Northern Beaches Council

Ingleside Sustainability

David Holden, Associate Director

WHAT ARE WE TRYING TO ACHIEVE?

- Address challenges & constraints
- Deliver improved cost of living outcomes
- Deliver best practice sustainable development
- Optimise regional infrastructure investment
- Ingleside registered as Green Star Communities project

- Deliver a **world class development outcome**

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OUR BRIEF – PEER REVIEW

1. **Review of existing technical studies & master plan (Structure Plan)**

2. **Precinct analysis (PRECINX) across:**
   - Water and sewer
   - Energy, peak demand and greenhouse gas emissions
   - Transport
   - Affordability
   - Costs & benefits of improved environmental performance

3. **Recommendations for discussion**

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TECHNICAL STUDY REVIEW

1. *On Site Effluent Assessment for Subdivision* by SMEC
2. *Preliminary Land Capability Geotechnical Assessment Report* by SMEC
3. *Transport and Traffic Assessment* by AECOM
4. *Draft Infrastructure Delivery Plan* by Cardno (traditional servicing)

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PRECINX

MASTERPLAN METRICS

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ANALYSIS

PRECINX™

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TANGIBLE INSIGHTS

- POPULATION & JOB TARGETS
- HOUSEHOLD & TRANSPORT AFFORDABILITY
- TRANSPORT & CAR USE
- RESOURCE CONSUMPTION
- INFRASTRUCTURE REQUIREMENTS
- RETURN ON INVESTMENT
- LIVEABILITY

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3 KEY RECOMMENDATIONS

1. Investigate **recycled water** as alternate servicing

2. Pursue Higher **BASIX Targets**

3. Identify **public and active transport links** and designs

4. Investigate additional infrastructure solutions including **LED street lighting** and planning for **electric vehicles**

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RECYCLED WATER

WHAT ARE WE TRYING TO ACHIEVE?

Address two key issues for the precinct:

1. **Stormwater requirements** for flooding and water quality means that homes will be required to install significant rainwater tanks (large capital cost).

2. **Sewer infrastructure** is not currently proposed for two precincts. Given the sensitive receiving waters there are concerns with ATUs.

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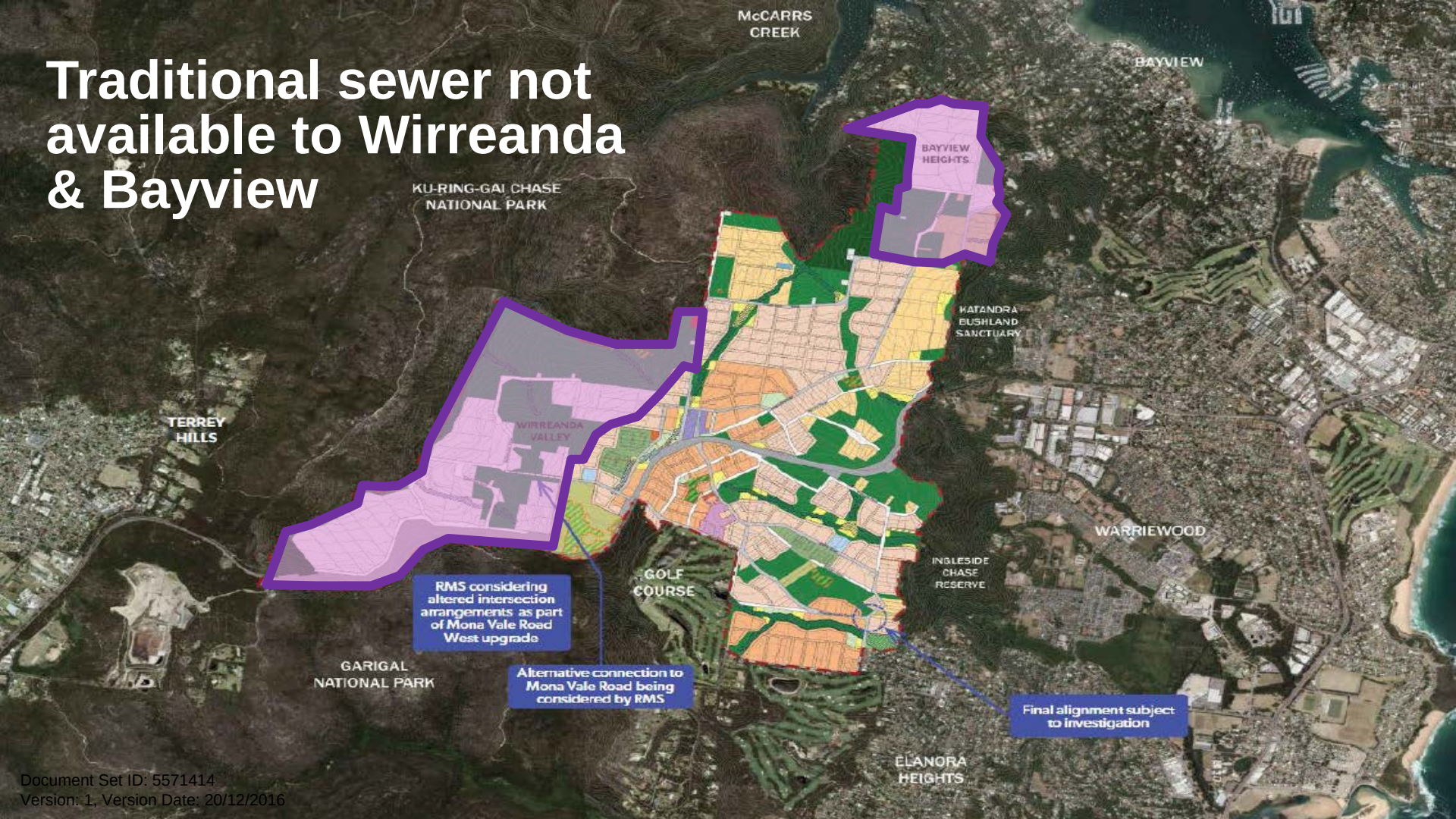
Traditional sewer not available to Wirreanda & Bayview



WATER MANAGEMENT REQUIREMENTS

In order to meet the targets for groundwater and environmental flows at a sub-catchment level:

- Rainwater tanks:

Typology	Requirements
Low Density	10,000 per lot used for I,T,L and HW
Medium Density	6,000 per lot used for I,T,L and HW
Mixed Use	6,000 per lot used for I,T,L and HW
Environmental Living	10,000 per lot used for I,T,L and HW
School	150 kL/ha used for I + T
Community Centre	150 kL/ha used for I + T

(note – typical BASIX home requires a 1,000 to 3,000 L rainwater tank)

- Bio-retention & stormwater for irrigation of sports fields

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MARKET SOUNDING (PRELIMINARY)

- 2 parties (public and private water utilities) where approached.
- Both were interested in providing alternative water servicing.
- Clarity on water and sewage infrastructure is critical.
- Responds to highly fractured ownership.
- Economic and environmental benefits.

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LINK TO DISTRICT PLAN (GSC)

- Draft North District Plan (Nov 2016):

5.8.2 Energy and water

Making more efficient use of energy and water is a cost effective way to reduce carbon emissions, reduce pressure on waterways and ecosystem, and reduce costs to State and local governments. Steps to reduce greenhouse gas emissions will rely on action taken at the local and district scale, as well as national and international efforts. Monitoring the use of energy and water can help guide and support targeted measures to make the North District more efficient and sustainable.

Adopting a place-based approach and identifying Collaboration Areas enables us to plan for improved environmental performance. This could also improve the ability to:

- renew and replace inefficient infrastructure (greening the infrastructure grey-grid)
- organise utilities, car parking, amenities, open space, urban green cover and public spaces
- apply and further develop successful approaches from other areas of Greater Sydney.

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HOW WOULD IT WORK?

- **WICA licence** to provide Ingleside with drinking water, waste water and recycled water to all precincts.
- **Trunk Infrastructure -** Understand drinking water augmentation requirements at the boundary.
- **Preference for pressure sewer** (flexibility with staging and reduce environmental impact in receiving waters).
- **Utility capital funding + financial contribution scheme**.
- **Other services** - Potential to expand to energy and telecommunications.

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ALTERNATIVE = ATUs

- **Biological treatment**, membrane filters, chemical disinfectants are required to lower the nutrient content to a level acceptable for areas with phosphorous constraints.
- **Further investigation** will be required regarding the likely impact of disinfectants on local ecology and creek system
- **Lot by lot assessment** will be required to accurately determine the minimum application area
- **Costs** - $17,000 to $28,000 per lot, plus $300 per year in maintenance (equivalent to total infrastructure costs of servicing Wirreanda Valley & Bayview Estate).

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IMPLEMENTATION OPTIONS

ATU

- Land zoning (minimum lot sizes) to facilitate ATUs

Recycled Water

- Request for Information to test the market
- Establish performance requirements for Ingleside
- Establish a mechanism for financial contribution

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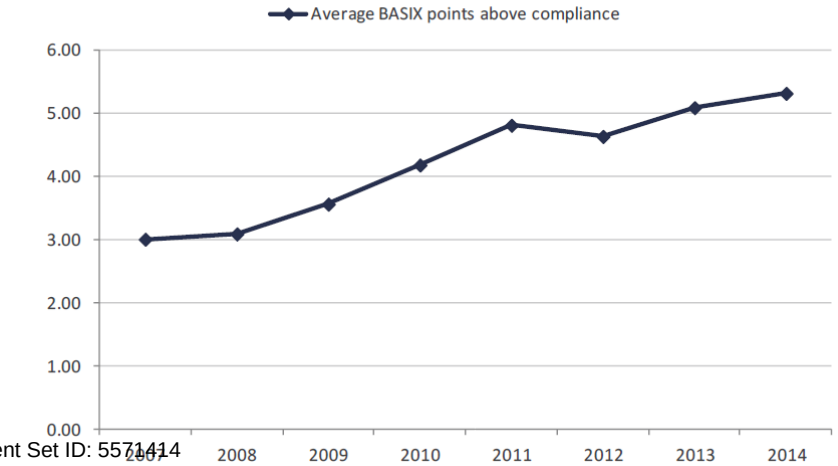
BASIX

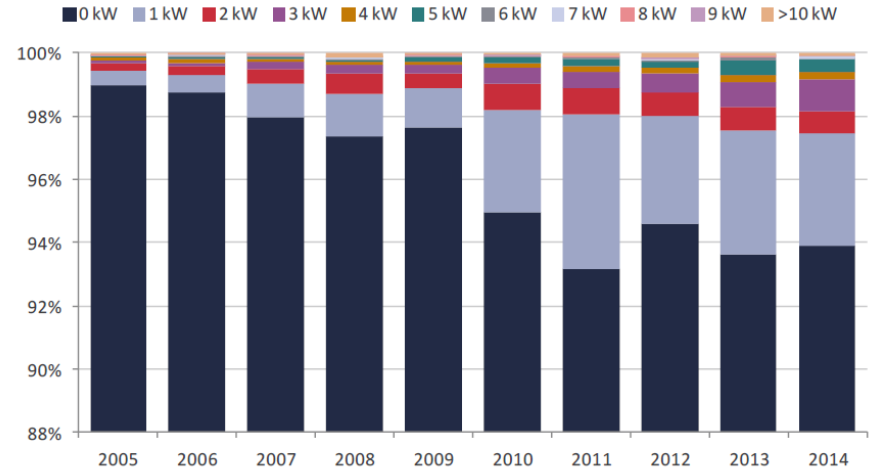
WHAT CAN BE ACHIEVED?

- Existing Sydney Metropolitan average consumption = BASIX 20
- Sydney has seen an increasing trend in over-compliance, particularly in BASIX Energy outcomes

AVERAGE BASIX ENERGY POINTS ABOVE COMPLIANCE SINCE 2007



SOLAR INSTALLATIONS LISTED ON BASIX CERTIFICATES



RECENT ANNOUNCEMENTS

- Minor BASIX Energy target increases (+5 points)
- Effective July 2017.
- “Explore opportunities to further increase the BASIX targets, particularly with councils in high-growth areas”.

NSW GOVERNMENT Planning & Environment

RE: Increase in BASIX energy targets

The NSW Government has announced that the BASIX energy targets will increase beginning in July 2017. This is in line with the Government’s aim to be a national leader in energy efficiency and in tackling climate change.

Existing homes in NSW use around 17% of the total state’s energy consumption and we expect around 1.8 million new homes to be built across NSW over the next 40 years. The NSW Government’s A Draft Plan to Save NSW Energy and Money recognises that residential energy efficiency is one of the easiest ways to save energy and save money through lower utility bills.

Typically, the energy targets for houses and low-rise units will increase by 10 per cent, and by 5 per cent for mid and high-rise units.

The settings for thermal comfort heating and cooling will also change, in line with the proposal in the 2013-14 BASIX Target Review.

These changes were announced in A Draft Plan to Save NSW Energy and Money, which was released by the Minister for the Environment in October 2016.

WHAT CAN BE ACHIEVED?

- Tested on 4 building typologies
- Reviewed by the Department of Planning

INGLESIDE BUILDING TYPOLOGIES TESTED IN BASIX

	Large detached	Medium detached	Attached	Apartment
Lot area (m2)	1250 to 6,000	450 - 650	150 - 250	1,500
Dwellings (number)	1	1	1	30
Storeys (number)	1	2	2	3
GFA (m2)	315	255	135	50 to 90 m2
Bedrooms (number)	5	4	3	1 to 2 bedroom
Car Spaces (number)	2	2	2	55
Roof Area (m2)	280	230	120	1,200
Pool / Size (kL)	Yes (54)	No	No	No

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RECOMMENDATION

Increase BASIX Energy Targets:

- **Single dwellings** - BASIX Energy 60 (+20 points)
- **Apartments** - BASIX Energy 45 (+10 points)

Note -

BASIX Water 50 will be achieved due to the rainwater tank and reuse requirements necessary to achieve the targets in the Water Cycle Study.

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RECOMMENDATION

How

- Locally specific BASIX targets (BASIX 60 for Energy and Water).
- BASIX can be varied just for Ingleside.
- Improved NatHERS, LED lighting, Solar PV and/or solar hot water.

Cost

- Marginal capital cost of $5,000 to $7,000 per dwelling (excluding water requirements)

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OUTCOMES

- **40% reduction** in greenhouse gas emissions
- **20% reduction** in peak electricity demand
- **7-star NatHERS** (expected)
- **35% reduction** in water demand
- Save household approximately **$800 per year** (on average)

Significant contribution towards **Green Star Community Rating** (7-10 points in total)

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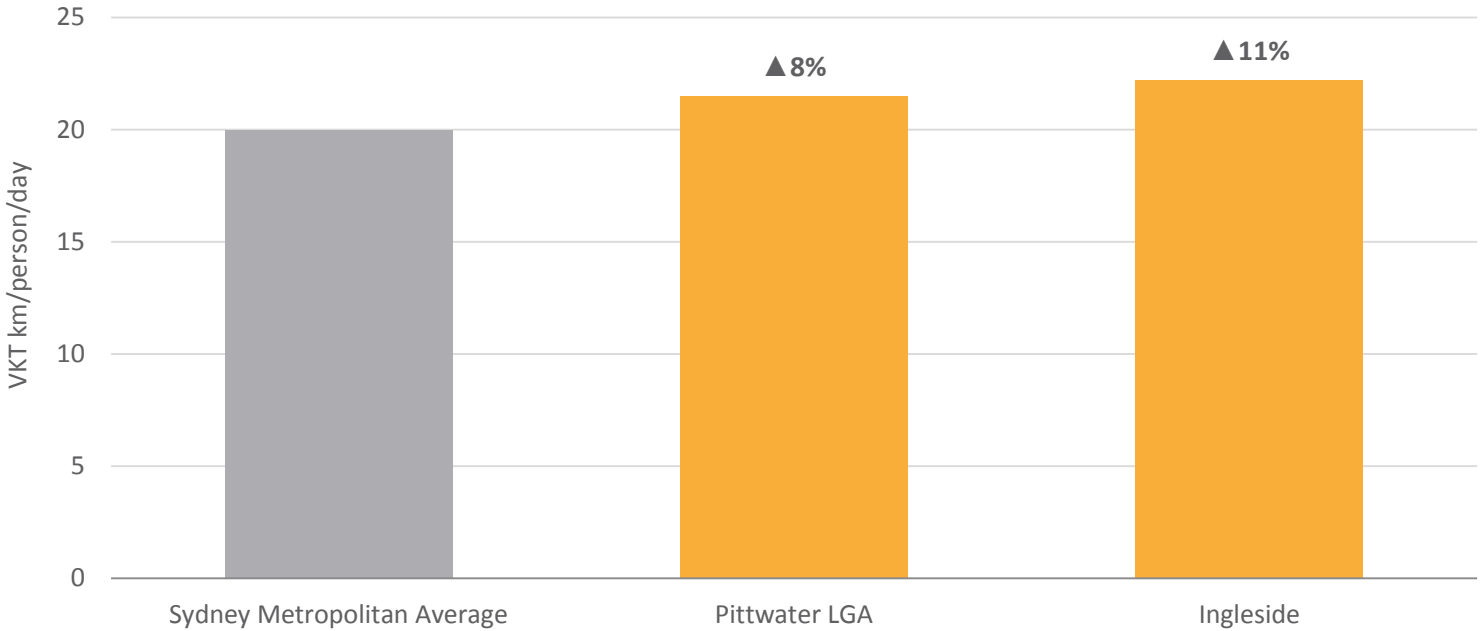
TRANSPORT

TRANSPORT LINKS

Car Use



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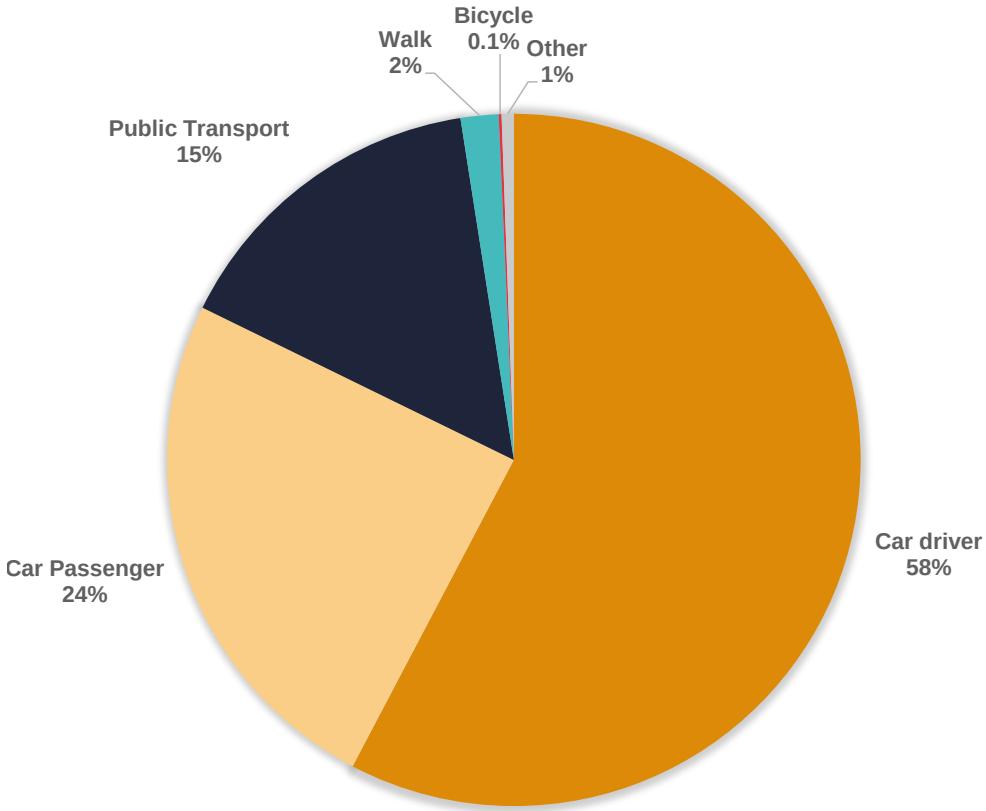
TRANSPORT LINKS

Expected household travel patterns at Ingleside



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TRANSPORT LINKS

Why Electric Vehicles?

A resident at Ingleside who switches to an electric vehicle will save approximately **$4,500 per year** in fuel costs.

Recommendation = EV ready homes

Charge points in all dwellings

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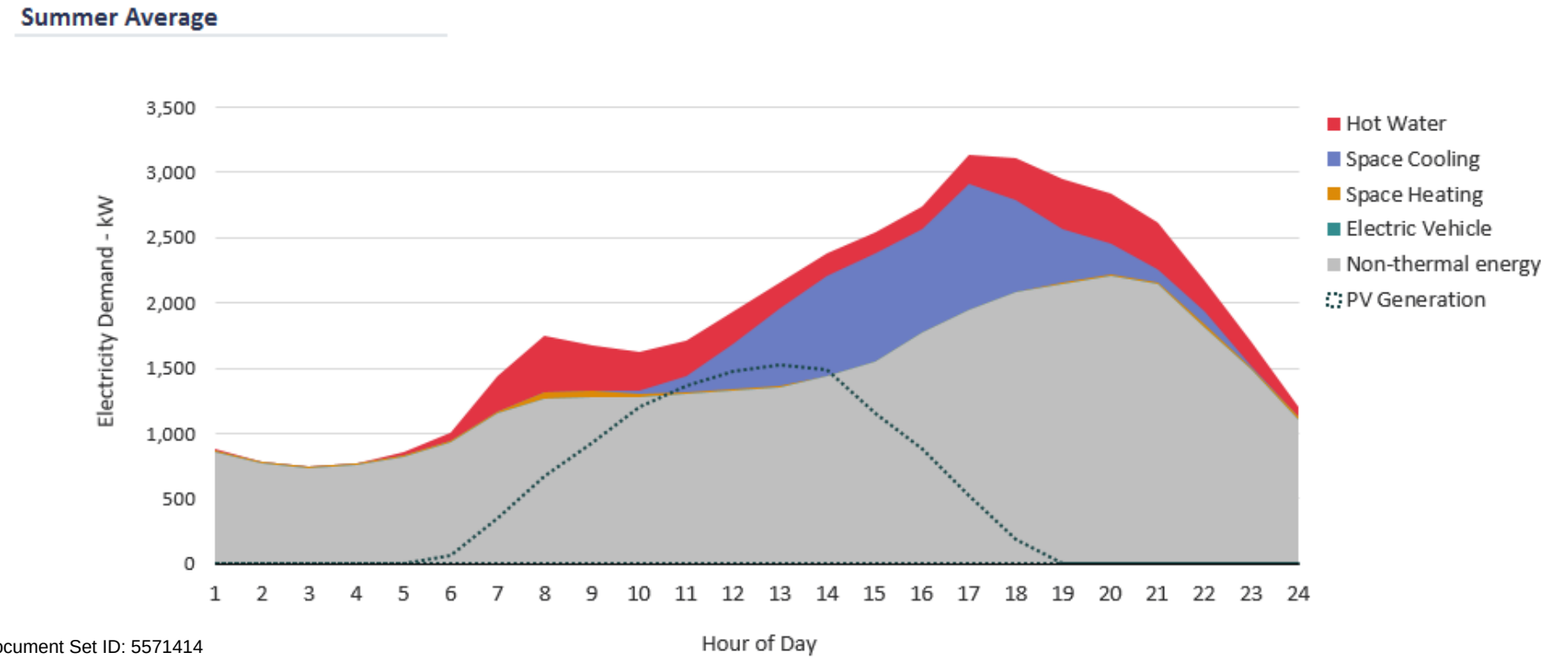
TRANSPORT LINKS

Planning for Electric Vehicles



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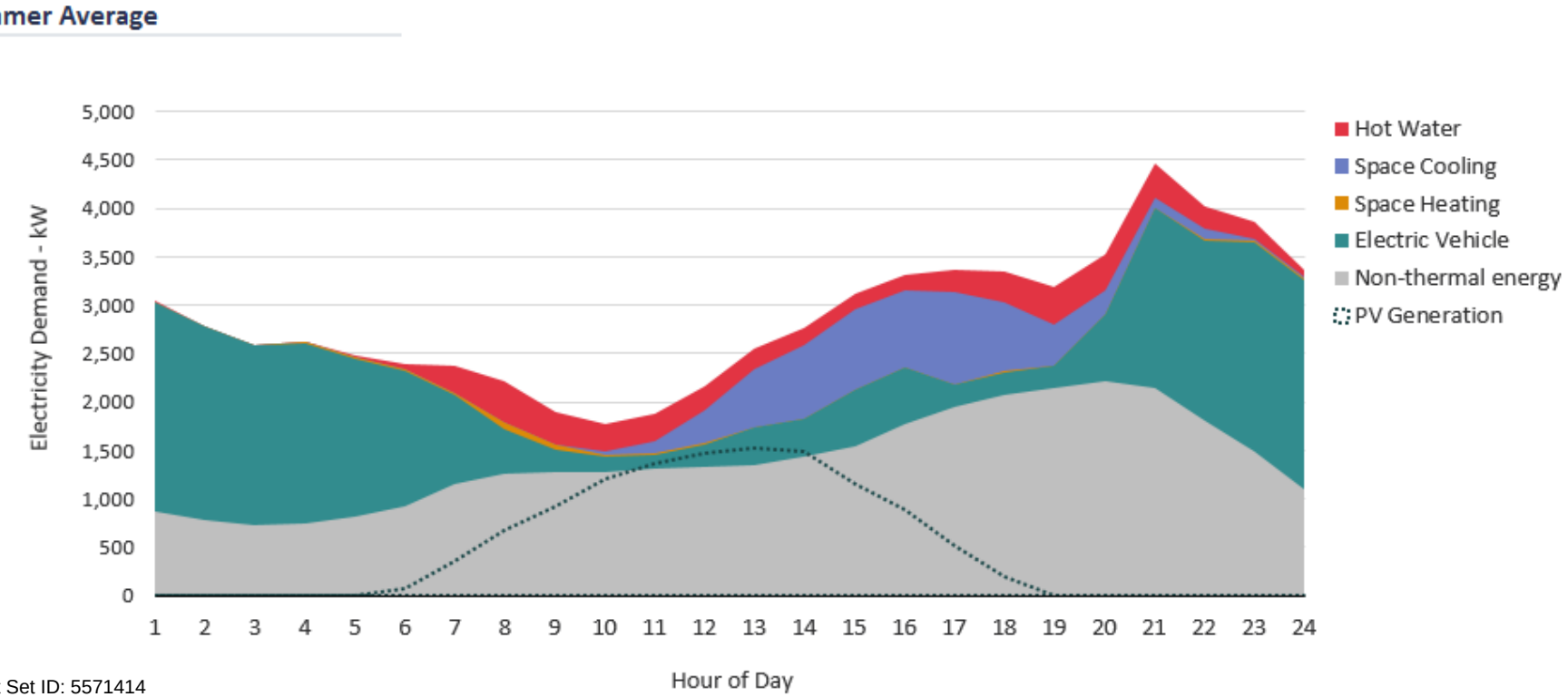
TRANSPORT LINKS

Planning for Electric Vehicles



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TRANSPORT LINKS

Cycling heat map of cyclists (labs.strava.com).
Red shows roads of high use, green shows roads of low use.

Cycling + Active Transport

+

Link to public transport

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OVERALL OUTCOMES

When compared to current compliance requirements:

- **40% reduction** in greenhouse gas emissions
- **20% reduction** in peak electricity demand
- **35% reduction** in water demand
- Save household approx **$800 per year** in energy & water costs
- Save household approx **$4,500 per year** in transport costs

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