PORT OF AUCKLAND
TĀMAKI HERENGA WAKA

POAL transitioning to electrification: why, how, when and future resilience

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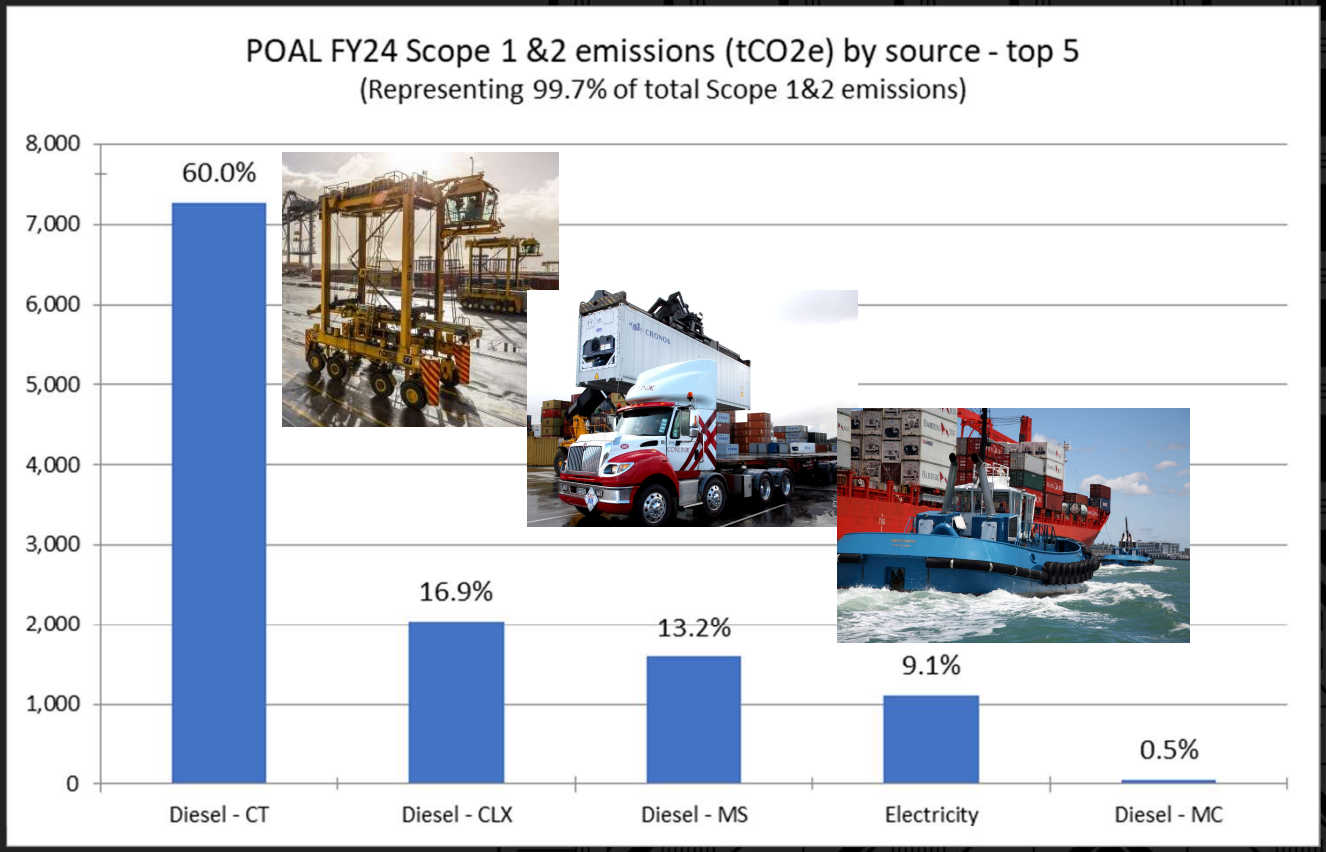
CEP Conference 2025

GHG inventory, Target & Strategy – the Why?

TOITŪ CARBON REDUCE
ISO 14064-1 ORGANISATION

FY24
12,104 tCO2e
(Scope/Category 1 & 2, location based)

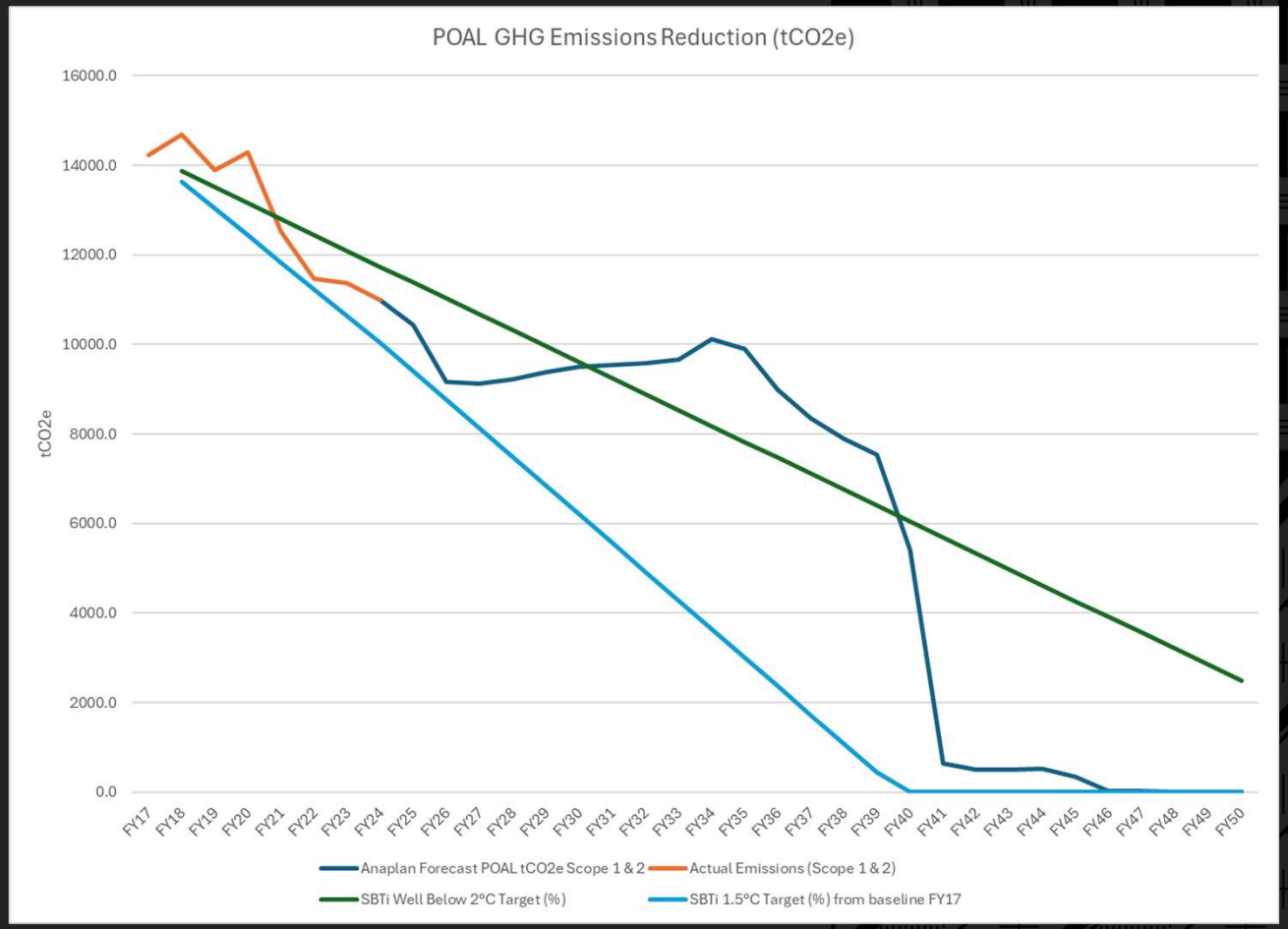


Zero emissions by 2050

Sustainability

- Caring for Aucklanders
- Genuine harbour health
- Meaningful climate action
- Driving towards a circular economy
- Sustainable business in Auckland

How and When? Emissions reduction roadmap



Based on replacement of end of life port equipment with zero emission equivalents

Hydrogen? Electric?

Model built in financial planning and forecasting software (Anaplan) for currency and accessibility
- Asset register
- Actual monthly diesel
- Capex schedule
- Budget forecast

Part of business budgeting and planning processes


Sparky
IN OPERATION SINCE 2022
364 tCO2e
FF11
Empty container handler
IN OPERATION SINCE LAST WEEK!
67 tCO2e
55% electric light fleet

E-equipment challenges and learnings

Limited options

Cost more – kit + charger

EECA TE TARI TIAKI PŪNGAO ENERGY EFFICIENCY & CONSERVATION AUTHORITY

LOW EMISSION TRANSPORT FUND

Operation & Maintenance costs less

Charging: where, how & when?

24/7 Operation : Change the way we work? Additional units?

Operator training

Future resilience – Climate Risks

Auckland Council Group = CRE

Climate-related disclosure - XRB Climate Standards

Assessment of Climate related physical & transition risks
-> Climate Adaptation Plan for future resilience

Physical risks:
NIWA climate info for Auckland - Hot-house scenario

7 priority risks

Hazard	Present day (1986- 2005)	Mid Century RCP8.5 (2050)	End of Century RCP8.5 (2100)	Potential Impact on POAL Infrastructure	Potential Impact on POAL Operations
Temperature	15°C	+0.9°C	+3.3°C	Vulnerability of temperature sensitive infrastructure Increased power demand for reefers and air conditioning loads. Additional shade / temperature controlled infrastructure for	Potential increase in worker heat stress. Potential impact on national / regional grid capacity and/or operation.
Hot days (above 25°C) annually	15 to 24 days	+10 to 20 days	>70 days		
Cold nights (below 0°C) annually	Auckland CBD: 1 night Hunua Range: up to 8 nights Northwest of the region: up to 5 nights	0 to 2 fewer cold nights	0 to 3 fewer cold nights in most of the region. Hunua Range: up to 8 fewer cold nights	N/A	N/A
Drought (Dry days) annually	237 dry days	+3 to 9 days	+ 12 to 21 days	N/A	Potential impact on national power generation capacity / operation of national grid.
Precipitation (average annual)	1200 mm – 1800mm	-5% to +5% change	-5% to +5% change	N/A	N/A
Extreme weather (100-year event, 24 hour event)	160-240 mm	+8% rainfall depth (24hr, 100yr)	+28% rainfall depth (24hr, 100yr)	Potential for increased damage to buildings and infrastructure and increase repair and maintenance costs. Increased risk of water ingress to underground infrastructure. Potential increase in dredging volumes and/or disposal costs (contaminated sediments) due to increased sediment load from City. Increased build /replacement costs to meet updated infrastructure and building design specifications.	Impact on shipping schedules / arrivals due to weather events. Impact on por operations due to weather events Impact on port access through problems with roads and rail system. Potential for increased damage to port cargo equipment Impact on supply chain Potential impact on operations due to inability for localised forcasting.
Sea level rise	Represented by mean high water spring tide 10%	+0.3 m	+0.8 m	Potential overtopping of eastern terminal riprap from sea level rise combined with storm surge. Potential inundation of Kingslow and central roadway of Shed 51. Increased risk of coastal erosion / increased repair and maintenance costs	Similar impacts for operations as sea level risks will be exascerbated by storm surge and adverse weather events.
Mean wind speed (MSW)	4.9m/s MWS	-1% to -2% MSW	-4% MSW	N/A	N/A
Increased fire weather (Very High and Extreme forest fire danger days)	8.3 days	+40% to 50%	+50% to 100%	N/A	Potential impact on national power generation capacity / operation of national grid

Risk: Power supply

POAL is totally dependent on a secure supply of electricity.

Any disruption to supply caused by:
- - increasingly severe storms resulting from a changing climate, or
- - increased demand from transition to a low carbon economy (both POAL specific and nationally),

will impact port operations (particularly cranes and reefers) and support services.

Availability of supply

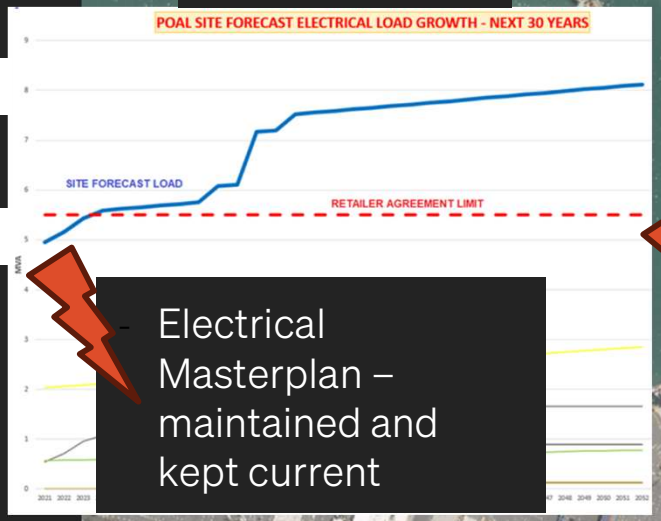
Vulnerability of supply

Solutions for POAL

- Electrical Masterplan – maintained and kept current
- Communication with providers
- Upgrade infrastructure to ensure resilience
- Generate our own power on-site
- Contingency plans for outages

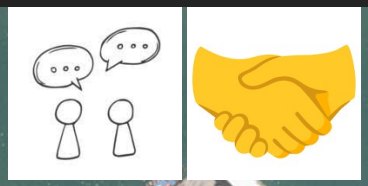
Future power supply resilience solutions

Demand



- Electrical Masterplan – maintained and kept current

Outside Port



- Communication with providers

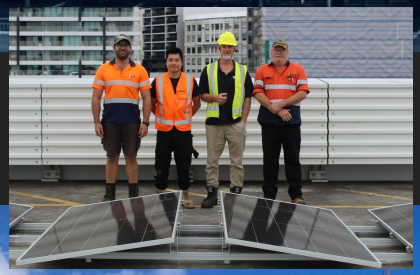
Inside Port

POAL FREYBERG SUBSTATION
⇩
REPOSITION & UPGRADE

POAL CABLES
5MVA
⇩
10MVA – 20MVA

- Upgrade infrastructure to ensure resilience

VECTOR QUAY ST SUBSTATION
11kv
5.5MVA
(out of 28MVA)
→
2030
22kv
9MVA



Generate power on-site

- Bledisloe Wharf Carhandling Building Solar array
- 1,400 panels
- Estimated to generate 6% of current demand (800MWh per annum)
- Payback of less than 7 years
- Aiming for at least 20% of current demand over next few years
- Feeds into Port baseload

Contingency plans for outages

- Studies to maximise use of on-site power generation underway to enable use of some cranes

- Integrating the onsite solar generation with crane regeneration won't allow full crane operation, but it will be interesting to see just what is possible.....

Thanks
Ngā mihi nui

Do you have any questions?

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