

Demand Forecasting Lower South Island

Nick Mulgan
Economics and Approvals

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TRANSPower



EC Prudent Peak Demand Forecast

- Annual half hourly peak demand forecast at GXP
- 13 transmission regions
- Growth rates are regional
- Prudent peak represents 10% PoE
- Top Down econometric method
- Demand as a function of GDP, Population

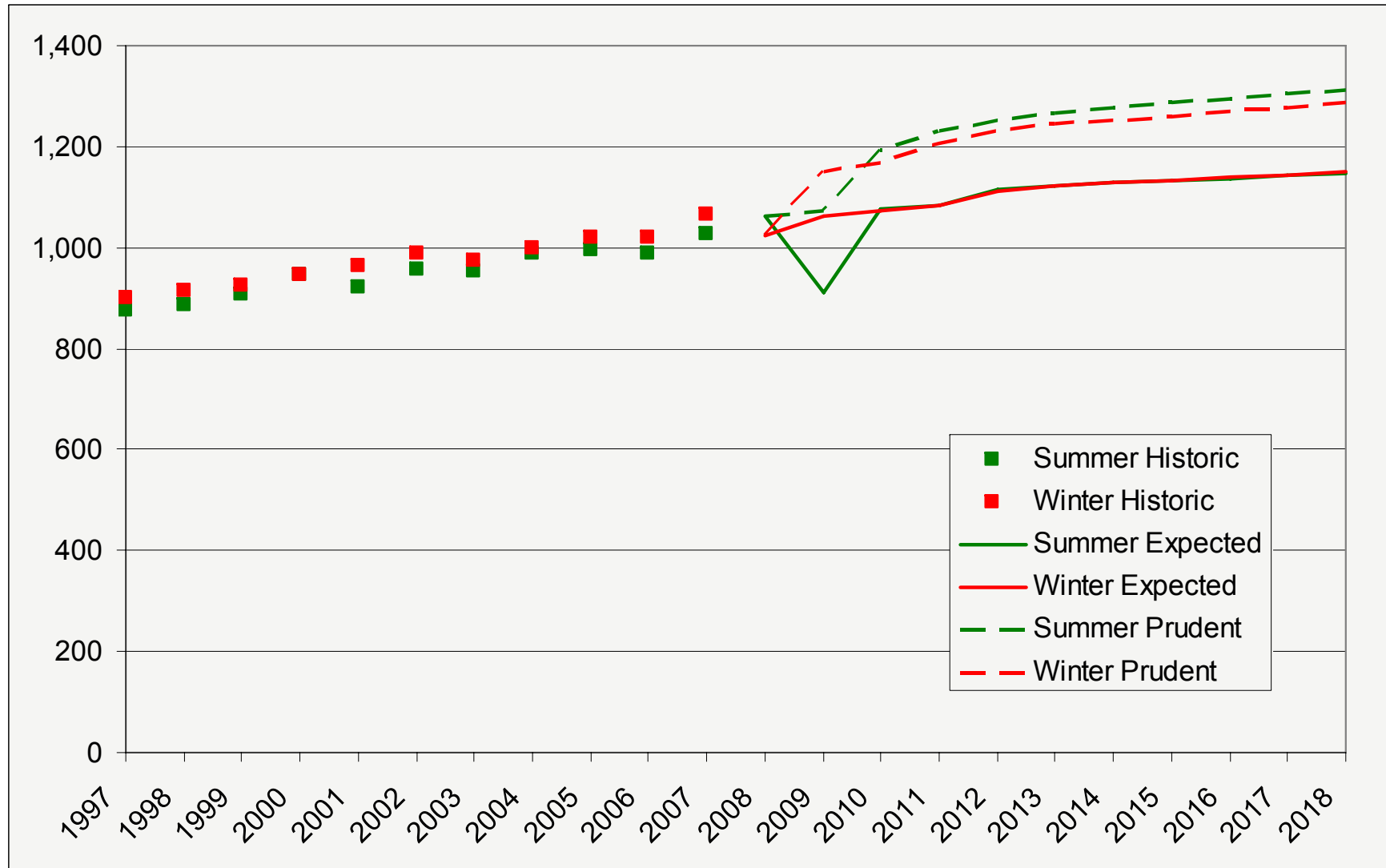


Covec Forecast

- COVEC has reviewed EC and network company forecasts as well as historical growth rates to produce a “Lower South Island” regional forecast
- “Prudent” and “Expected”
- Summer Peak and Winter Peak
- All GXPs south of Roxburgh
- Balcutha, Brydone, Clyde, Edendale, Gore, Halfway Bush, Invercargill, North Makarewa, Palmerston, South Dunedin, Tiwai



“Lower South Island” Peak Demand Forecast (MW)



Covec Forecast - Key Industries

- Dairy
 - 100 conversions in 2008, similar expected in 2009
 - Each 50-55kVA load
 - Fonterra expect increase of 5.5 - 8.5% per annum milk supply increase 2009-2014. 50-90 conversions per annum.
 - Milk processing capacity reached in 2011. 4-7 MW new plant
- Meat
 - Recent reduction from Dairy conversion
 - Alliance expecting -10% lamb production this season, -25% mutton
 - Shorter season likely, close some plant?
 - Dairy increase → more beef production in dry summers



Covec Forecast - Key Industries (contd.)

- Coal/Lignite
 - 75% of NZ recoverable lignite reserves
 - L&M Lignite and Solid Energy both investigating
 - L&M: Possible 690MW self-sufficient lignite to liquid plant, but with grid connection for shortfall or excess
 - Solid Energy: possible lignite to briquettes plant 17MW by 2012
- Oil and Gas
 - Exploration licenses issued 2007 for great southern basin
 - Exxon Mobil and OMV seismic tests
 - Possible offshore drilling and exploration 2-10 years, production 10-25 years



Covec Forecast - Key Industries (contd.)

- Smelter
 - TPCC caps Tiwai at 610 MW, expires end 2012
 - Full capacity 620 MW, 640 MW with new transformers
 - Intend to increase to 700MW long term, market permitting
 - Load dropped by 5% in May 2008 and further 5% June – Oct
 - November, ramping up, lost transformer (separate presentation)
- Other Minerals
 - Silicon, ~ 1 billion Tonne high quality SiO₂
 - Would require 100MW secure supply
 - Interest in coal, steel, chemicals, oil, gas, but frightened off by lack of security of supply, especially dry years
- Timber
 - Dongwa have no plans for expansion. Current downturn will reduce energy but not peak



“Step Load” Forecasts in MW

Description	Customer	Forecast	Season	2008	2009	2010	2011	2012	2013	2014	2015	2016
Dairy Plant	Fonterra	Prudent	S								2.0	2.0
Dairy Plant	Fonterra	Prudent	W								1.5	1.5
Meat Processing Plant	Alliance	Expected	SW				-3.3					
Meat Processing Plant	Alliance	Prudent	SW				-2.4					
Dairy Plant	Mataura Valley Milk	Expected	S		2.0	2.0	2.0	1.0				
Dairy Plant	Mataura Valley Milk	Expected	W			1.5	1.5	1.5	0.5			
Dairy Plant	Mataura Valley Milk	Prudent	S		3.0	3.0	1.0					
Dairy Plant	Mataura Valley Milk	Prudent	W			2.5	2.5	1.0				
Pilot Coal Plant	Solid Energy	Both	SW			1.2						
Full Coal Plant	Solid Energy	Prudent	SW				2.3	14.0				
Meat Processing Plant	Silverfern farms	Both	S	-1.4								
Meat Processing Plant	Silverfern farms	Both	W	-0.7								
Gold Mine	Oceana Gold	Both	SW	-1.5								
Gold Mine	Oceana Gold	Both	SW	1.5								
Aluminium Smelter	Rio Tinto	Expected	S			10.0		20.0				
Aluminium Smelter	Rio Tinto	Expected	W		10.0			20.0				
Aluminium Smelter	Rio Tinto	Prudent	S			10.0	20.0					
Aluminium Smelter	Rio Tinto	Prudent	W		10.0		20.0					



GXP Forecasts in MW

	Historic Peak		Prudent Forecast									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Balclutha	25	28	28	29	29	29	29	29	29	30	30	30
Brydone	9	9	10	10	10	10	10	11	11	11	11	11
Clyde	9	8	10	11	11	11	11	11	11	11	11	11
Cromwell	27	25	32	33	34	36	37	38	40	42	43	45
Edendale	21	23	28	29	28	29	30	32	35	39	40	42
Frankton	48	47	53	55	58	61	64	65	66	67	68	69
Gore	27	30	37	43	52	65	68	71	72	74	75	77
Halfway Bush	110	120	136	139	142	145	148	149	150	151	151	152
Invercargill	84	91	96	97	99	100	101	102	103	104	104	105
Naseby	24	25	28	28	28	29	29	30	30	30	31	31
North Makarewa	56	52	73	75	78	80	82	85	88	90	93	96
Palmerston	6	8	8	8	8	8	8	8	8	9	9	9
South Dunedin	71	71	75	77	78	80	82	83	84	85	87	88
Tiwai	609	609	619	619	639	639	639	639	639	639	639	639



Process from here

- To provide good evidence to substitute for the Commission's default forecast it is essential that we use the most current information available and back it up.
- We need to use:
 - Evidence based local information with regard to projected demand growth
 - Specific step load change information with probabilities attached
- Detailed power system analysis starting in the New Year
 - Comments in the next few weeks would be appreciated
 - Later on in the process it may be more difficult for us to include alterations, but we will do what we can
- Report is available on website



Value of Lost Load

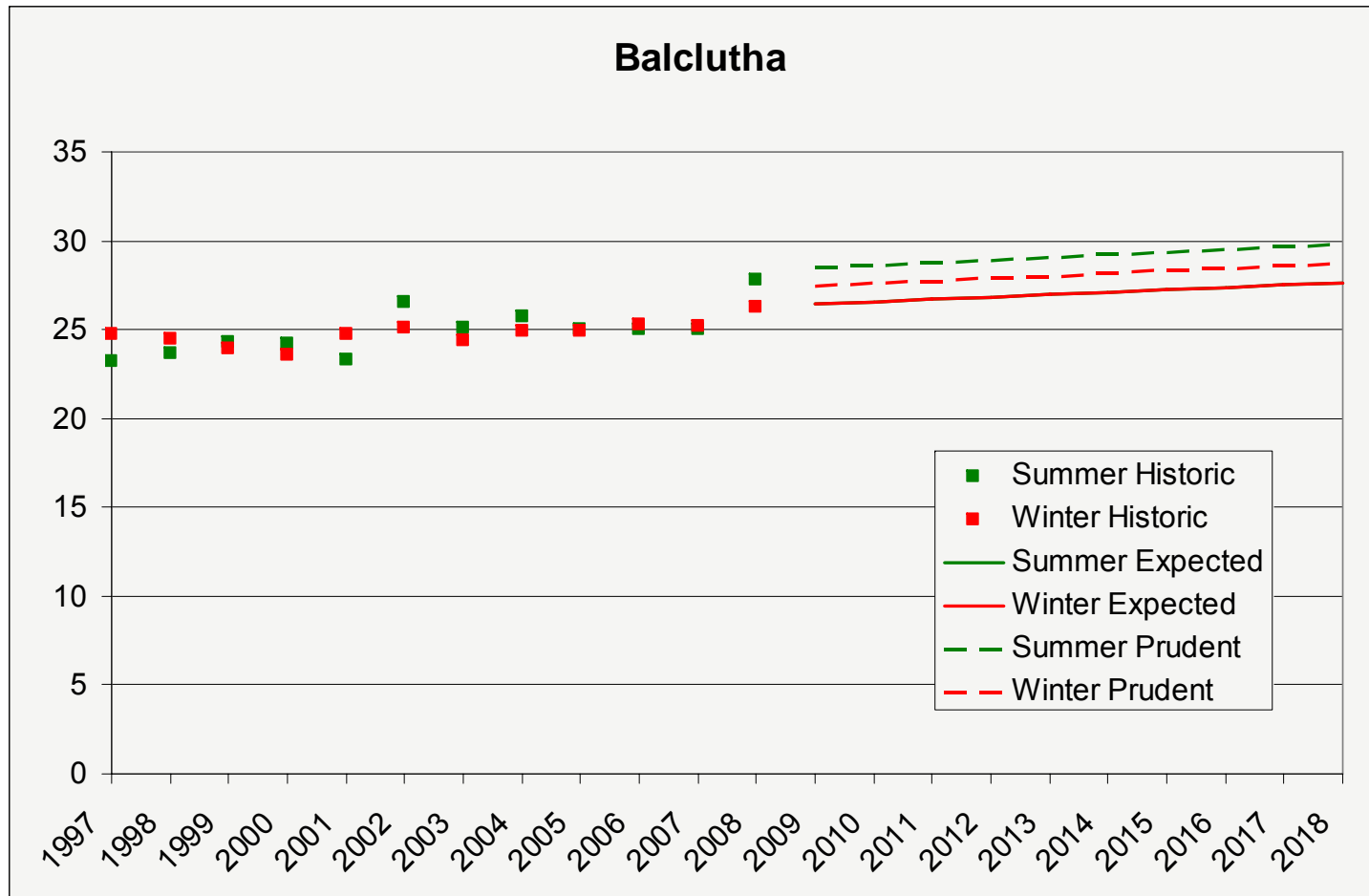
- Again, to substitute for the regulatory default value of \$20,000/MWh we need detailed information
- We will be sending out a spreadsheet with typical outage lengths, asking for the cost to large consumers



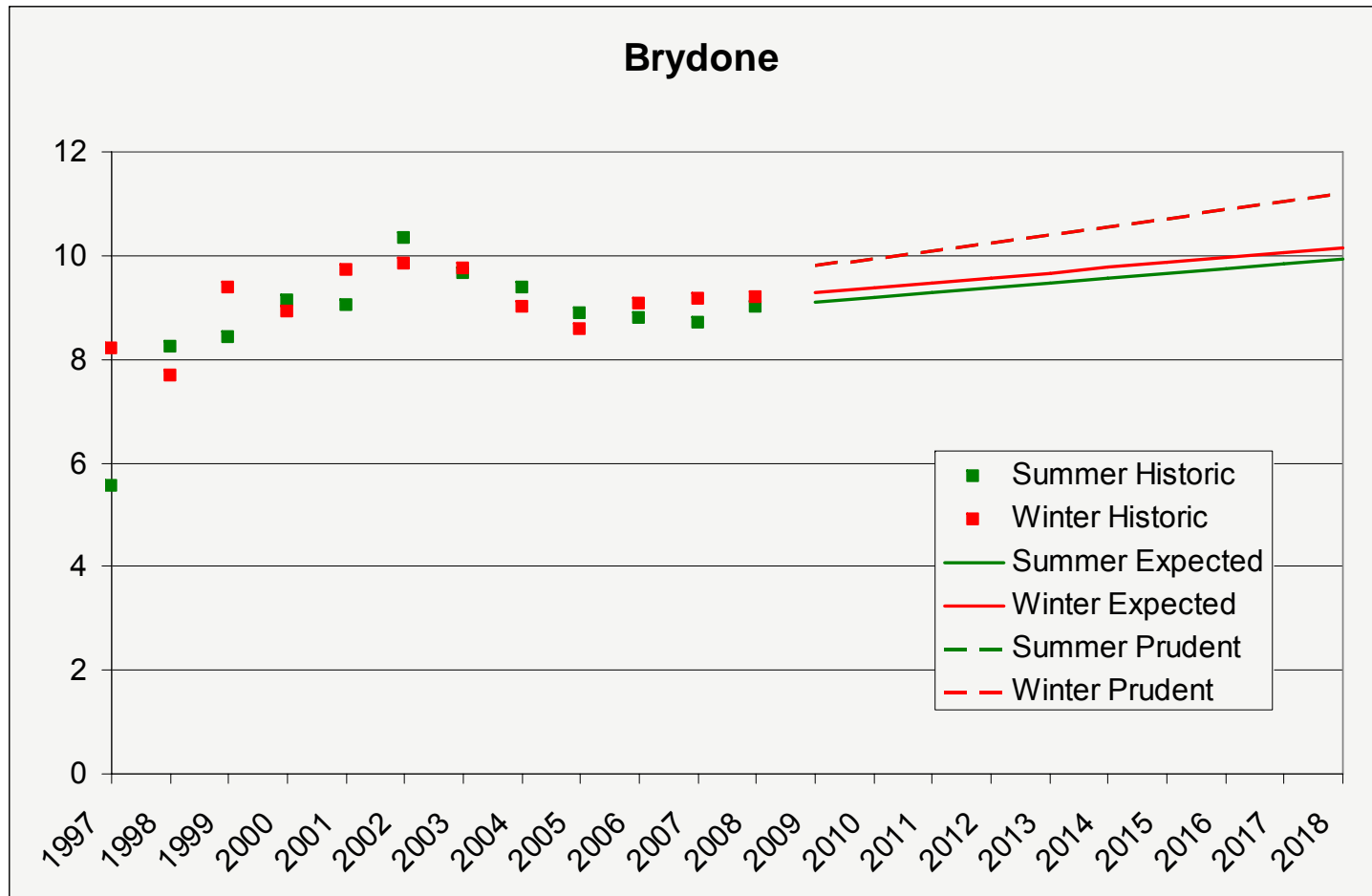
Questions?



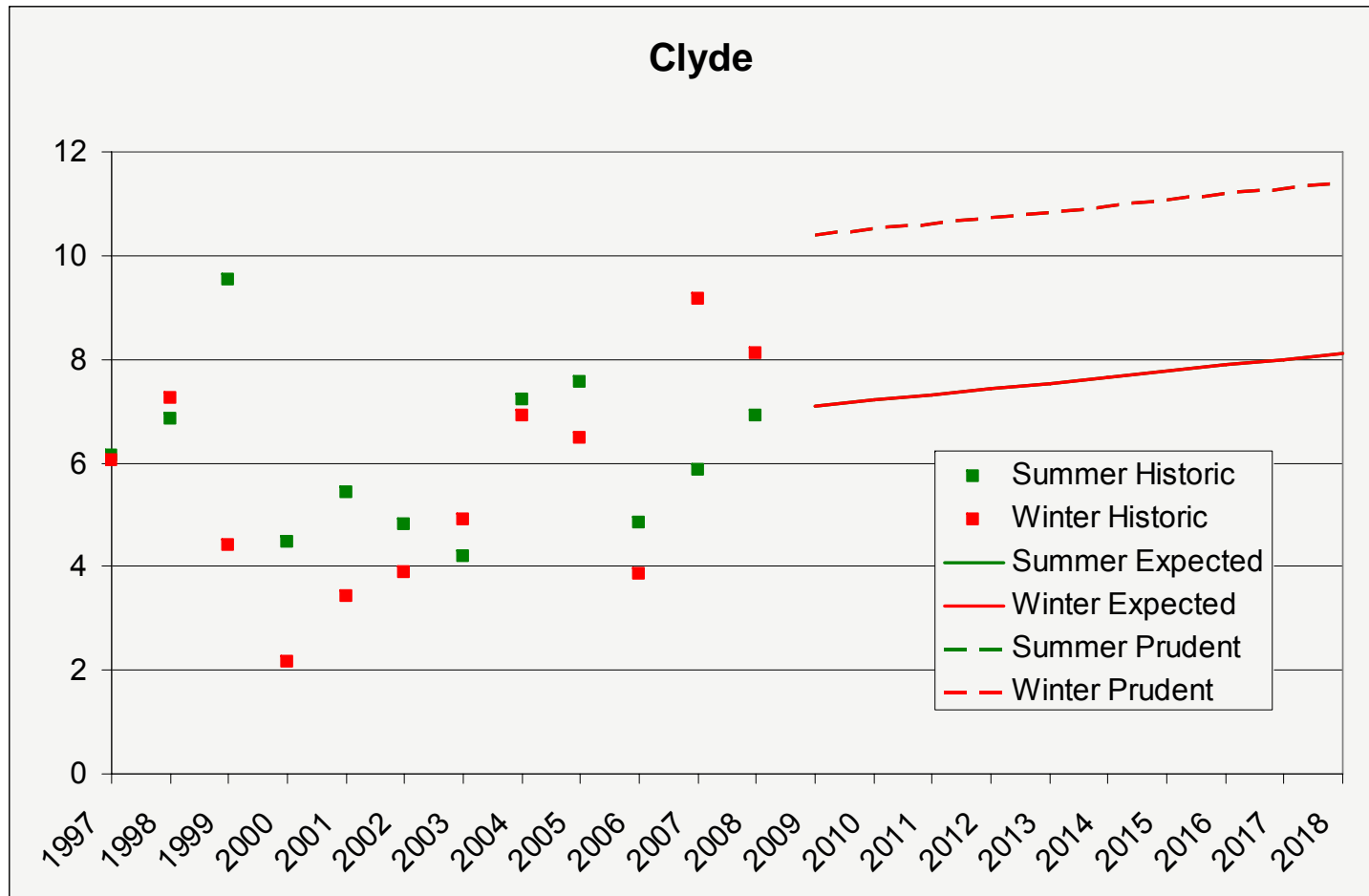
Individual GXPs



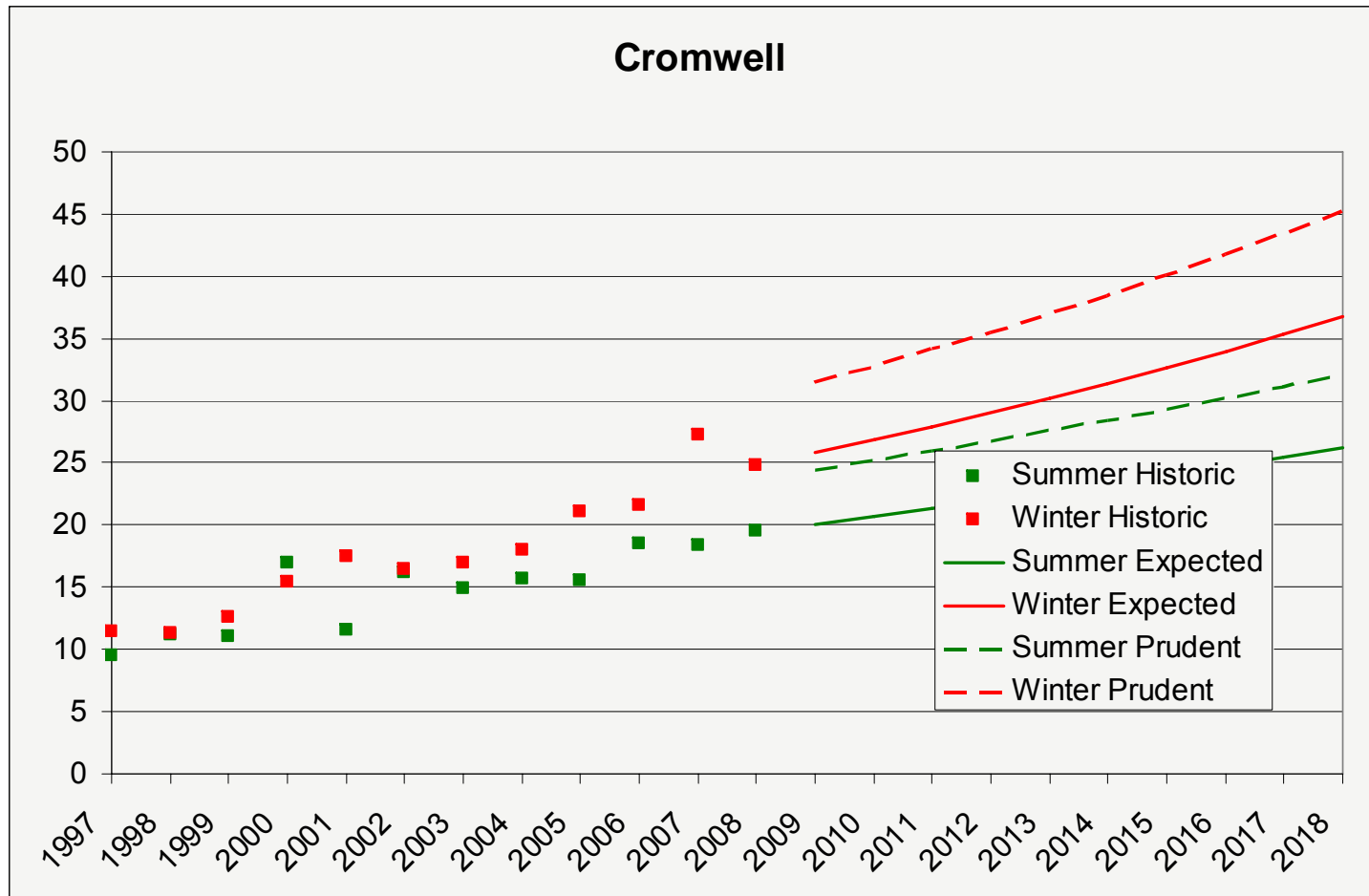
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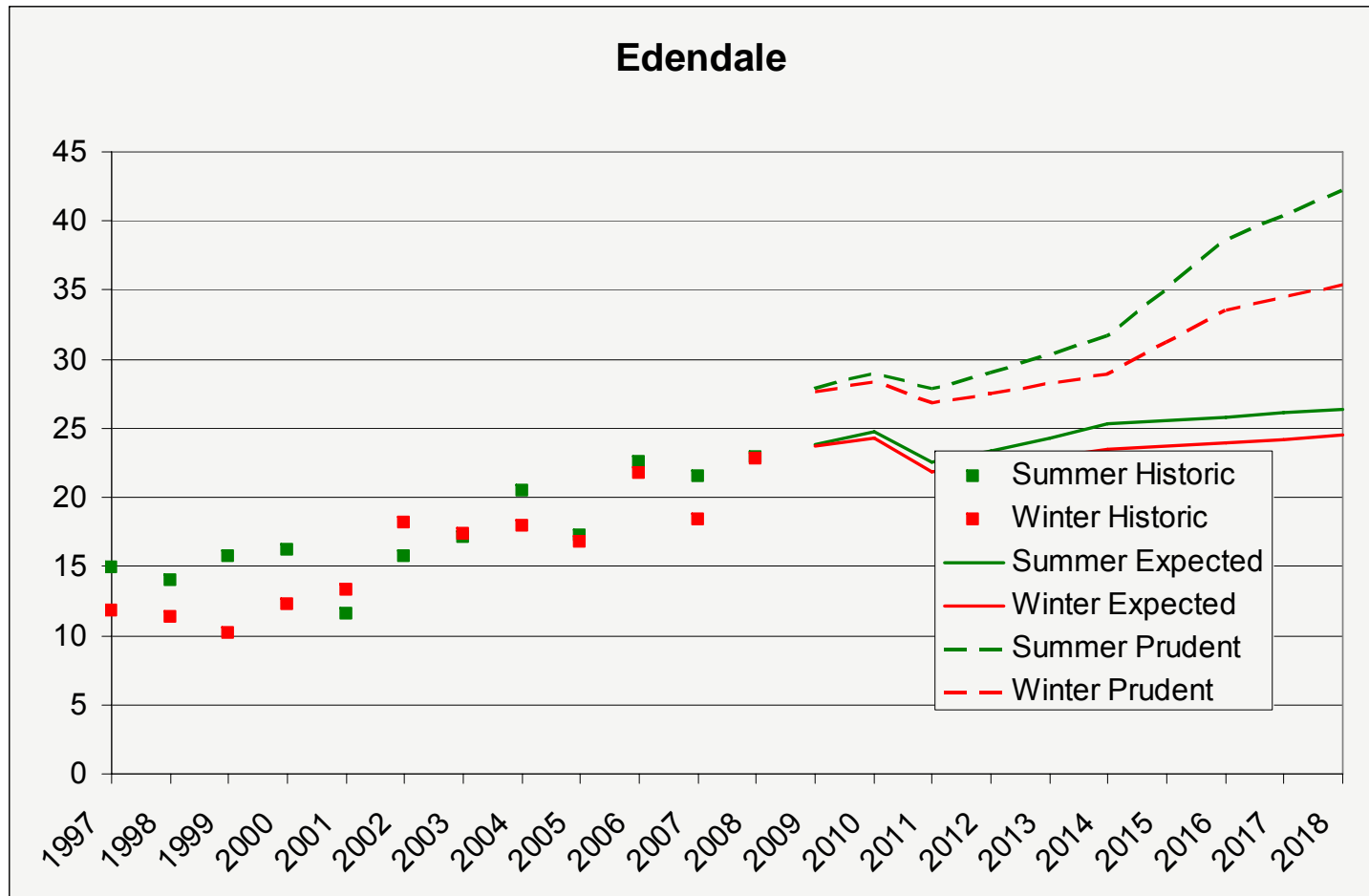
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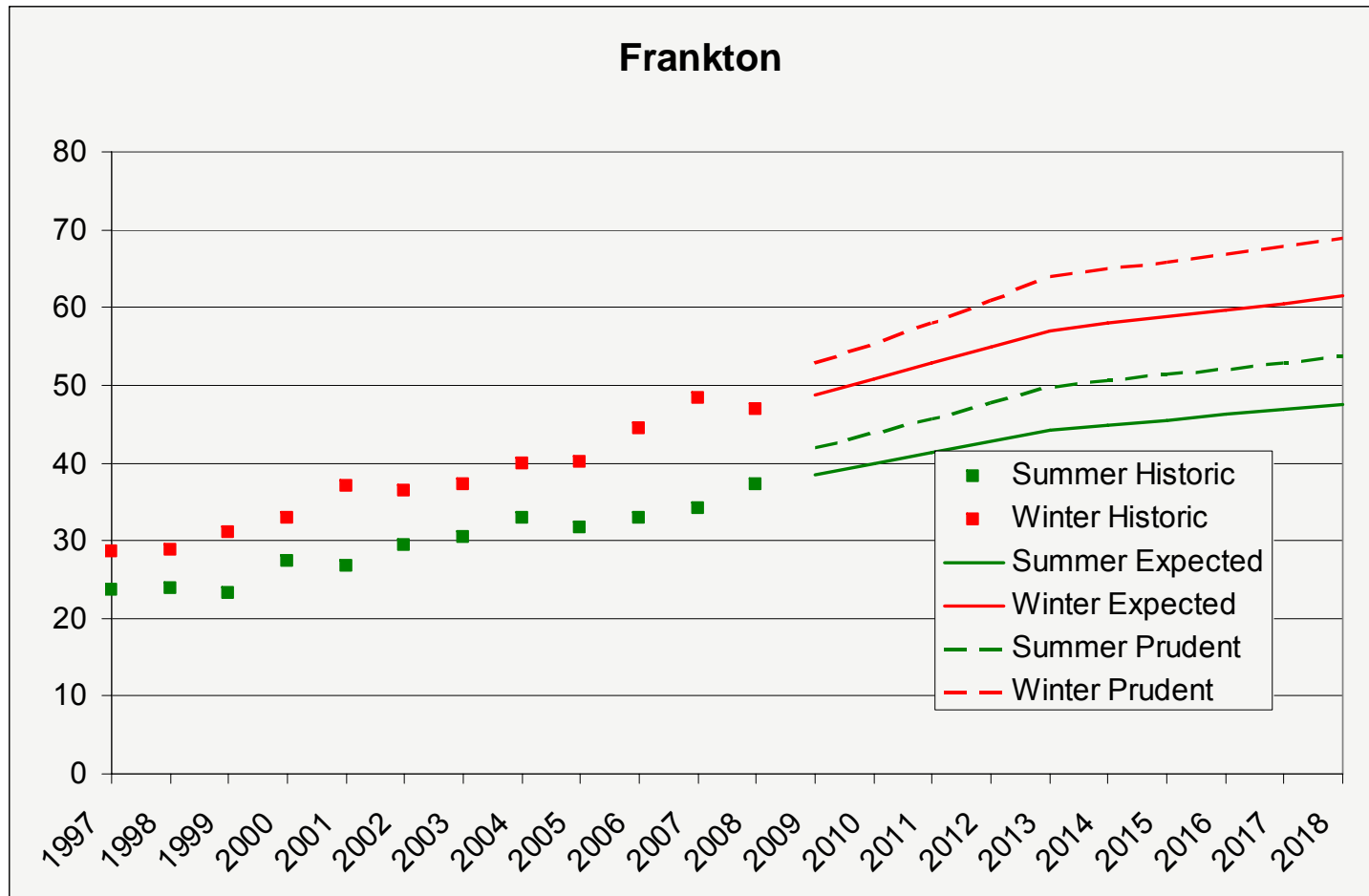
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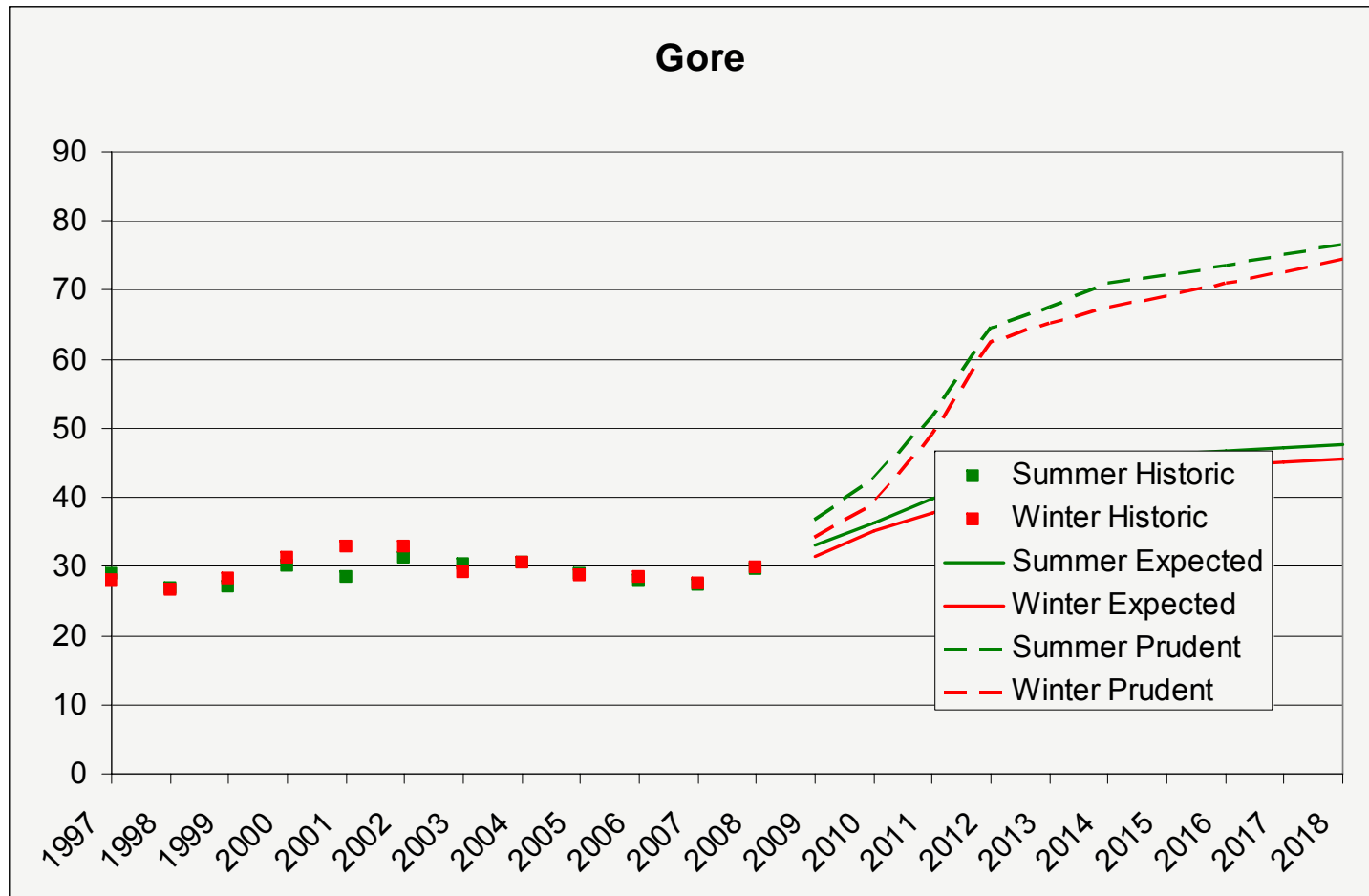
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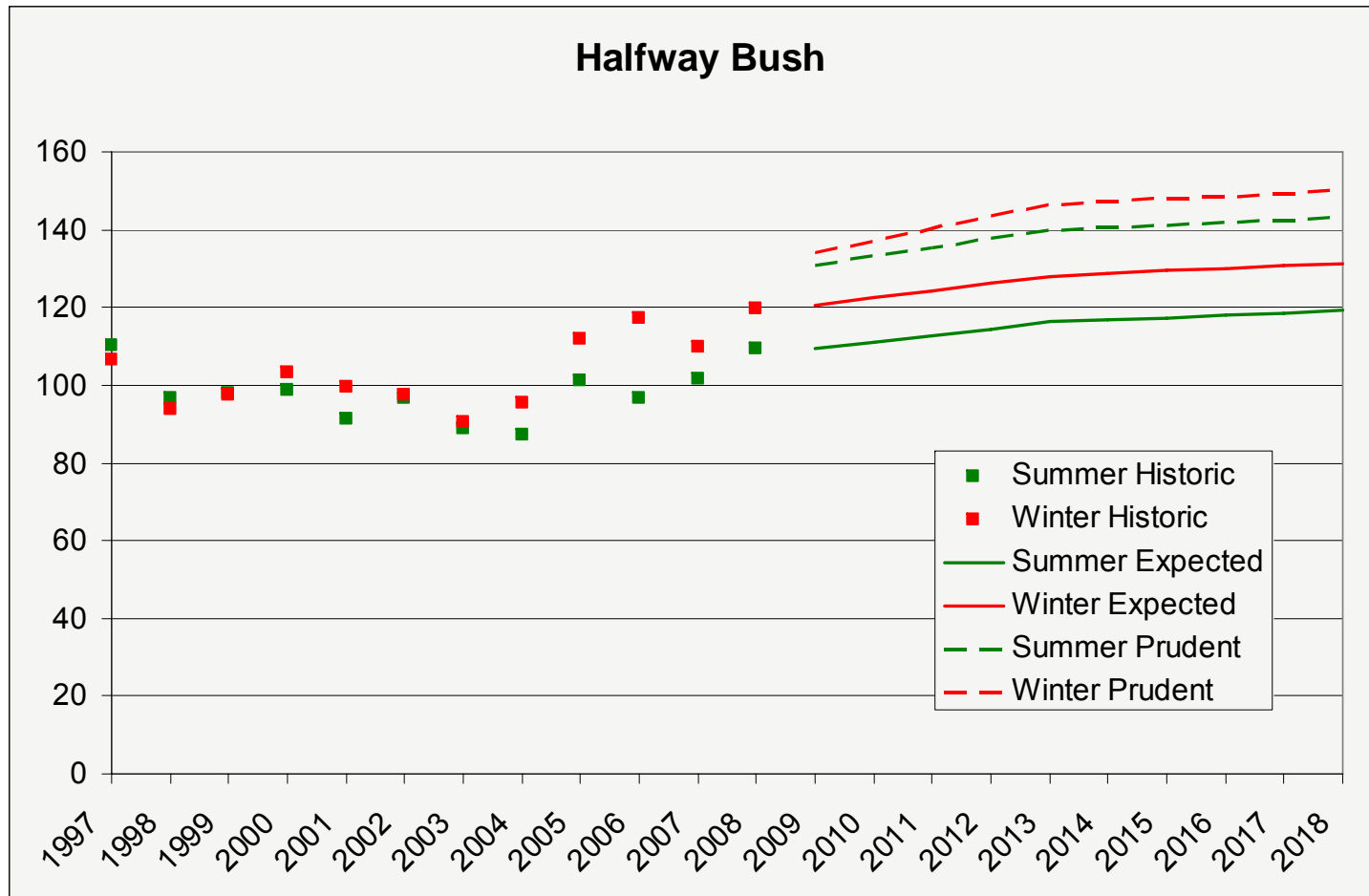
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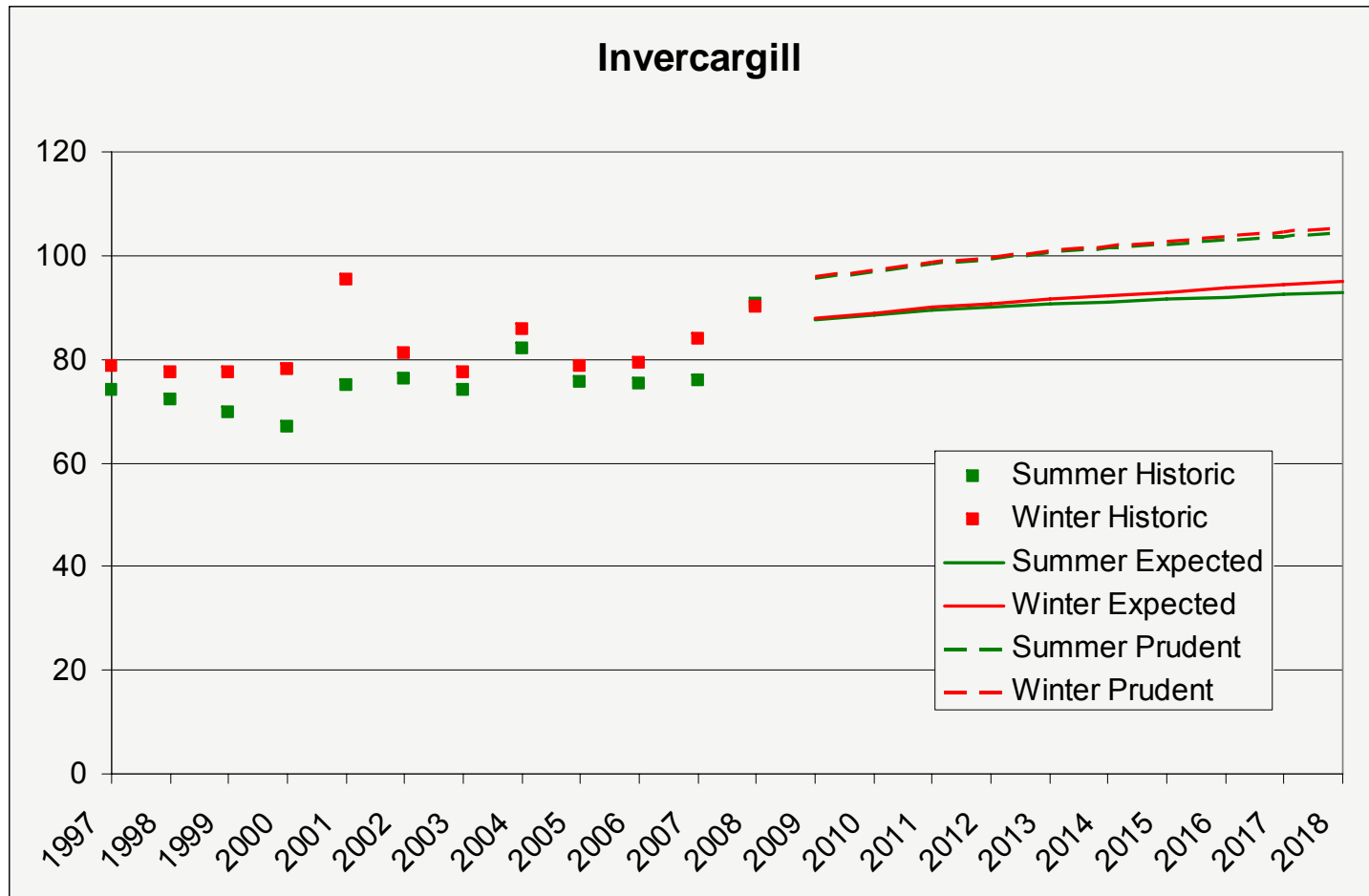
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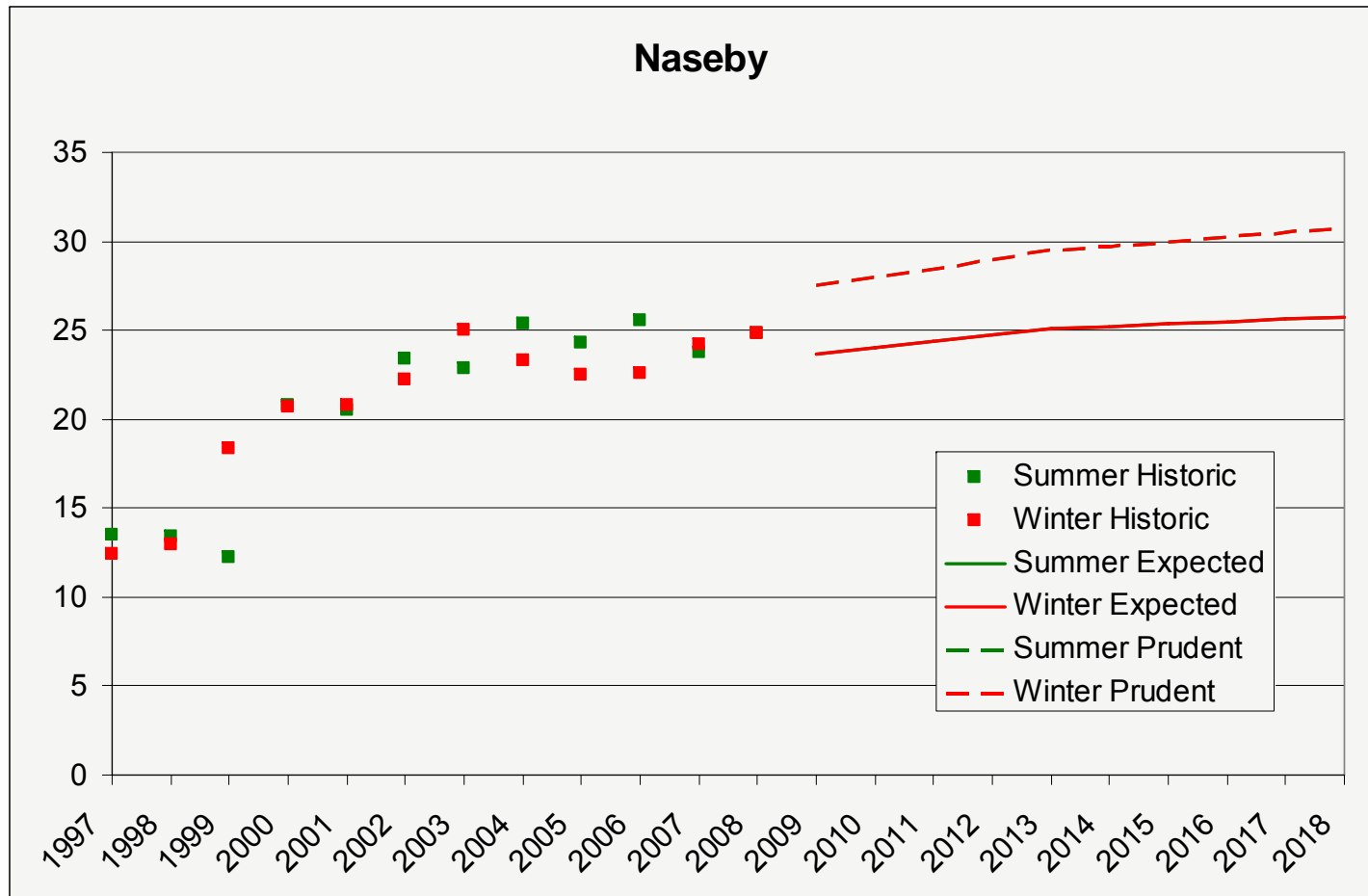
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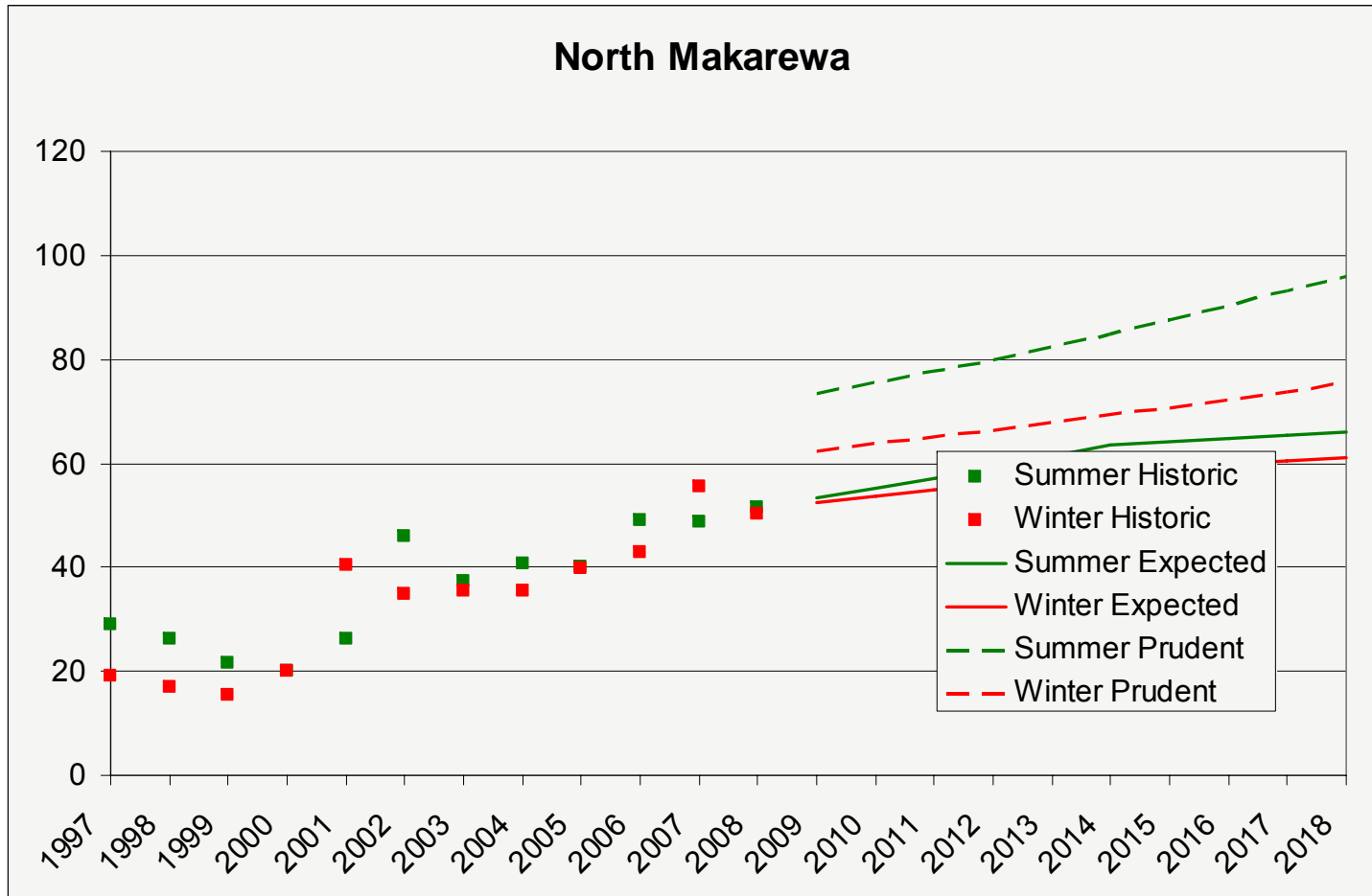
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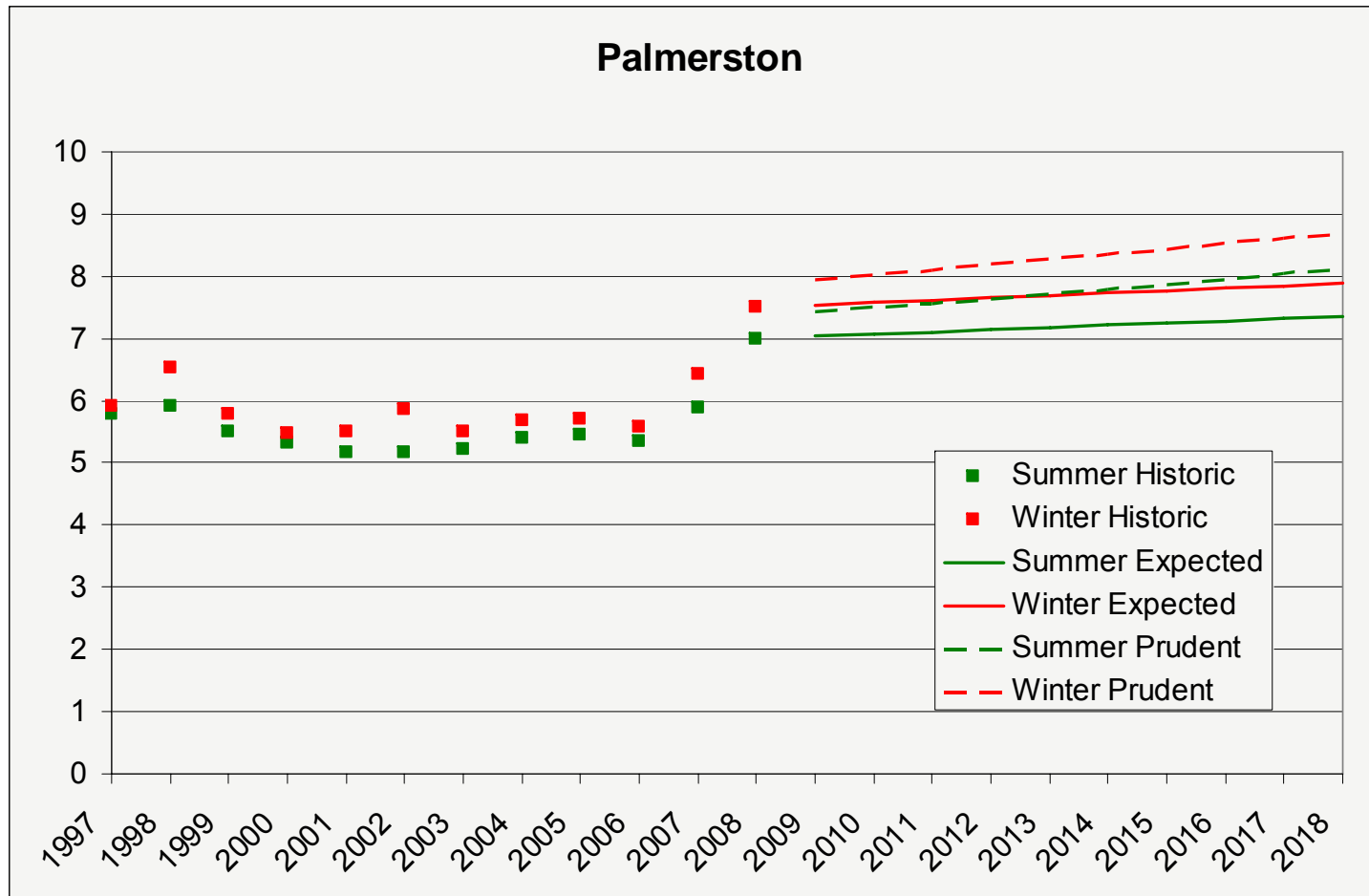
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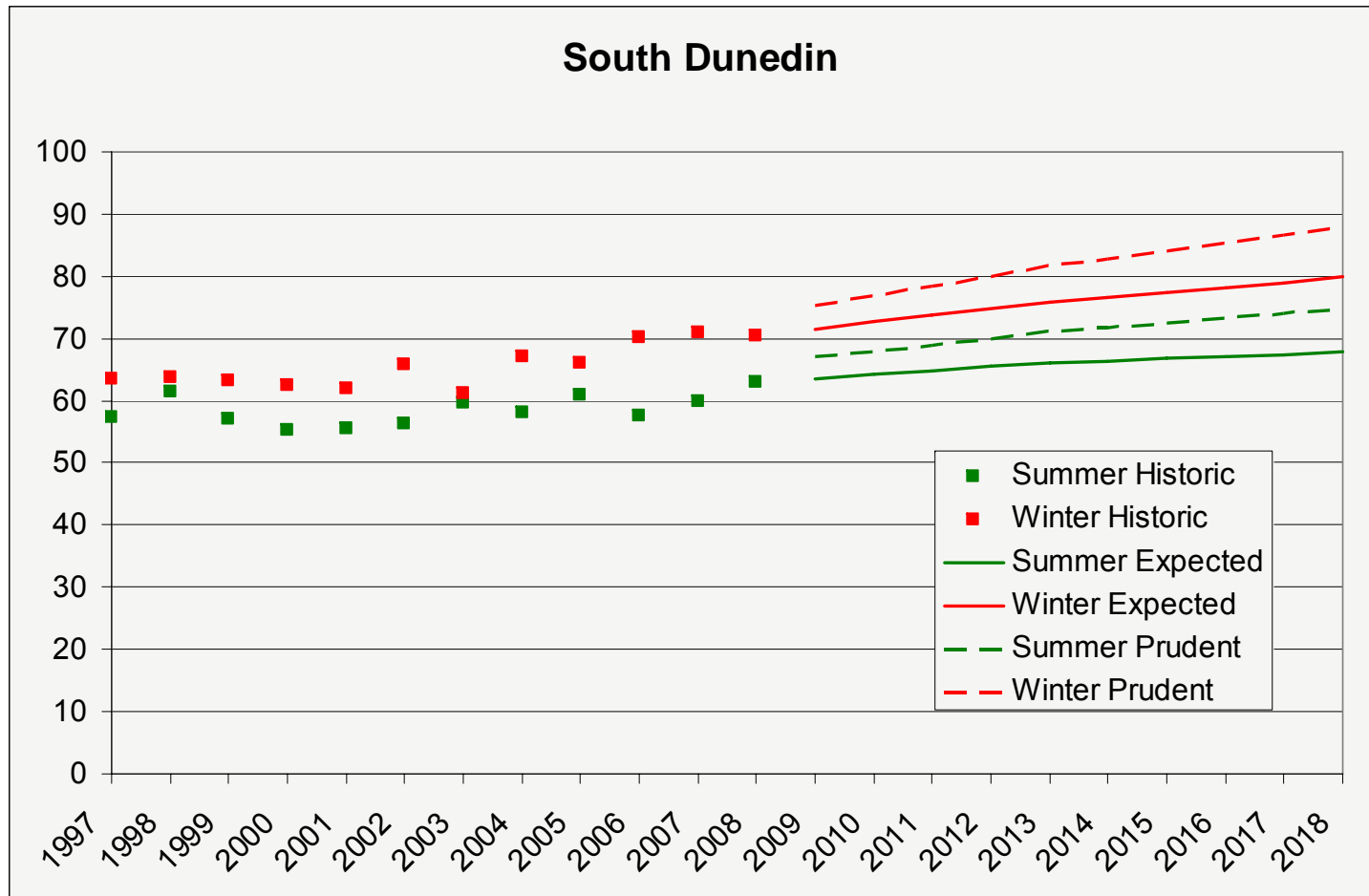
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