Report to Entrust

The Energy Solutions Programme

Financial Year 2018/19

July 2019

1 Purpose

The purpose of this report is to highlight Vector's performance against The Energy Solutions Programme for the 2018/19 financial year. As per the requirements of the Deed Recording Essential Operating Requirements (DREOR), the Energy Solutions Programme for 2018/19 included **overhead improvement projects** (i.e. undergrounding conversion) and **new solutions as alternatives to overhead lines** (e.g. community generation, smart poles and micro grids).

2 Executive Summary

We highlighted in past reports that our ability to deliver large-scale undergrounding projects in recent times have been significantly limited by Chorus' ability to convert the overhead copper telephone lines at the same time. As such, the last large-scale project, jointly coordinated, was completed in 2015.

The completion of their fibre rollout programme now enables Chorus to promote the conversion to fibre as a means to retire copper network assets when Vector is doing undergrounding projects. It is therefore very pleasing to report that the coordination on large-scale overhead conversion projects with Chorus has regained momentum over the past year.

It is also pleasing to report that Auckland Transport (AT) is continuing their support of these projects by installing new streetlights as we remove the power poles.

The expenditure against the 2018/19 Energy Solutions Programme target was $8M, with a further $3M of investment committed or under construction.

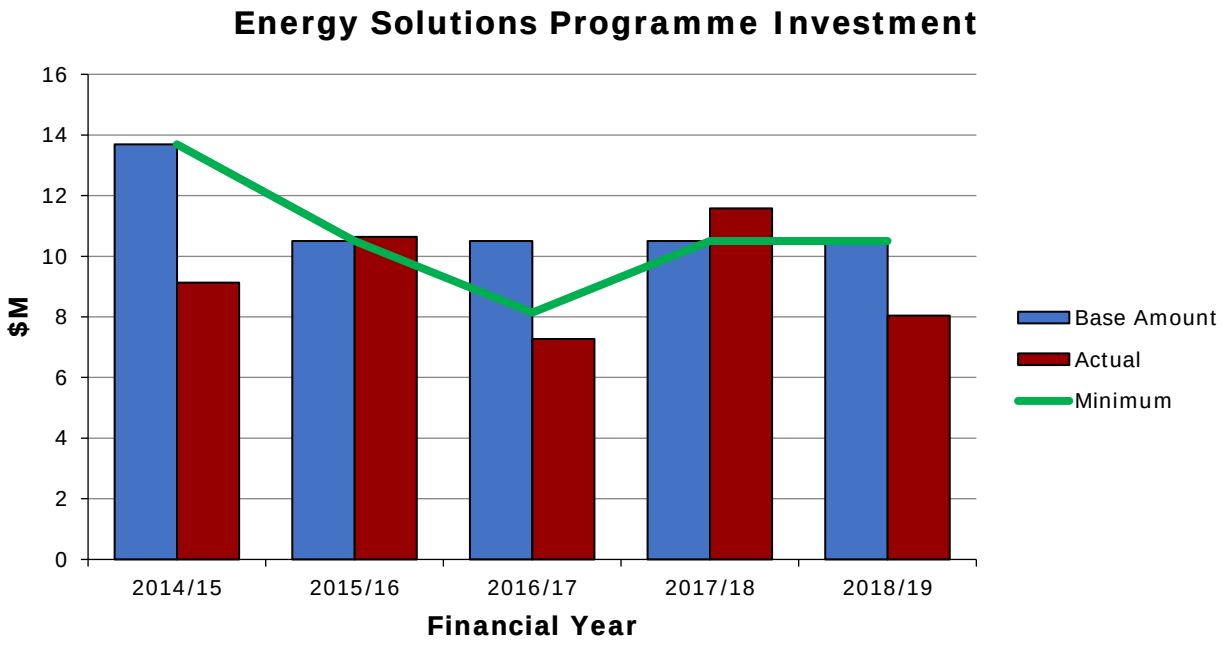
3 Energy Solutions Programme Investment

The breakdown of the Energy Solutions Programme for 2018/19 is shown below:

Overhead Improvement:	
Undergrounding	$6.1M
Undergrounding contributions	($0.3M)
New Technology solutions:	
Community Generation	$1.8M
Smart Pole	$0.4M
Smart Grid – Kawakawa Bay	$0.1M
	$8.0M[1]

[1] Addition discrepancy is due to rounding

The chart below illustrates the expenditure on the programme over the past 5 years. A total of $46.6M has been invested in the programme over this period (i.e. $9.3M per annum).



4. Achievements in 2018/19

Undergrounding

We completed undergrounding projects during this past year in Franklin Road (Freemans Bay), Station Road (Otahuhu), Alba Road (Greenlane), St. Georges Road (Avondale), Sarsfield Street (Herne Bay), Dominion Road (Mt. Eden), Rahiri Road (Mt. Eden), Taurarua Terrace (Parnell), Brown Street (Ponsonby), Windsor Street (Parnell) and Walmer Road in Pt. Chevalier.

A planned project in Powell Street has been delayed to enable Chorus to secure more residents' commitments to convert to fibre to enable them to retire the copper network. They have received strong support from properties on one side of the street, but not the other. This project will now be constructed in 2019/20. We deferred a project in Selwyn Street to coordinate the works with a significant property development within the project area. Unfortunately, the property development eventually failed. This project will now be constructed in 2019/20.

We are very pleased to report that all undergrounding works were delivered without a lost time injury and continue to receive complimentary customer feedback upon completion. These projects continued to provide positive brand exposure to Entrust through co-branded project signs, co-branded project information flyers and references in project correspondences.

The following photos depict the positive impact on amenity value in the areas undergrounded during the year.

Franklin Road, Freemans Bay (after)

Franklin Road, Freemans Bay (after)

Alba Road, Greenlane (before)

Alba Road, Greenlane (after)

Station Road, Otahuhu (before)

Station Road, Otahuhu (after)

Sarsfield Street, Herne Bay (after)

Sarsfield Street, Herne Bay (after)

Sarsfield Street, Herne Bay (before)

Sarsfield Street, Herne Bay (after)

Rahiri Road, Mt Eden (before)

Rahiri Road, Mt Eden (after)

Taurarua Terrace, Parnell (before)

Taurarua Terrace, Parnell (after)

Taurarua Terrace, Parnell (before)

Taurarua Terrace, Parnell (after)

Windsor Street, Parnell (before)

Windsor Street, Parnell (after)

Community Generation

We completed the purchase and deployment of a range of small, portable generator units. These have been co-branded these Vector and Entrust (refer images below). We now have a fleet of 60 small portable generators to assist customers during outages and network contingencies.

We have also completed the procurement and commissioning of the fleet of six large, trailer and truck mounted mobile generator units with capacities ranging from 200kVA, 500kVA and 800kVA. These units are in service and are being used to support wider community groups during network contingencies and planned outages through connecting directly into Vector's network. The photo below shows one of the 800kVA generator units permanently mounted on a truck.

Smart Poles

The Smart Poles incorporate a variety of community focused devices such as electric vehicle chargers, security cameras, electronic signage, and weather sensors while lifting the conductor above most tree lines to improve amenity value and reduce vegetation cuts. We are deploying five Smart Poles across two separate projects:

- Selcourt Road in Mt Albert is being developed with three Smart Poles to carry low voltage electricity cables utilising Aerial Bundled Conductor (ABC).

- The second project involved the installation of two separate and bespoke Smart Pole configurations in the Wynyard Quarter district.

The integration of 3rd party communication technology with the new smart poles have provided challenges with the Selcourt Road installation, but that is now on track for completion in October.

The photos below show day time and evening images of one of the poles installed at the Wynyard Quarter.

Micro Grid – Kawakawa Bay

We are implementing a micro grid solution to improve the resilience of the network and customer experience at Kawakawa Bay. The network to Kawakawa Bay and Orere Point is exposed to significant geographical challenges, flood prone zones at Clevedon, vegetation conflicts along the feeder route and road reserve instability.

The micro grid, positioned in the centre of the Kawakawa Bay area, combines renewable solar generation and battery energy storage to support the local customer base during contingencies.

The system is being installed on WaterCare's land at Kawakawa Bay, improving the reliability of supply to the site. We have incorporated in the design an automated inter-tie with the CountiesPower network on the Kaiaua Coast. This will result in further benefits to the community during extended contingencies. The project is on track for completion at the end of October.

Andre Botha
Chief Networks Officer