

MEMORANDUM

TO: Environmental Sustainability Committee

MEETING DATE: 18 May 2022

TITLE: Citywide Emissions Inventory 2021

PRESENTED BY: Adam Jarvis, Senior Climate Change Advisor

APPROVED BY: David Murphy, Chief Planning Officer

RECOMMENDATION TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE

1. That the memorandum titled 'Citywide Emissions Inventory 2021' be received.

1. ISSUE

- 1.1 The Eco City Strategy 2021 set a target of a 30% reduction in CO₂e emissions in Palmerston North by 2031, compared to the 2016/17 baseline. This inventory has been prepared to measure progress against these targets.
- 1.2 This memo has not been prepared to inform policy responses by the Council to work towards the Eco City Strategy target. As detailed in previous reporting, work continues on the implementation of the 'Low Carbon Roadmap' that will inform future policy responses and LTP budgets.

2. BACKGROUND

- 2.1 In 2016/17 PNCC conducted its first citywide inventory to provide context for the Eco City Strategy's 25% citywide carbon emission reduction target. This inventory was conducted by AECOM and was presented to Council in 2018. This latest inventory follows the same methodology and has been completed 'in-house' by Council staff.
- 2.2 The relaxation of COVID-19 restrictions as well as other national economic drivers continue to affect the city's emissions profile. The biggest change from 2020 is due to forestry related emissions, as discussed in the 2020 memorandum, with forestry removals and replanting returning to more normal levels.

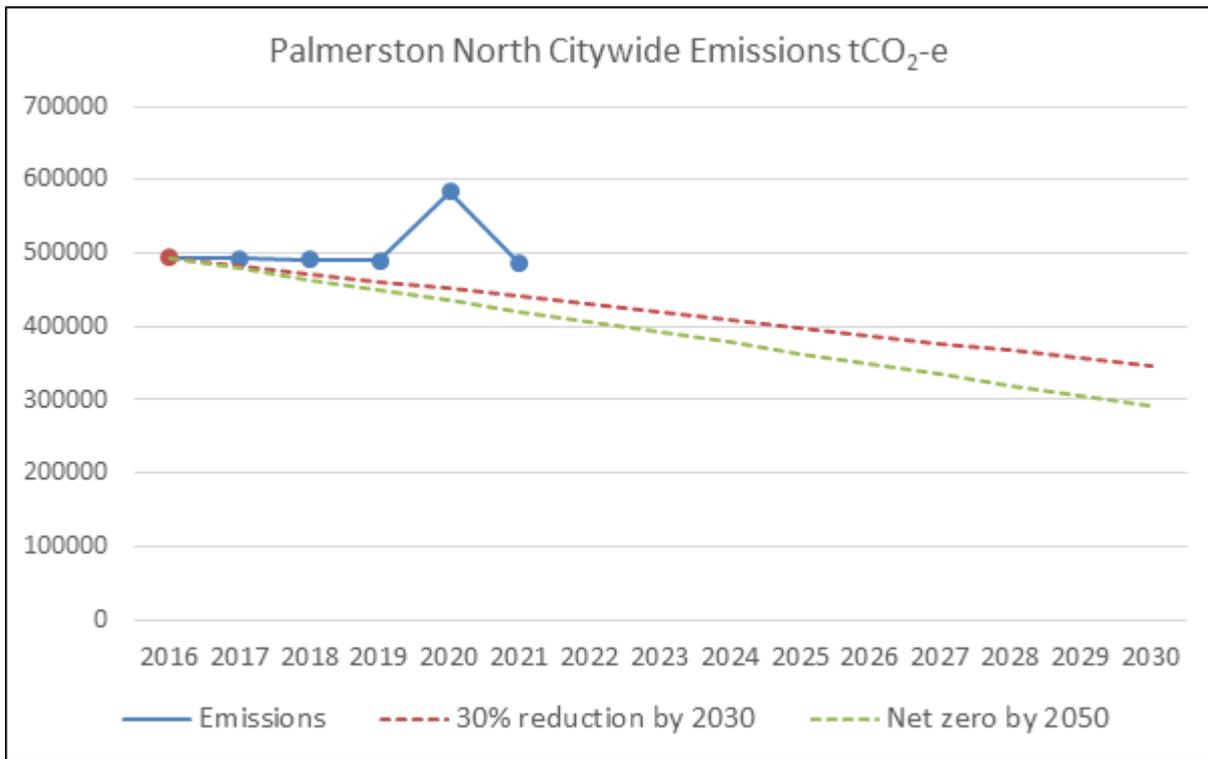


Figure 1 - Citywide Emissions and Target Trends

- 2.3 Encouragingly, the beginnings of a downward trend in Citywide emissions have begun to emerge, with the 2021 inventory (see Table 1 below) showing a 0.5% decline in emissions relative to the 16/17 baseline, representing a per-capita decline of ~6.5%. However as the chart in Figure 1 above demonstrates, Palmerston North remains significantly behind schedule in meeting the Eco City Strategy 30% reduction target in remaining 8 years, as well as the national target, set through the Climate Change Response (Zero Carbon) Amendment Act 2019, of carbon neutrality by 2050.
- 2.4 Not unsurprisingly, and as per officer guidance provided alongside the 2020 inventory, it is becoming increasingly clear that the 2020 year was an outlier in terms of emissions. Covid related lockdowns had a variety of transient impacts on emissions. By 2021, these appear to have largely settled, the August 2021 lockdown notwithstanding, revealing a range of longer-term trends that 2020 either masked, or in some cases accelerated.

Sector/Category Source		Emissions (tCO ₂ e)		tCO ₂ e difference since 16/17 (%)
Stationary Energy	Electricity Consumption	44502	128398	-5674 (-4.23%)
	Electricity T&D Loss	4628		
	Petrol and Diesel	23761		
	Natural Gas	44191		
	Natural Gas T&D Loss	4850		
	LPG	5010		
	Landfill Gas	7		
	Coal	1448		
	Biofuels	1		
Transportation	Petrol	124147	226425	-13486 (-5.62%)
	Diesel	90459		
	Rail Emissions	1642		
	Jet Kerosene	8512		
	Av Gas	975		
	LPG	690		
Waste	Solid Waste Disposal	15550	17407	1586 (10.02%)
	Waste Water	1857		
IPPU (Industry)		31953		+5604 (+18.83%)
Agricultural		122634		+10836 (+9.69%)
Total gross emissions (excl. forestry)		526817		-1674 (-0.32%)
Forestry	Exotic Forest Sequestration	-87,434	-67203	-734 (-1.1%)
	Native Forest Sequestration	-19,091		
	Total Harvest Emissions	39322		
Total net emissions (incl. forestry)		459614		-2408 (-0.52%)

Table 1 - 2021 Citywide Emissions Inventory Results Summary

- 2.5 Compared with the 2016/17 baseline, 2021 saw significant progress in electrification of stationary energy, with notable declines in natural gas and coal usage (down ~12 and 37% respectively). Balancing these reductions were increases in IPPU (e.g. refrigerants, aerosols, chemical process emissions), and a modest increase in electricity emissions. Increased electricity demand may in fact be a positive sign of change from more emissions intensive technologies to more efficient electric alternatives. It is likely that as the city continues to decarbonise electricity use will continue to increase.
- 2.6 The transport sector saw a 9% reduction in petrol usage, likely primarily due to the effects of the August 2021 lockdown and increased incidence of working from home. Regionally, EVs are still an insignificant proportion of the overall fleet, though ~2.5% of new vehicle registrations are battery electric, up from ~0% in 16/17, but lagging significantly behind major centres such as Auckland and Wellington at ~6-9%.

- 2.7 The ongoing effect of Covid lockdowns continues to be observed in aviation, with these emissions ~23% below the baseline. It may be that the normalisation of remote working and online meetings will have a lasting effect on short-haul business travel. Officers anticipate an upcoming increase in 2022 aviation emissions related to latent demand for holidays and other recreational travel as national borders reopen, though the long-term impacts remain to be seen. Diesel emissions increased slightly, but this was not reflected in registration numbers, suggesting that the existing diesel fleet is seeing higher utilisation, possibly due to an increase in home-deliveries of goods post-Covid.
- 2.8 Waste emissions have increased by 10%, somewhat outpacing population growth due to a reduction in recycling volumes following the decision of China to no longer accept these materials, and the subsequent reduction in the number of plastic types our recycling service accepts.
- 2.9 Agricultural emissions in Palmerston North have normalised somewhat since the large uptick observed in 2020 which was likely a statistical anomaly as per officer guidance during the presentation of the 2020 inventory. However, this decline is balanced by a shift from lower intensity pastoral farming to higher intensity dairy.
- 2.10 Forestry emissions have largely returned to the 2016/17 baseline from the 2020 uptick, as there were relatively few large harvesting operations. That said, a substantial number of forestry blocks are reaching maturity (24-26 years), and further substantial harvesting operations are predicted in the coming years.

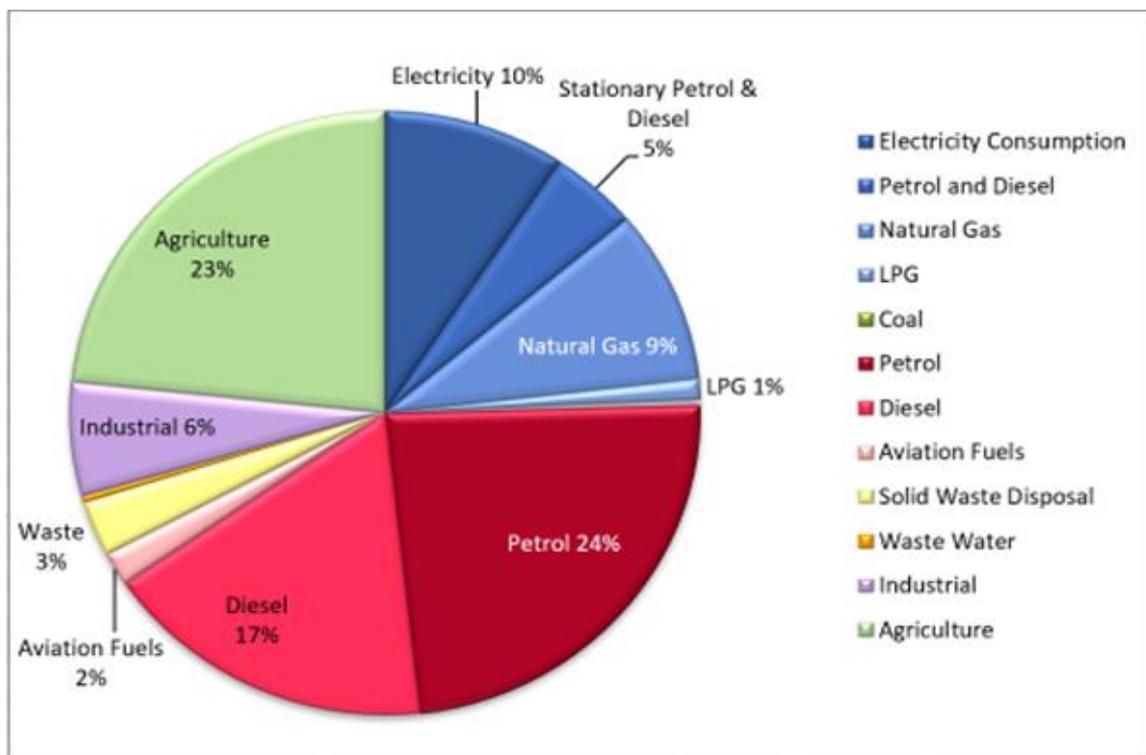


Figure 2 - Citywide Inventory Emissions Source Comparison

3. NEXT STEPS

- 3.1 Council officers will continue to monitor citywide emissions, publishing inventories annually for the previous calendar year. It is anticipated that the 2022 inventory will be published in Autumn 2023.
- 3.2 Work continues on the implementation of the 'Low Carbon Roadmap', in particular with respect to the analysis of cost/benefits of carbon reduction options feeding into the development of the next Long Term Plan. A report on the 2021/22 Low Carbon Fund is expected to be reported to the September Environmental Sustainability Committee.
- 3.3 An organisational emissions inventory is currently being compiled for the 2020/2021 financial year. It is expected that this inventory will be externally audited in July, and reported to the September Environmental Sustainability Committee.

4. COMPLIANCE AND ADMINISTRATION

Does the Committee have delegated authority to decide?	Yes
Are the decisions significant?	No
If they are significant do they affect land or a body of water?	No
Can this decision only be made through a 10 Year Plan?	No
Does this decision require consultation through the Special Consultative procedure?	No
Is there funding in the current Annual Plan for these actions?	Yes
Are the recommendations inconsistent with any of Council's policies or plans?	No
The recommendations contribute to Goal 4: An Eco City	
The recommendations contribute to the achievement of action/actions in Climate Change	
The action is: Develop a road map to achieving a low carbon city.	
Contribution to strategic direction and to social, economic, environmental and cultural well-being	Measuring progress towards the Eco City Strategy carbon reduction target.

ATTACHMENTS

Nil