



# Nillumbik Shire

## Stationary Energy Transition Strategy



## Zero Carbon Communities

To develop appropriate strategies for 100% renewable energy

October 2017



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## 1.1 Description of Nillumbik Shire

The Shire of Nillumbik is a local government area in Victoria, north-east of Melbourne. It contains both outer northern suburbs of Melbourne and rural areas. The Shire covers an area of approximately 432 square kilometres and has an Estimated Resident Population (in 2015) of 62,602, with a population density of 1.45 persons per hectare, living in both typical urban settings and remote bush properties.

## 1.2 Outline

The purpose of transition planning is to layout the tasks and activities needed to achieve a Zero Carbon Nillumbik in relation to stationary energy.

The Stationary Energy sector covers emissions from the combustion of solid, gaseous and liquid fossil fuels, such as coal, natural gas, diesel and LPG, for stationary energy (non-transport) purposes and is generally the sector contributing the most to a community emissions inventory.

### Purpose:

- Communicate a transition to 100% renewable stationary energy in Nillumbik is possible and affordable
- Communicate current emissions and steps to reduce them to zero in a ten year timeframe.

### Outcomes:

- Community support and mobilisation
- Clarity on how to proceed
- Projects established
- Investment
- Greenhouse gas emissions reduced

### Baseline emissions, energy usage and costs for Nillumbik 2015



**2015 - 1.17 million**



**300,500t CO<sub>2</sub>e produced**



**\$63.5 million spent on energy by the community**



**\$1,014 spent on energy per person**

Projected population increase of 5% by 2028 and uptake of EVs to increase electricity consumption by 8% Therefore energy trajectory for 2028 is 1.8 million GJ/year.

### Process to transition all of Nillumbik stationary energy to renewable energy in ten years

Approximately one third in each of three areas:

1. Reduce demand by improving efficiencies
2. Replace with behind the meter renewable sources –primarily solar PV
3. Build equivalent utility scale renewables

## 1.3 Five focus areas to eliminate Nillumbik stationary energy emissions by 2028

	Focus Area	Actions/Objectives
1	Inform/Promote	<ul style="list-style-type: none"> <li>• Build momentum and energy</li> <li>• Curate information to simplify access.</li> <li>• Learn and share</li> <li>• Community engagement and advocacy to develop expectations to drive change in this area and change to state and federal policy.</li> <li>• Lobbying and legislation change</li> </ul>
2	Reduce demand	<ul style="list-style-type: none"> <li>• Better building and efficiencies</li> <li>• Retrofits, LED lighting, heat pump hot water, insulation, double glazing, pelmets and blinds</li> <li>• Smart data power use</li> <li>• Bulk buys of energy efficient appliances</li> </ul>
3	Replace with: Behind the meter renewables and storage	<ul style="list-style-type: none"> <li>• Household and business Solar PV</li> <li>• Micro-grids and batteries</li> <li>• Bulk buys of PVs and batteries</li> <li>• Investment and crowdfunding</li> </ul>
4	Replace with: Utility scale renewables and storage	<ul style="list-style-type: none"> <li>• Support large scale investments - Investment and crowdfunding</li> <li>• Community energy</li> <li>• Promote GreenPower</li> <li>• Support state government action: Current target 40% by 2025</li> </ul>
5	Gas transition	<ul style="list-style-type: none"> <li>• More gradual transition</li> <li>• Replace appliances with electric as they become obsolete</li> <li>• Explore clean gas options - (biogas)</li> <li>• Lobbying and legislation change</li> </ul>

## **Inform/Promote:**

Council and many homes and businesses have made great progress with increasing efficiencies and installing rooftop solar. There are many great initiatives within the shire and elsewhere in Australia and worldwide that are getting traction but many people aren't aware of the possibilities and momentum that are developing. A critical activity is to promote this and inform people so they have hope, feel part of something bigger, feel this change is inevitable and to be active in supporting it.

People are time poor and have limited time to investigate, research and implement solutions. It's important to provide easily accessible information making it clear to people what options they have and how to move forward. Curate information to streamline research process for people who want to make changes.

## **Reduce Demand:**

Improving efficiencies of energy use not only reduces emissions but also saves money.

## **Behind the meter:**

Rooftop solar, battery storage and perhaps microgrids can substantially reduce emissions and save money.

## **Utility scale renewables:**

These may be within or outside the shire. State government targets for renewable energy may dovetail nicely with the 2028 timeline.

## **Gas transition:**

The transition from gas needs to be treated differently to that for non-renewable electricity. Gas accounts for 54% of stationary energy consumption in Nillumbik but only 20% of GHG emissions. So while the long term scenario is to move away from gas, it doesn't make sense until there's renewable electricity available to replace it.

In the most populous post codes gas accounts for a much higher proportion of energy consumption than electricity. The barriers to transition from gas are vastly different to electricity. A significant factor is the capital investment in appliances. A key strategy is to transfer appliances from gas to electric as they are replaced due to ageing.

## **1.4 Resourcing**

While CEN is largely resourced by volunteers, we will seek funding where practical for administration and discrete projects.

## **1.5 Processes and philosophy**

1. Clean Energy Nillumbik is not aligned with any particular political movement. The aim is to mitigate climate change by reducing greenhouse gas emissions.
2. This area is quickly and constantly evolving – plans will incorporate mechanisms for regular review and adjustment of strategy.
3. Many measures for improving energy efficiency and using renewable energy save money and it has been demonstrated that this is a strong and effective incentive for making these transitions.
4. Other guiding principles – avoid reinventing the wheel, network with stakeholders, use available resources and share learning with others.

## 1.6 Baseline emissions and energy usage for Nillumbik 2015

	Usage (MWh)	Usage (GJ)	Environment Impact (tCO <sub>2</sub> e)	% emissions	% GJ	Cost *(\$m)	Cost per person**
Residential Electricity	130,000	466,000	158,000	53	28	\$35m	\$559
Residential Gas	241,667	870,000	48,000	16	52	\$15m	\$239
Industrial/Commercial Electricity	73,000	265,000	90,000	30	16	\$13m	\$208
Industrial/Commercial Gas	22,222	80,000	4,500	1	5	\$0.5m	\$8
Total Electricity	203,000	731,000	248,000	83	43	\$48m	\$767
Total Gas	263,889	950,000	52,500	17	57	\$15.5m	\$245
Total Electricity & Gas	466,889	1,681,000	300,500			\$63.5m	\$1,014

\* based on Australian Energy Market Operator data and estimated/averaged generation, transmission, distribution, retail and environmental costs.

\*\* Australian Bureau of Statistics 2015 Nillumbik population of 62,602

Chart 4 Stationary Energy Split 2014 (GJ)

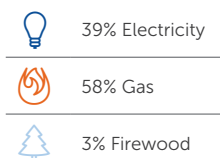
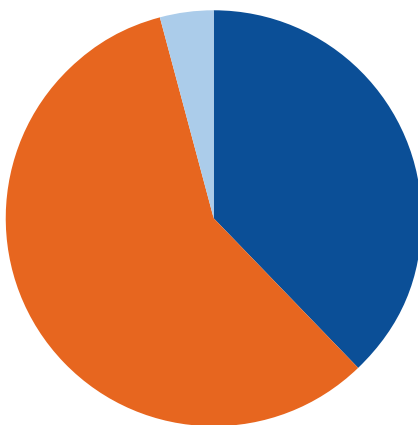
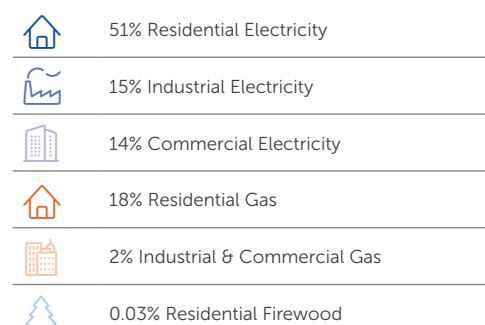
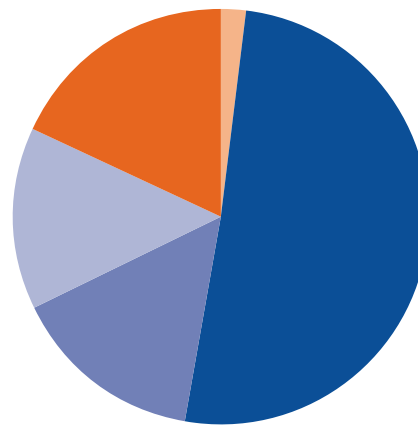
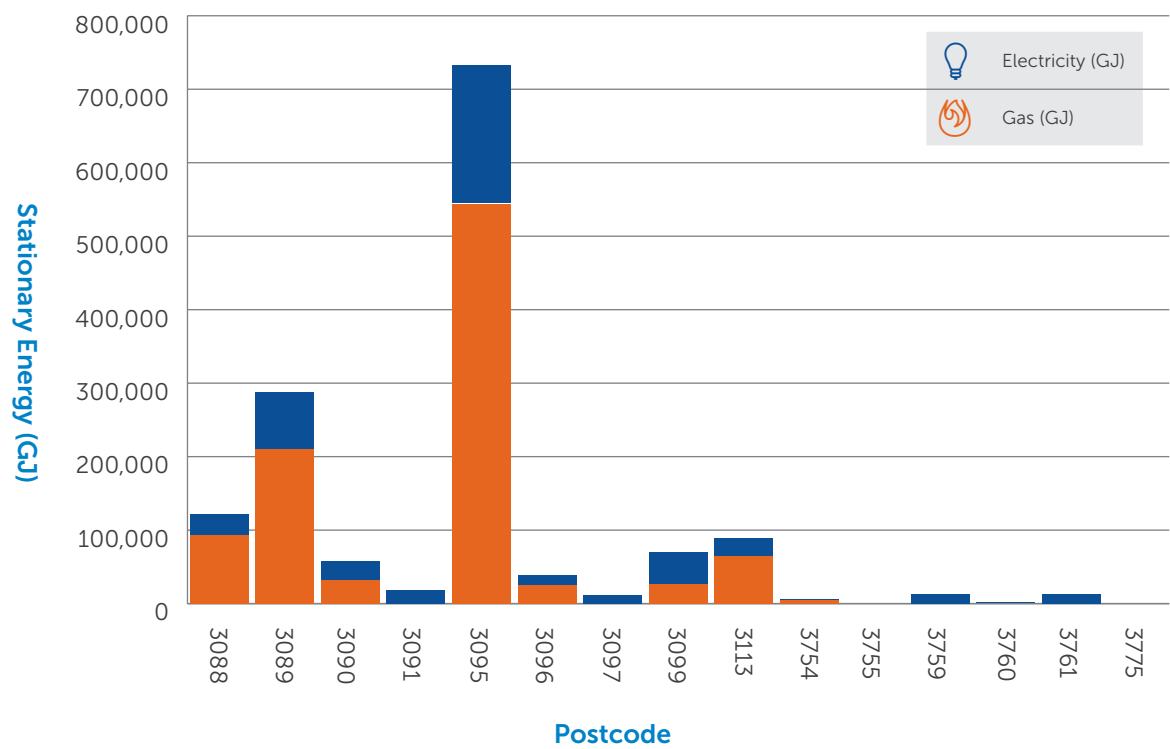


Chart 7 GHG Emissions by Sector 2014



Total Stationary Energy Use by Postcode 2014 (GJ)





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## Publishing & Copyright

Published by Beyond Zero Emissions Inc.  
Ross House  
Suite 4.7, 247 Flinders Lane  
Melbourne, VIC 3000 Australia

Published November 2017



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