



Transmission System Plan 2025

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Appendix E

Zone Substation Utilisation



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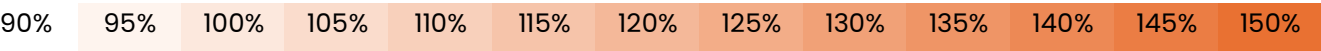
Zone substation utilisation

Zone substation (ZSS) utilisation assessments and projections are undertaken as a discrete study alongside TSP. A key variation to the TSP study is the demand input used. A statistical demand forecasting method is applied to estimate annual peak demand with key distribution demand drivers such as electric vehicle charging overlaid. Unless stated otherwise, all demand drivers are Probability of Exceedance 10 (PoE 10) estimates. Table 1 shows the weighted average substation utilisation across WPN regions.

Region	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
North	60%	61%	62%	62%	62%	62%	63%	63%	64%	64%	64%
Metro North	88%	89%	91%	93%	97%	99%	101%	103%	106%	108%	109%
East	70%	68%	60%	60%	60%	62%	62%	62%	62%	63%	63%
East Perth & CBD	60%	60%	61%	62%	64%	66%	66%	67%	67%	68%	69%
Metro South	91%	90%	92%	95%	99%	102%	103%	105%	108%	110%	112%
South	77%	79%	79%	81%	82%	83%	84%	86%	88%	89%	91%

Table 1. Forecast weighted average ZSS utilisation for WPN regions

Network utilisation is visually indicated as illustrated:



The highly loaded ZSS within each region are listed in Table 2 with a summary of planned actions and project stage to address forecast overloads.

Project stages are defined as: **M** = Monitor | **I** = Project Initiation | **S** = Project Scoping | **P** = Project Planning | **E** = Project Execution

Target year is the indicative Financial Year that the action will be completed. Projects that are being monitored (**M**), in the initiation stage (**I**) or in the scoping stage (**S**) may be subject to non-network solutions.

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Capacity ¹												Target		
Substation	(MVA)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Stage	Year	Planned actions
North														
Moora	16	107%	107%	108%	108%	106%	108%	109%	110%	111%	111%	M		
Metro North														
Arkana	72	86%	86%	86%	86%	90%	92%	92%	93%	94%	95%			
Beechboro	86	92%	92%	92%	93%	96%	98%	99%	100%	102%	104%	M		
Clarkson	56	95%	97%	100%	103%	107%	112%	116%	119%	122%	125%	E	2026	Add transformer
Cottesloe	57	93%	94%	96%	100%	105%	109%	109%	109%	111%	112%	M		
Hazelmere	27	116%	117%	114%	117%	124%	128%	125%	131%	126%	129%	I		
Henly Brook	53	85%	92%	97%	103%	108%	114%	120%	126%	132%	139%	E M	2026	Add transformer
Joondalup	53	90%	91%	92%	95%	99%	103%	105%	106%	109%	111%	P	2029	Add transformer
Landsdale	88	103%	103%	103%	103%	106%	109%	110%	113%	115%	118%	P	2029	Add transformer at Wangara & load transfer
Malaga	81	107%	107%	109%	110%	112%	115%	116%	118%	120%	121%	M		
Manning Street	43	96%	97%	99%	103%	109%	114%	115%	116%	119%	122%	M		
Midland Junction	94	76%	77%	78%	82%	85%	88%	90%	92%	94%	96%			
Morley	81	85%	86%	88%	89%	90%	92%	94%	96%	97%	99%			
Muchea	51	78%	80%	83%	87%	90%	92%	93%	95%	97%	97%			
Mullaloo	66	103%	105%	106%	109%	112%	115%	118%	120%	122%	124%	M		
North Beach	75	89%	90%	91%	93%	94%	96%	97%	100%	102%	103%			
Osborne Park	63	98%	99%	100%	102%	105%	107%	109%	110%	112%	114%	M		
Padbury	82	90%	90%	90%	92%	95%	98%	98%	99%	101%	102%	M		
Shenton Park	66	93%	94%	95%	98%	103%	107%	109%	111%	114%	117%	M		
Wangara	28	104%	107%	111%	116%	123%	129%	132%	136%	140%	145%	P	2029	Add transformer
Wanneroo	84	107%	110%	114%	119%	123%	126%	130%	134%	137%	140%	P	2029	Add transformer at Joondalup & load transfer.
Wembley Downs	43	100%	103%	107%	111%	113%	114%	116%	120%	123%	126%	M		
Yanchep	61	146%	159%	173%	188%	205%	220%	231%	241%	254%	266%	P M	2027	Add transformer
Yokine	53	107%	108%	109%	111%	114%	116%	118%	119%	122%	124%	M		
East														
Black Flag	28	134%	134%	61%	61%	61%	63%	63%	63%	63%	63%	E	2026	Add transformer
Boulder	56	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%			
Cunderdin	14	98%	98%	98%	98%	99%	99%	99%	99%	100%	100%	M		
Northam	33	94%	94%	94%	94%	94%	94%	94%	95%	97%	98%	M		
CBD & East Perth														
Joel Terrace	75	90%	89%	91%	90%	97%	99%	98%	99%	99%	101%	M		
North Perth	84	79%	81%	83%	85%	89%	91%	92%	93%	96%	98%	M		

Capacity ¹												Target		
Substation	(MVA)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Stage	Year	Planned actions
Metro South														
Amherst	85	91%	94%	96%	100%	104%	107%	108%	108%	109%	111%	M		
Australian Paper Mills	46	85%	85%	87%	91%	96%	100%	102%	104%	107%	109%	M		
Belmont	72	71%	72%	73%	75%	78%	80%	83%	85%	88%	91%			
Bentley	56	85%	85%	87%	89%	91%	92%	94%	95%	97%	98%			
Bibra Lake	55	108%	109%	111%	114%	119%	121%	121%	121%	121%	121%	P	2028	Add transformer
Byford	77	144%	133%	140%	145%	154%	162%	166%	171%	176%	183%	E S	2026	Add transformer at Willetton & load transfer [2]
Canning Vale	93	80%	80%	82%	84%	86%	86%	86%	86%	87%	89%			
Cockburn Cement	77	77%	79%	82%	86%	91%	94%	96%	98%	100%	102%	M		
Collier Street	69	75%	76%	76%	78%	80%	81%	82%	84%	86%	88%			
Gosnells	77	97%	99%	101%	104%	108%	112%	114%	117%	120%	124%	M		
Maddington	26	124%	126%	128%	130%	133%	136%	138%	140%	142%	145%	P	2026	Add transformer
Mandurah	76	110%	117%	121%	126%	134%	140%	144%	148%	155%	160%	E M	2025	Load Transfer to Pinjarra
Meadow Springs	86	112%	115%	119%	124%	130%	136%	140%	144%	148%	152%	I	2029	Add transformer
Medina	84	87%	88%	88%	89%	94%	96%	96%	99%	101%	101%	M		
Murdoch	54	86%	87%	87%	88%	89%	90%	90%	91%	92%	93%			
O'Connor	70	81%	82%	84%	86%	88%	90%	92%	93%	94%	96%			
Pinjarra	53	87%	87%	87%	89%	90%	91%	93%	94%	96%	96%			
Riverton	81	100%	100%	102%	106%	109%	110%	110%	112%	114%	116%	M		
Rivervale	83	87%	87%	88%	90%	94%	95%	96%	97%	98%	99%			
Rockingham	75	94%	95%	96%	98%	100%	103%	104%	106%	108%	110%	M		
Southern River	87	121%	118%	98%	103%	109%	113%	116%	119%	123%	128%	E S	2028	Add transformer & load transfer to Willetton [2]
Waikiki	87	108%	111%	113%	117%	122%	127%	130%	133%	137%	142%	P	2031	Load Transfer to proposed Baldivis ZSS
Welshpool	90	76%	77%	79%	81%	84%	87%	89%	92%	95%	98%			
Willetton	26	105%	89%	91%	97%	101%	104%	107%	109%	111%	114%	E	2027	Add transformer
South														
Albany	60	103%	106%	108%	110%	113%	117%	120%	124%	128%	133%	S		Upgrade to higher capacity transformers
Bunbury Harbour	65	120%	120%	120%	124%	130%	133%	135%	137%	142%	144%	S	2028	Add transformer
Busselton	50	108%	109%	112%	118%	126%	130%	131%	133%	137%	141%	E	2027	Add transformer
Katanning	20	92%	93%	93%	93%	55%	55%	55%	56%	56%	57%	E	2029	Add transformer
Wagerup	30	94%	94%	94%	95%	95%	96%	96%	97%	98%	98%			
Wagin	6	103%	102%	102%	101%	100%	99%	99%	99%	99%	99%	M		

¹ Current planning capacity

² Potential new Haynes ZSS

Table 2. Forecast peak utilisation for highly loaded ZSS

