The impact of excess water use charges in Christchurch

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water NEW ZEALAND
The New Zealand Water & Wastes Association Waiora Aotearoa

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Tākina, Te Whanganui-a-Tara Wellington

Christchurch City Council

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Contents

- Introduction
- Volumetric charging objectives
- A journey through 30 years
- Implementation process
- Realized impacts
- Impact of rain on garden watering
- Benefits – now and envisioned
- Effect of an increased allowance

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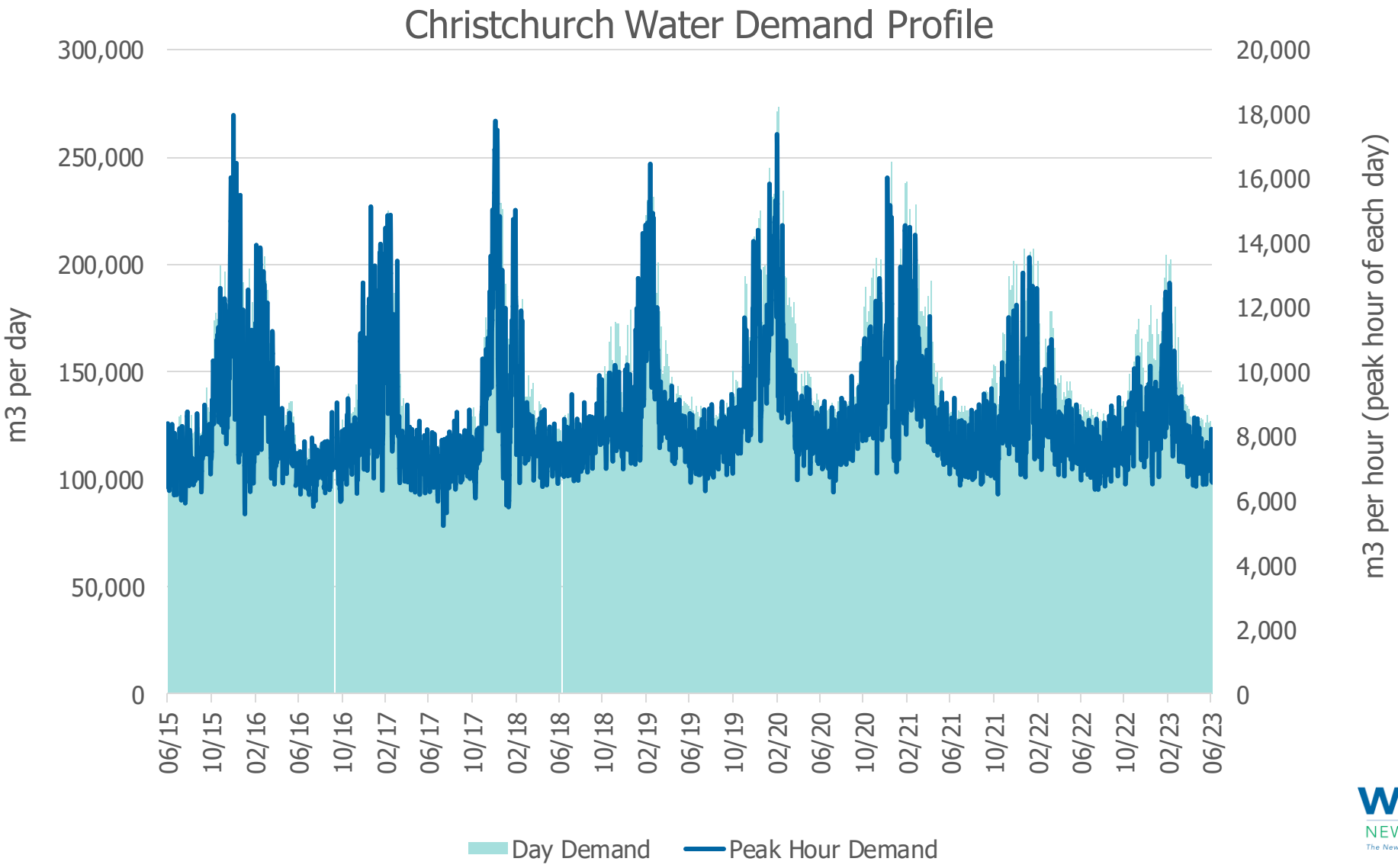
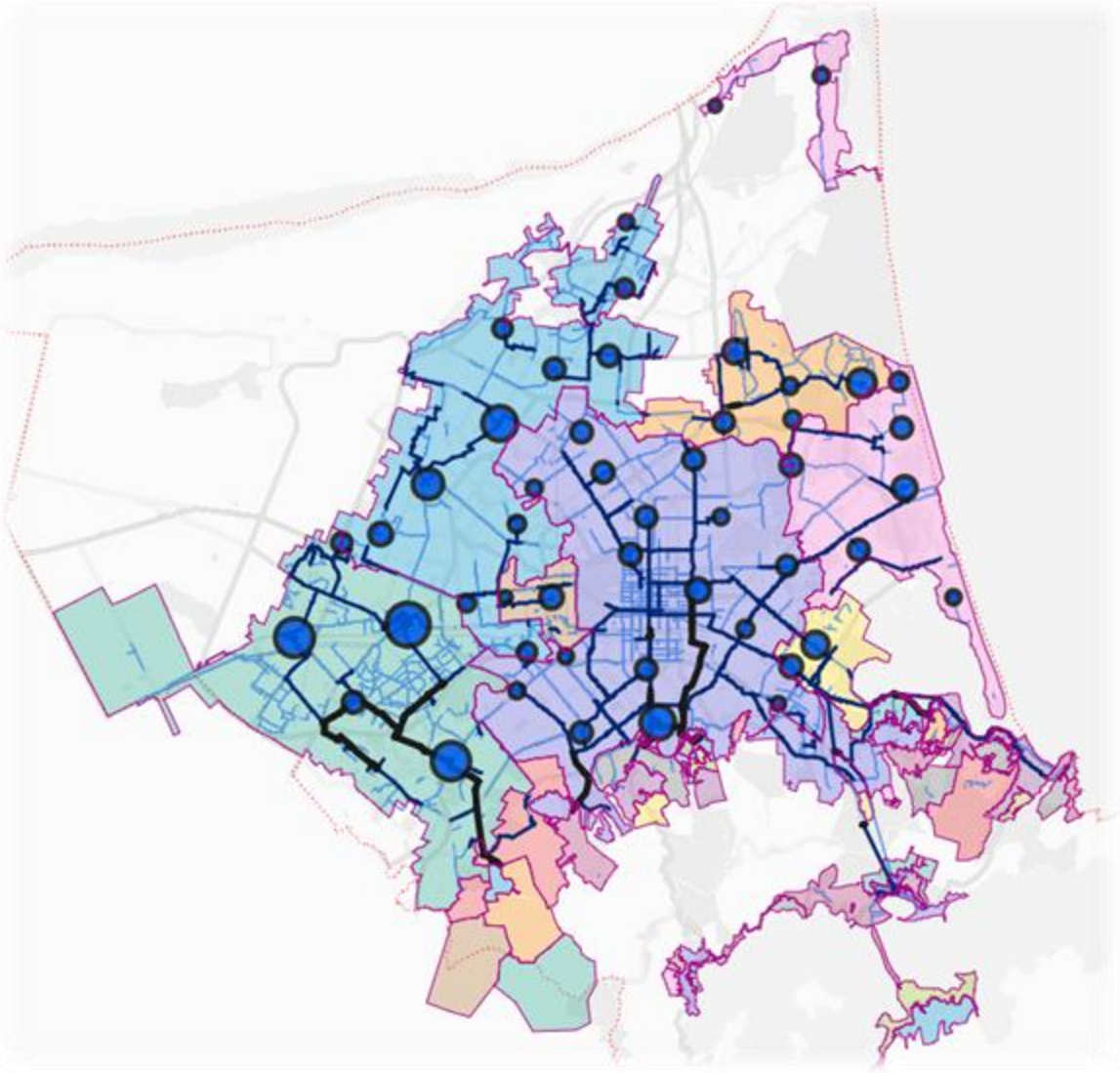
Christchurch aka "the Garden City"



City wide Peak Factor ≈ 2

Some zones peak factor ≈ 3

Volumetric charging objectives



Christchurch Water Supply System

→Decentralized system

→On-demand and direct supply system

→100% groundwater from confined aquifers

→52 drinking water supply pump stations

→Self-sufficient water supply zones

Volumetric charging objectives

WATER DEMAND MANAGEMENT

Consumer Pays *Equitable allocation* *Climate change*

Water is valued / efficient use

Water resource sustainability

Better infrastructure utilization

A journey through 30 years

Prior to 1989 amalgamation → excess water use charges for both residential and commercial in city

After 1989 amalgamation → residential excess water use charges abolished

June 1990 'Charging for water in the new Christchurch City'
→ full water meter coverage

July 1991 – June 1996 Install of wall-to-wall residential water meters

Mar 1995 – Sep 1995 'Charging Policy for Christchurch City's Water Supply'
→ volume-based charge for efficient use of artesian aquifers

Public Consultation

70% of 253 submissions are opposed
→ proceed to read meters – revert charging to next Council

Oct 1996 'Strategies for the Efficient Use of Water'
→ do NOT introduce volume-based charges

A journey through 30 years

Christchurch City Council

Sep 2000
→ continue meter reading and confirm top 20 domestic users
→ do NOT introduce consumption-based charges

Apr 2008 'Water Charging Options Study'

Sep 2019 'Te Wai Ora o Tāne Integrated Water Strategy'
→ assess volumetric charging for demand management

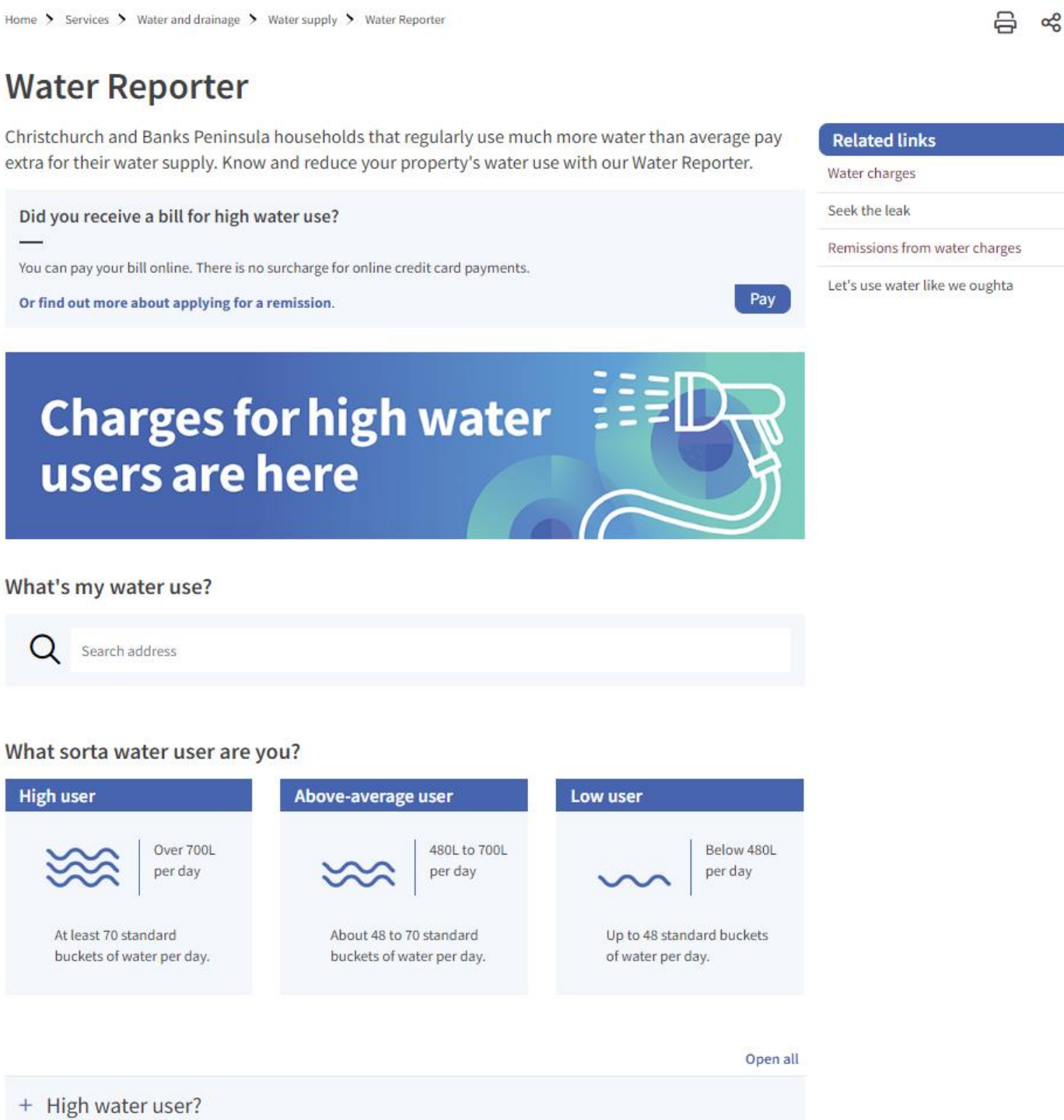
Dec 2020 'Demand Management and Charging'
→ recommends excess residential charge

Jul 2021 'Long-Term Plan 2021-31'
→ excess water residential charge

Implementation Process

October 21						
Mo	Tu	We	Th	Fr	Sa	Su
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- Increase meter reading frequency from bi-annually to quarterly
- Introduce customer communication campaign **Water like you Oughta**



Implementation Process

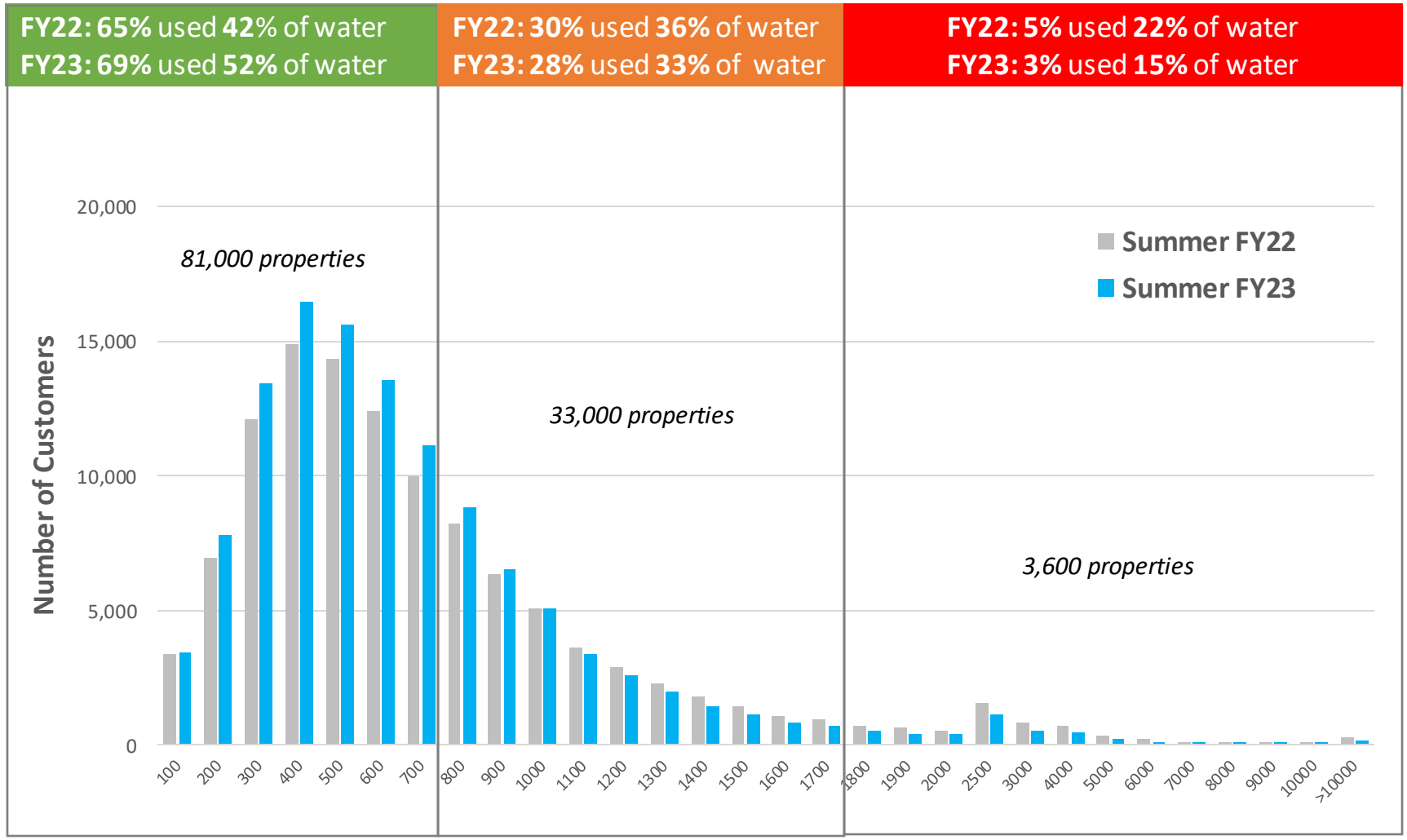
Charging for excess water starts

- $1.35 per m^3 for average use > 700 litres per day per property
- No charge if quarterly invoice < $25 ..... 900 litres per day per property
- Remissions if household size is greater or equal to 9 people
- Remissions if evidence can be provided of fixed leaks

First invoices issued February 2023

- 22% of meter reads triggered excess charge
- only 54% excess invoices raised (because of $25 administrative remission)
- average invoice = $128.74 for 3 months
- median invoice = $59.94 for 3 months
- maximum invoice > $10,000
- 435 invoices > $1,000 for 3 months
- 95% of invoices < $300 for 3 months

Realized impact on customer behaviour



MANY leak repairs

Before:

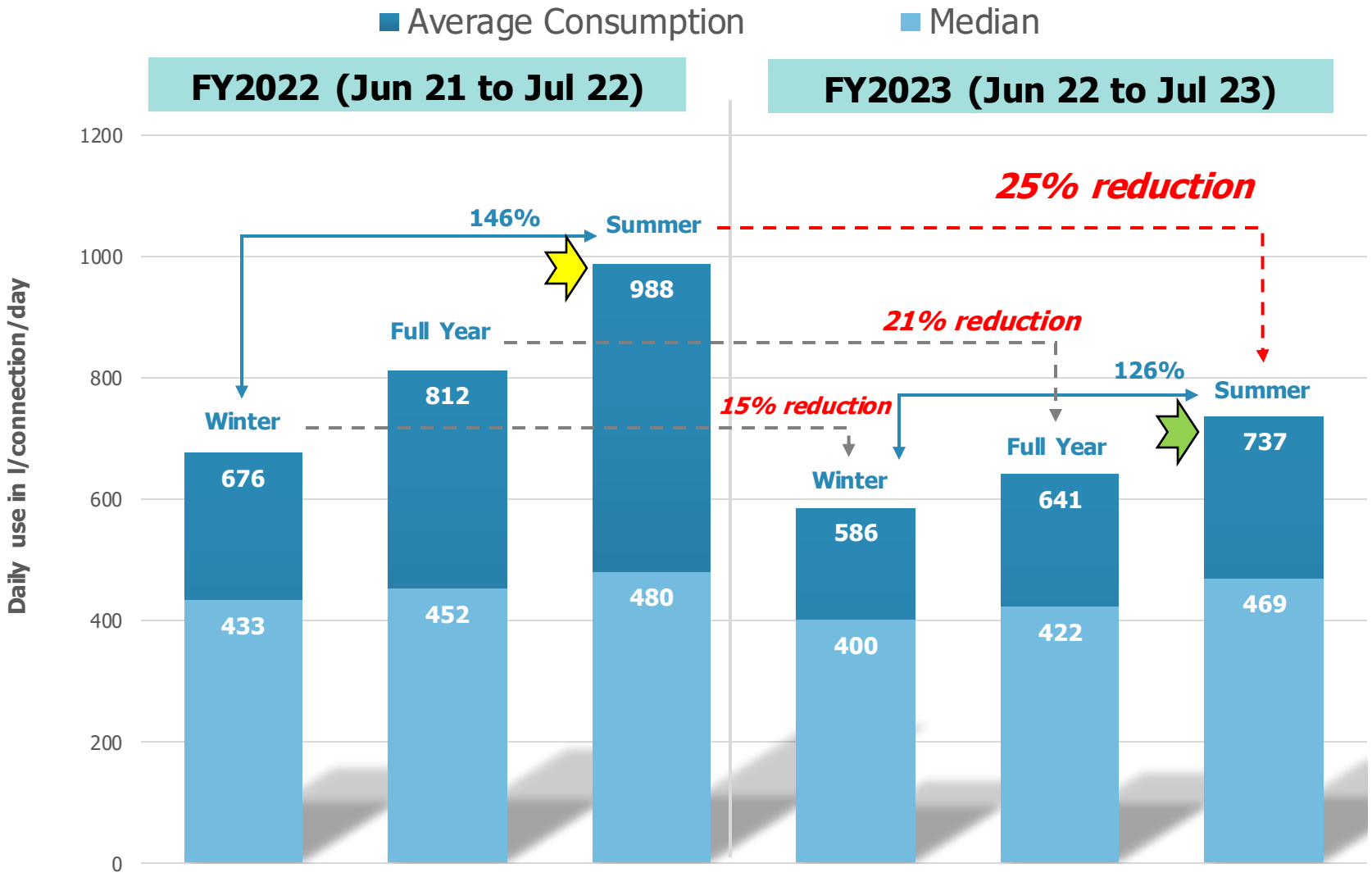
top 20% ≈ 50% of residential demand

After:

top 20% ≈ 35% of residential demand

70% use < 700 l/d

Realized impact on customer consumption

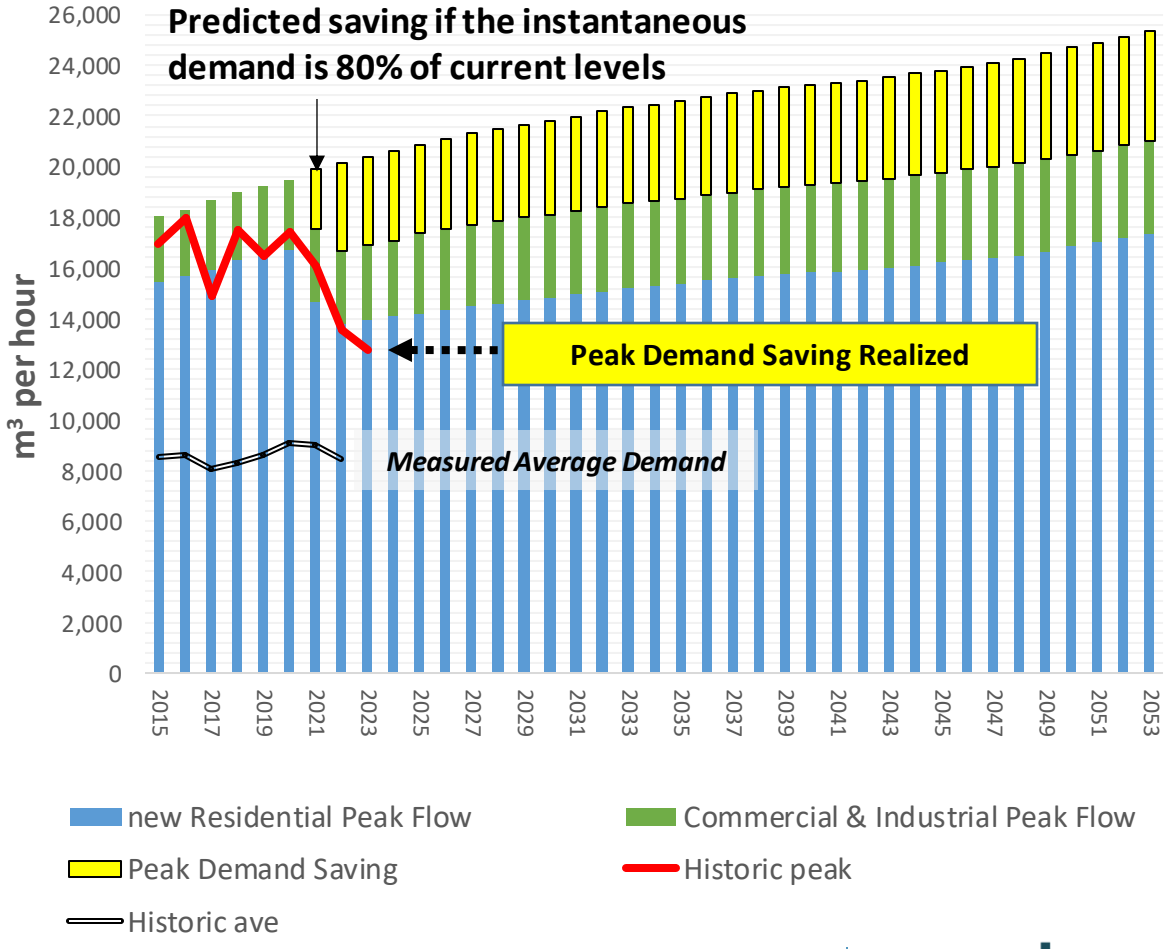


- Media coverage started
- Increased meter reading started
- Customer campaign started
- Excess charges becomes effective
- Invoicing starts towards end of summer

Realized impact on peak flow demand

Peak Instantaneous Flow Demand

Water Supply Zones	Historic Peak (Feb 2020)	FY22 Peak	FY23 Peak	Saving (Historic Peak minus FY23 Peak)	FY23 Peak % Change from Historic
	m^3 per hour				
Brooklands/Kainga	156	107	113	43	-28%
Central	5,440	5,287	4,804	636	-12%
Ferrymead	1,101	895	847	254	-23%
North West	4,276	2,610	2,650	1,626	-38%
Parklands	1,519	1,257	941	578	-38%
Rawhiti	1,503	1,344	1,148	355	-24%
Riccarton	583	562	763	-180	+31%
West	3,391	2,204	2,320	1,071	-32%
TOTAL	**17,382**	**13,560**	**12,764**	**4,618**	**-27%**

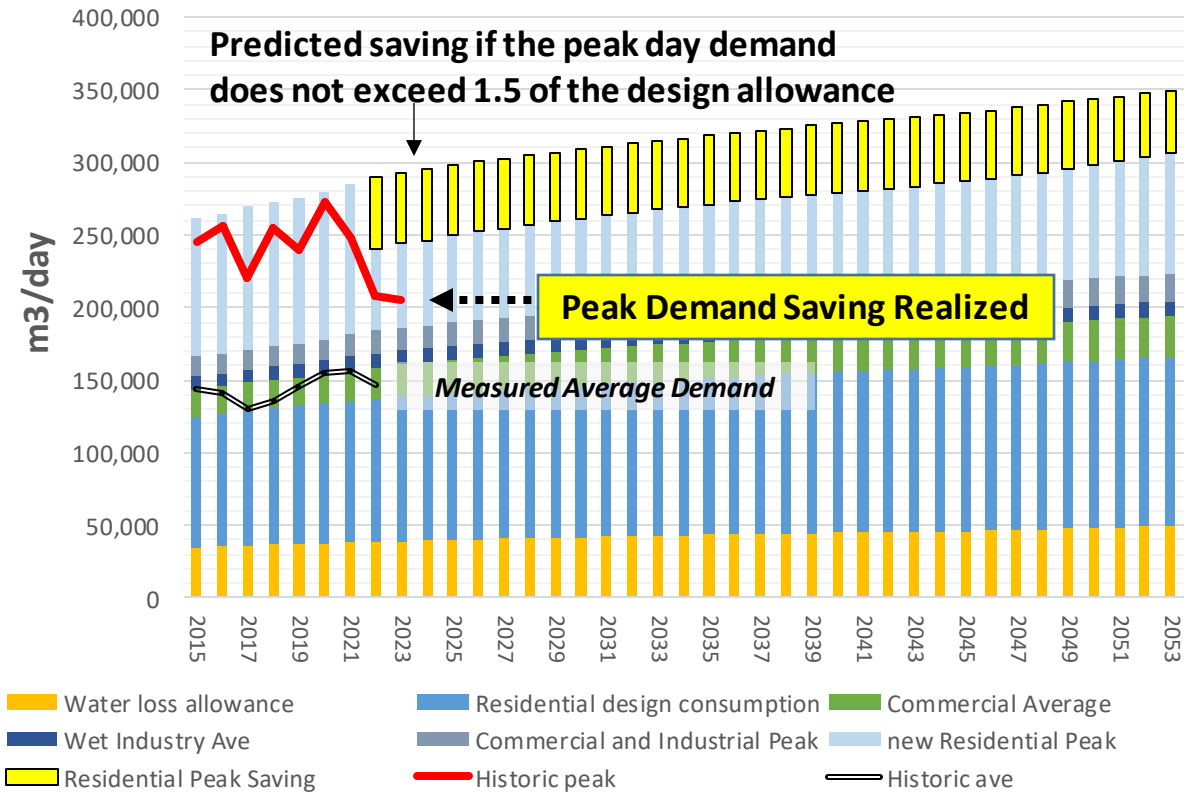


Savings equal to the production capacity of 9 medium sized pump stations (500 m^3/hour or 139 L/s)

Realized impact on peak day demand

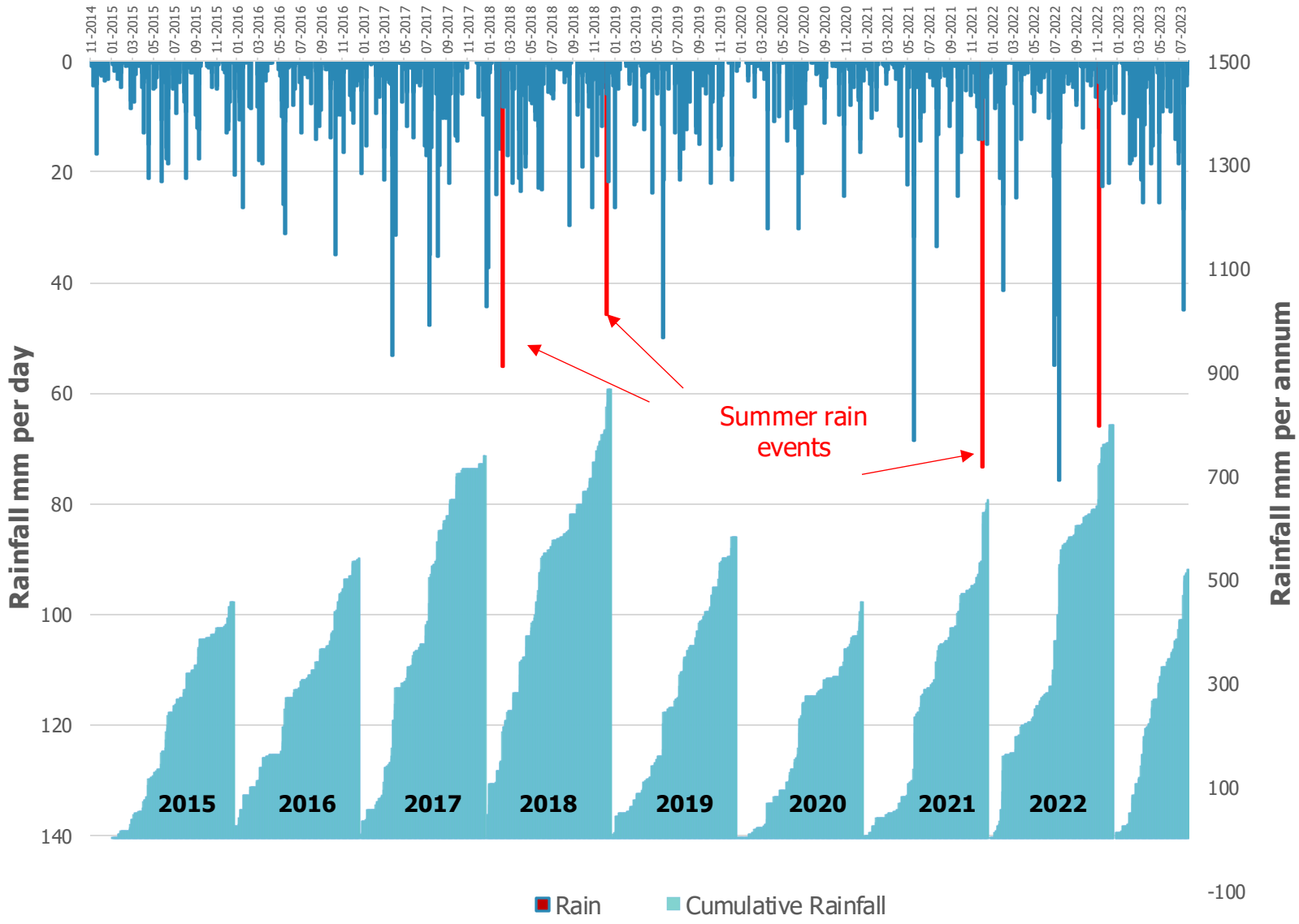
Peak Day Demand

Water Supply Zones	Historic Peak (Feb 2020)	FY22 Peak	FY23 Peak	Saving (Historic Peak minus FY23 Peak)	FY23 Peak % Change from Historic
	m^3 per day				
Brooklands/Kainga	2,414	1,443	1,752	661	-27%
Central	104,166	83,756	81,531	22,635	-22%
Ferrymead	21,298	17,261	15,887	5,411	-25%
North West	57,207	37,921	39,268	17,939	-31%
Parklands	18,533	14,286	11,890	6,643	-36%
Rawhiti	21,919	16,920	14,626	7,293	-33%
Riccarton	5,845	6,021	6,379	-533	-9%
West	48,860	38,276	37,611	11,248	-23%
TOTAL	**273,268**	**207,810**	**204,805**	**68,443**	**-25%**



Saving = 12% of water take consent volume

Impact of rain on garden watering



Rain contribution acknowledged but overall savings cannot be credited to rain only

Similar total rainfall than previous years with high demand

Fewer antecedent dry days in FY2022 and FY2023

Benefits

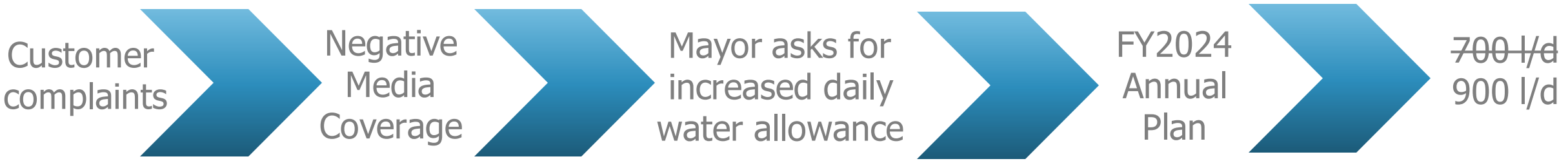
NOW

- Avoided water restrictions despite capital works
- Reduced pumping energy costs
- Reduced greenhouse gas emissions

ENVISIONED

- Capital savings of $150 million because fewer wells (25) and pump stations (8) to meet future demand growth
- Opportunities to rationalize water supply system by reducing the number of pump stations

Effect of an increased allowance

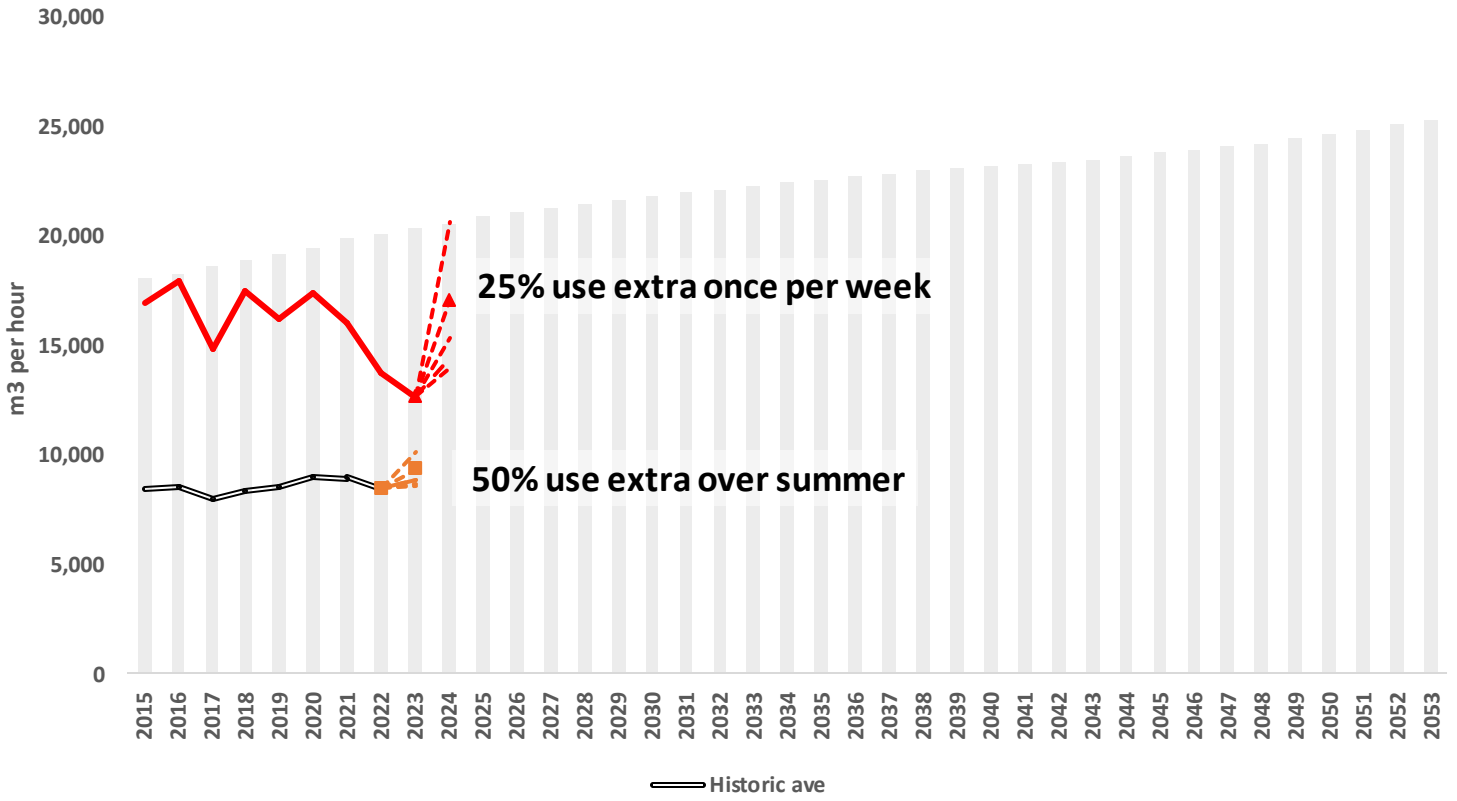


	Annual Plan Submissions	Council Votes
Support maintaining the daily allowance of 700 litres per day	190 (50%)	8
Support increasing the daily allowance to 900 litres per day	191 (51%)	8 1 Councillor Abstains

Effect of an increased allowance

Jul 2023 → increased daily residential water allowance to 900 litres per day

Nov 2023 | Dec 2023 | Jan 2024 | Feb 2024 | Mar 2024 → ?



Acknowledgements

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Christchurch City Council Strategy, Policy and Resilience Team (Diane Shelander) for history

Questions?