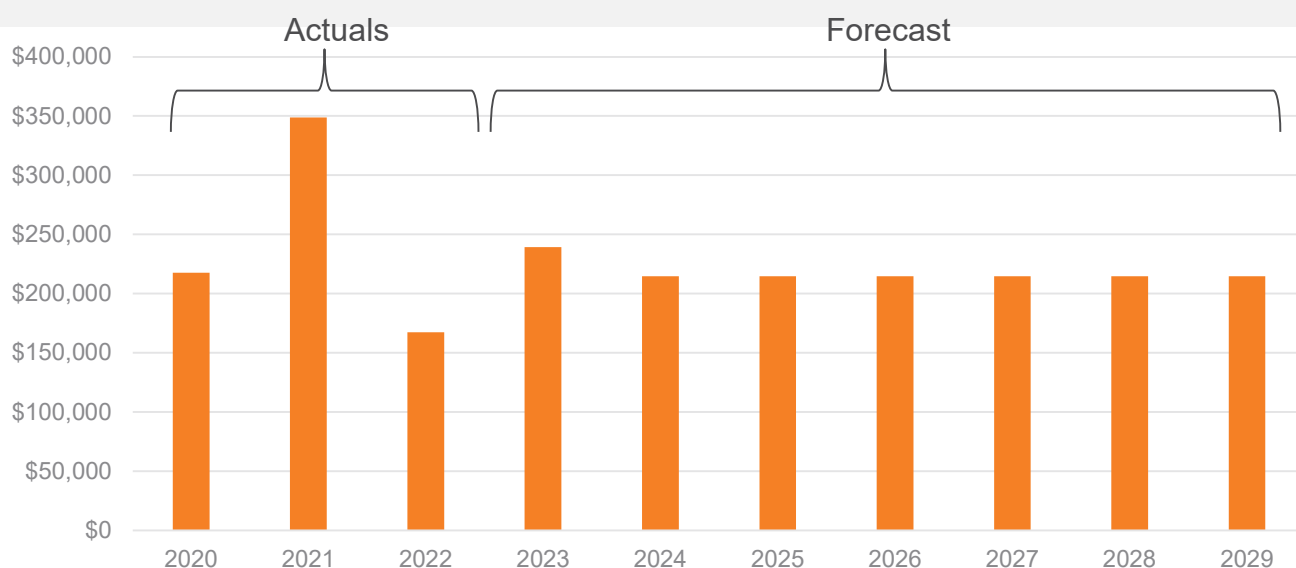
Investment Options

Once identified, each site then can be analysed to determine the best remediation option. Not all sites identified will have a relocation task. The options to deal with an identified site include:

- Remediation by project by Essential Energy
- Referring the site to RMS
- Referring the site to Council
- Investigation reveals no further alterations required for the site

The proposal is to address the highest risk locations with the most frequently hit poles, which can be targeted based on the ranked number of collision incidents recorded. Based on historical data, there will be approximately five sites that will be able to be remedied over the five-year program.

CAPEX Forecast



Note: All values are in middle of the year 2023-24 real dollar terms

Justification

Forecast expenditure for the 2024-29 period is \$1.1M. This is approximately equal to the 2019-24 actual/forecast.

The key objectives of these investments is to:

- identify high risk sites and the impact on Essential Energy assets
- reduce the number of fatal pole crashes or those resulting in injury as a result of crashes within the Essential Energy footprint.

The major benefits expected from these investments are:

- **Reduced network risk:** fewer cars hitting poles resulting in power outages for customers.
- **Improved maintainability:** fewer cars hitting poles reduces the fault & emergency maintenance requirements

Augex - Crossings of Navigable Waterways Investment Case

Background

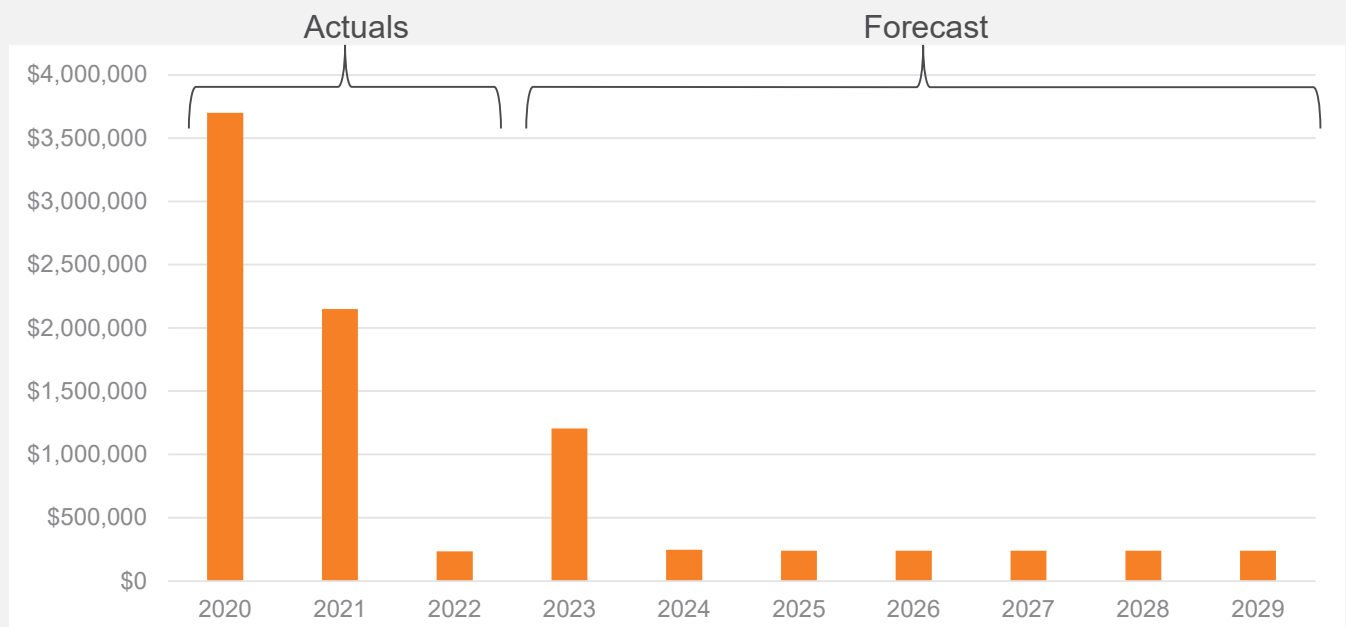
This program is required for compliance with NSW Transport, Roads and Maritime Services regulatory requirements for network assets crossing navigable waterways. The work includes installation of warning signs and risk reduction activities such as increasing the conductor clearance height at selected sites to reduce the navigational risk to as low as reasonably practicable. Most of the higher risk crossings requiring redesign and reconstruction works have been completed in the 2014-19 and 2019-24 regulatory periods.

Investment Options

Failure to complete this program will result in non-compliance to the NSW Transport, Roads and Maritime Services Crossings of Navigable Waters: Electricity Industry Code.

While the first stages of this program included augmentation to the network by raising the height of conductors over navigable crossings, the program of works has shifted to the erection of signage to bring the risk for each crossing down to ALARP (As Low As Reasonably Possible).

CAPEX Forecast



Note: All values are in middle of the year 2023-24 real dollar terms

Justification

Forecast expenditure for the 2024-29 period is \$1.2M. The change from 2019-24 actual/forecast of \$6.6M is due to the navigable crossing program approaching its completion, with ongoing expenditure to maintain compliance.

Under the direction of the former Director-General as per the Electricity Supply (Safety and Network Management) Regulation 2008, the crossing of navigable waterways program has been implemented to comply with the requirements of the NSW Transport, Roads and Maritime Services Crossings of Navigable Waters: Electricity Industry Code.

The Code requires network operators to design, construct and manage crossings of navigable waterways in accordance with Australian Standard AS 6947-2009 – Crossing of waterways by electricity infrastructure. Subsequently, Essential Energy is required to apply the respective treatment(s) including new warning signs to navigable crossings sites to ensure the risk level at each navigable crossing is as a low as reasonably practicable

The major benefits expected from these investments are:

- **Reduced network risk:** Fewer contacts with high voltage overhead lines leads to fewer network outages.
- **Improved safety:** Fewer contacts with high voltage overhead lines reduces safety risk to the public.
- **Compliance:** The investments are required to achieve and maintain compliance with Electricity Industry Code.

Augex - Scada Development Upgrades Investment Case

Background

This investment case covers the ongoing need of SCADA within the business. It includes maintenance of software, firmware, device, adaptation of PowerOn Fusion Tools, AVR/Control Routine upgrades and Security investments. Meeting needs of NER 6.5.7 and legislative requirements for safe supply of electricity.

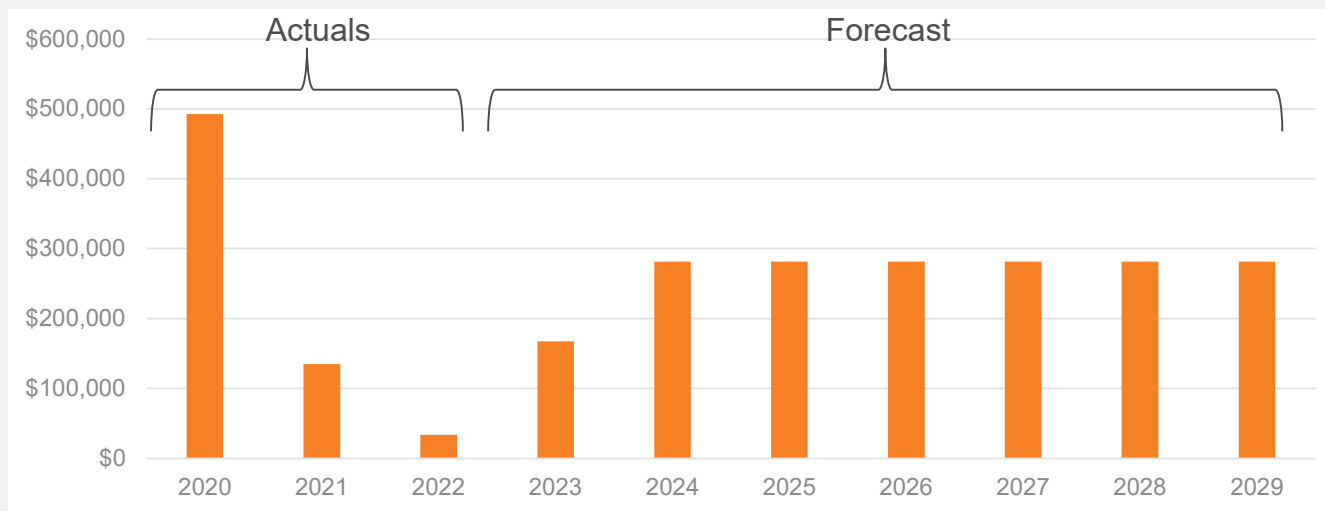
Investment Options

The preferred option involves keeping the current toolsets up to date and fit for purpose, meeting the ever-growing and changing needs of both our industry, business and customers. These ongoing changes include cybersecurity needs. We require constant revision of the toolsets applied, both in terms of the field devices as well as toolsets used to provide consistency in loading of information into PowerOn Fusion.

The expenditure includes:

- SCADA Security Upgrades – is an ongoing body of required work to meet the ongoing and growing demands for ensuring the cyber-security risk profile of the SCADA OT environment is kept at ALARP. Bodies of work undertaken in the current Determination Period have included penetration testing, resulting in several weaknesses having been identified and addressed appropriately. With new technologies coming on-line along with the virility of this cyber space, pro-active and ongoing bodies of work will be undertaken on an annual basis.
- PowerOn Fusion integration updates/upgrades. Not to be confused with upgrades of the PowerOn Fusion platform; but attributed to the consequential evolutionary changes made to the NMS. Changes/upgrades seen to date have included changes in the manner by which uploads are created into PowerOn Fusion, along with systemic attribute changes.
- SCADA Toolset Development. These are the necessary tools used by the SCADA Developers in conducting works associated with the data extraction and control of the remote terminal devices (be they an RTU or a field device). Protocol conversions, DNP#3 mapping, Control Routine development are but three given examples. All such development work forms part of the SCADA toolset and technical library of standard routines used throughout the OT fleet. Is inclusive of similar utilised in the DSA field, but more specifically orientated to the DSA devices deployed.

10 Year CAPEX Forecast



Note: All values are in middle of the year 2023-24 real dollar terms

Justification

Forecast expenditure for the 2024-29 period is \$1.4M. This is approximately equal to the 2019-24 actual/forecast.

Failure to invest directly will hamper further development, reduce opportunity to support new devices, increase security risk and create individual project estimation inaccuracy. Not making an investment in SCADA development can result in errors in control room switching, extended outages, increasing integration difficulties and both system /personnel performance/efficiency level.

The major benefits expected from these investments are:

- **Reduced network risk**
- **Improved maintainability**
- **Improved service to customers**

Augex - Zone Substation Environmental Compliance Investment Case

Background

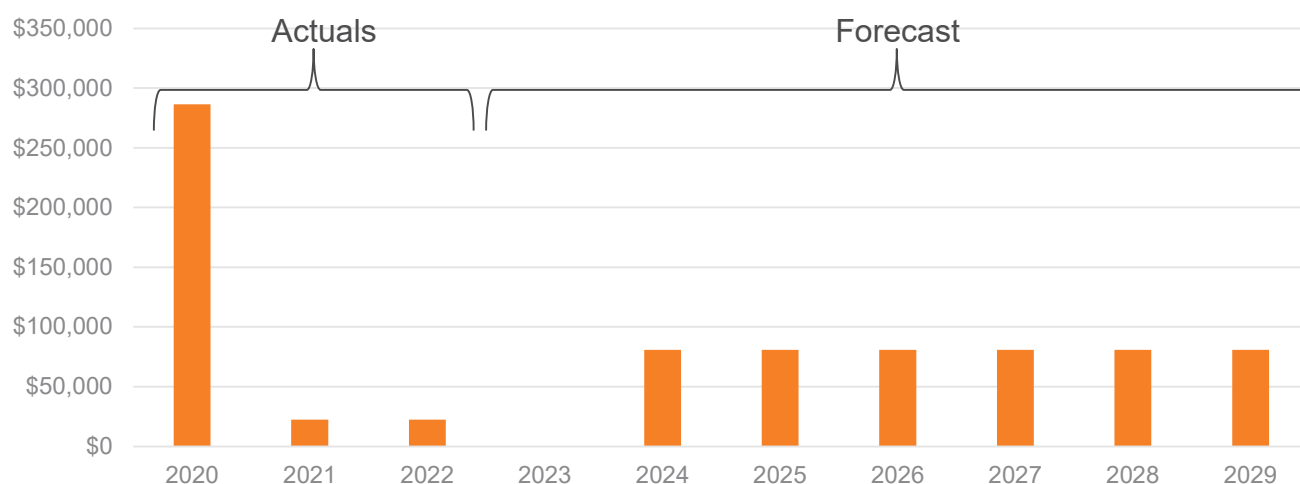
- **Transformer Bunds:** A transformer bund can be considered to have failed when it no longer acts to contain oil which may be leaking from the transformer or which may be rapidly expelled from the transformer as a result of a transformer fault. Transformer bunds can fail to contain oil during an oil spill event due to the presence of a leak, damage to the bund or excess water contained within the bund due to rainfall.
- **Oil Water Separators:** Oil water separators vary significantly in their failure modes by manufacturer and construction. In general, a failure can be categorised as an inability to separate oil from water. Common failure modes previously experienced which may cause this include blockages, failure of the materials from which they were constructed, communication failures and electronic failures.
- **Noise:** Essential Energy is bound to comply with the provisions of the Protection of the Environment Operations Act. Under the requirements of this Act sound pressure levels at a substation's nearest residence are not to exceed 35dBA. Power transformers can be a source of noise non-compliance.
- **Asbestos:** Asbestos is a substance with well known negative impacts on human health, stringent compliance requirements. Asbestos is currently found throughout Essential Energy's substations. It is present in primary and secondary equipment as well as building materials (including ceiling finishes, external walls, interior walls, fire doors and roofing materials), cable covers, ducts and pits.

Investment Options

- **Oil Containment:** Options to address oil containment include sealing of leaks in existing bunding, and the installation of oil-water separators. The coating of a transformer bund costs approximately \$15,000. The purchase and installation of an oil water separator is approximately \$9,000 per unit.
- **Noise:** Noise management can be considered to have failed when a residence is exposed to noise which exceeds 35dBA. Typical interventions include installing sound barriers or other treatments. The cost of a noise study is typically \$10,000, and rectification in the order of \$15,000.
- **Asbestos:** Asbestos is inspected every three years to review the condition and presence of known asbestos products and substation equipment containing asbestos products. A failure with regards to asbestos can be considered to have occurred when it becomes friable or damaged. This generally occurs as a result of some sort of mechanical force being exerted on an asbestos product and it becoming damaged. The preferred option involves the removal/containment of asbestos, with a particular target on that which has been damaged and as a result is an immediate risk to the health of staff in the vicinity. Refurbishment may also include painting of deteriorating items as this assists in the containment of asbestos fibres.

10 Year CAPEX Forecast

- *Note: All values are in middle of the year 2023-24 real dollar terms*



Justification

Forecast expenditure for the 2024-29 period is \$0.4M. This is approximately equal to the 2019-24 actual/forecast.

- **Oil containment** - Essential Energy is required to ensure that it does not permit contaminated water, oil or chemicals spills to pollute water catchments.
- **Noise** - Essential Energy is required to comply with the NSW Industrial Noise Policy.
- **Asbestos** – Friable asbestosis considered to be a significant risk to staff, and as a result removal is required. Failing to address hazardous asbestos installations could be a breach of the New South Wales Work Health and Safety Act 2011.

The major benefits expected from these investments are:

- **Reduced network risk**
- **Improved service to customers**
- **Environmental compliance**