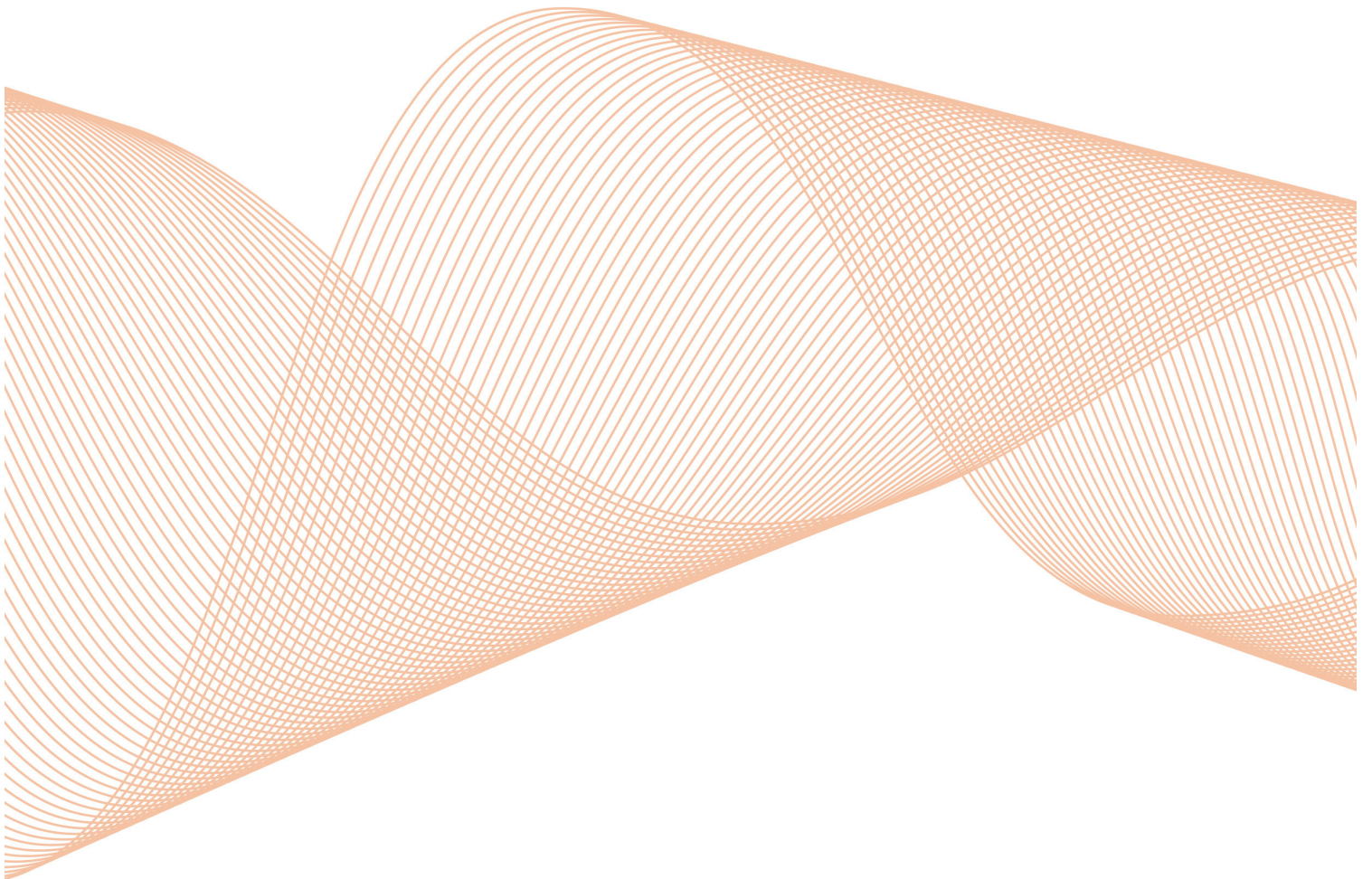

2015/16 Loss Factor Report

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1 Introduction

This report details the loss factors calculated for the 2015/16 financial year as required by section 2.27 of the Market Rules.

To comply with the obligations under section 2.27 of the Market Rules Western Power has:

- Recalculated all transmission loss factors
- Recalculated all average distribution loss factors
- Recalculated all individual distribution loss factors for customers with a CMD greater than 7,000 kVA
- Recalculated all individual distribution loss factors for customers with a CMD between 1,000 and 7,000 kVA located greater than 10 km from the electrically closest substation
- Recalculated the individual distribution loss factors for customers with a CMD between 1,000 and 7,000 kVA located less than 10 km from the electrically closest substation, where an individual distribution loss factor has been elected by the associated retailer
- Recalculated all individual distribution loss factors for distribution connected generation customers

2 Basis for calculation

Western Power calculates loss factors in accordance with the *Market procedure for determining loss factors*. The following sections provide further detail on the methodology used by Western Power in calculating loss factors.

2.1 Transmission loss factors

Western Power has calculated the transmission loss factors in accordance with section 4.1 of the *Market procedure for determining loss factors* using the software package T-price. T-price is also used by the Australian Energy Market Operator in determining loss factors in the National Electricity Market.

2.2 Average distribution loss factors

Western Power has calculated the average distribution loss factors in accordance with section 4.2 of the *Market procedure for determining loss factors*.

The methodology calculates the average distribution loss factors by:

- Determining losses within the zone substation transformers
- Determining HV feeder losses
- Determining distribution transformer losses
- Determining LV feeder losses (allowing separately for residential and commercial losses)

Western Power allocates the average distribution losses based on the usage of the various components of the network. An appropriate basis for this allocation is the reference services (offered in Western Power's access arrangement) and in accordance with the *Market procedure for determining loss factors* Western Power has determined an average loss factor for relevant reference services.

2.3 Individual distribution loss factors

Western Power calculates the individual distribution loss factors in accordance with section 4.2 of the *Market procedure for determining loss factors*.

The methodology used to calculate the individual distribution loss factors uses the formulae and methodology detailed in Schedule 4 of the Electricity Distribution Regulations 1997.¹ Schedule 4 of the Electricity Distribution Regulations 1997 is reproduced below:

1. To calculate the loss factor for a distribution connection which is an exit point a corporation must follow the following steps:
 - (a) the corporation must determine the line losses assuming the distribution connection was not there and assuming feeder maximum load;

¹ For sites supplied from multiple feeders the distribution loss factor has been determined as if the load is evenly split across the feeders. The resultant distribution loss factor is the average of the calculated distribution loss factors.

- (b) the corporation must determine the line losses assuming only the distribution connection was there and assuming feeder maximum load;
- (c) the corporation must determine the total line losses assuming all the distribution connections are there (including the distribution connection for which the loss factor is being determined) and assuming feeder maximum load;
- (d) the corporation must allocate a share of the total line losses calculated under step (c) to the distribution connection for which the loss factor is being determined based on the ratio of the result of step (b) and the sum of the results of steps (a) and (b);
- (e) the corporation must calculate the loss factor for the distribution connection by applying the following formula:

$$LF_{Exit} = 1 + \frac{A}{B}$$

where —

- A (in kW) is the share of the total line losses allocated to the distribution connection under step (d);
- B (in kW) is the contract maximum demand for the distribution connection.

2. To calculate the loss factor for a distribution connection which is an entry point a corporation must follow the following steps:

- (a) the corporation must determine the line losses assuming the distribution connection was not there and assuming feeder maximum load;
- (b) the corporation must determine the total line losses assuming all the distribution connections are there (including the distribution connection for which the loss factor is being determined) and assuming feeder maximum load;
- (c) the corporation must calculate the loss decrease or increase for the distribution connection for which the loss factor is being determined by subtracting the result of step (b) from the result of step (a);
- (d) the corporation must calculate the loss factor for the distribution connection by applying the following formula:

$$LF_{Entry} = 1 + \frac{A}{B}$$

where —

- A (in kW) is the loss increase or decrease calculated for the distribution connection under step (c);
- B (in kW) is the declared sent-out capacity for the distribution connection.

3 Transmission Loss Factors

Western Power has calculated the following transmission loss factors for the 2015/16 financial year.

Table 1 - Transmission Loss Factors

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
TAPA	Alcoa Pinjarra (Alcoa)	1.0045	1.0056
TAPL	Alcoa Pinjarra (Alinta)	0.9995	0.9962
TBLB	Bluewaters (BWP)	1.0004	0.9994
TBLS	Boulder (SCE)	1.1716	1.1903
TKRA	Karara Three Springs	1.0660	1.0355
TLWA	Lanwehr (Alinta)	1.0132	1.0098
TMBA	Mumbida Wind Farm	0.9097	0.9570
TMDP	Merredin Power Station	0.9629	1.0439
TMGS	Greenough River Solar Farm (Mungarra)	1.0329	1.0010
TMSK	Mason Road (KPP)	1.0222	1.0180
TOLA	Oakley (Alinta)	1.0161	1.0132
TSAV	Transmission SWIN Average	1.0432	1.0388
TUAV	Transmission Urban Average	1.0431	1.0370
TWKG	West Kalgoorlie GTs	1.0821	1.0854
TWOJ	Worsley (Joint Venture)	0.9866	0.9863
TWOW	Worsley (Worsley)	0.9898	0.9896
WAFM	Australian Fused Materials	1.0247	1.0212
WAKW	Kwinana Alcoa	1.0231	1.0186
WALB	Albany	1.0926	1.0684
WAMT	Amherst	1.0398	1.0328
WAPM	Australian Paper Mills	1.0427	1.0360
WARK	Arkana	1.0454	1.0378
WBCH	Beechboro	1.0457	1.0382
WBCT	Balcatta	1.0479	1.0398
WBDE	Baandee (WC)	1.0857	1.1554
WBDP	Binningup Desalination Plant	1.0140	1.0142
WBEC	Beckenham	1.0327	1.0327
WBEL	Belmont	1.0349	1.0307
WBGH	Boddington Gold Mine	1.0098	1.0090
WBHK	Broken Hill Kwinana	1.0261	1.0205
WBIB	Bibra Lake	1.0332	1.0277

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
WBKF	Black Flag	1.1663	1.2004
WBLD	Boulder	1.1607	1.1906
WBNP	Beenup	1.0252	1.0258
WBNY	Bounty	1.0847	1.0813
WBOD	Boddington	1.0088	1.0078
WBPM	British Petroleum	1.0263	1.0214
WBSI	Marriott Road Barrack Silicon Smelter	1.0145	1.0143
WBSN	Busselton	1.0535	1.0453
WBTN	Bridgetown	1.0117	1.0118
WBTY	Bentley	1.0375	1.0325
WBUH	Bunbury Harbour	1.0170	1.0147
WBYP	Byford	1.0347	1.0302
WCAP	Capel	1.0369	1.0349
WCAR	Carrabin	1.1586	1.1848
WCBP	Mason Road CSBP	1.0235	1.0200
WCCL	Cockburn Cement Ltd	1.0280	1.0241
WCCT	Cockburn Cement	1.0299	1.0254
WCGW	Collgar Windfarm	0.9984	1.0031
WCKN	Clarkson	1.0474	1.0372
WCKT	Cook Street	1.0488	1.0400
WCLN	Clarence Street	1.0436	1.0359
WCLP	Coolup	1.0474	1.0469
WCOE	Collie	1.0188	1.0187
WCOL	Collier	1.0433	1.0361
WCPN	Chapman	1.0354	1.0100
WCPS	Collie PWS	0.9969	0.9960
WCTE	Cottesloe	1.0444	1.0367
WCUN	Cunderdin	1.0933	1.0817
WCVE	Canning Vale	1.0323	1.0283
WDTN	Darlington	1.0442	1.0382
WDUR	Durlacher	1.0336	1.0096
WEDD	Edmund Street	1.0418	1.0341
WEDG	Edgewater	1.0507	1.0434
WEMD	Emu Downs	1.0021	1.0131
WENB	Eneabba	1.0596	1.0304

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
WFFD	Forrestfield	1.0431	1.0380
WFRT	Forrest Ave	1.0506	1.0425
WGGV	Golden Grove	1.0724	1.0572
WGNI	Glen Iris	1.0288	1.0250
WGNL	Gosnells	1.0336	1.0289
WGNN	Newgen Neerabup	1.0393	1.0278
WGTN	Geraldton	1.0336	1.0096
WHAY	Hay Street	1.0488	1.0399
WHBK	Henley Brook	1.0452	1.0366
WHEP	Herdsmen Parade	1.0521	1.0441
WHFS	Hadfields	1.0473	1.0396
WHIS	Hismelt	1.0230	1.0181
WHZM	Hazelmere	1.0394	1.0337
WJDP	Joondalup	1.0471	1.0400
WJTE	Joel Terrace	1.0486	1.0396
WKAT	Katanning	1.0553	1.0519
WKDA	Kalamunda	1.0450	1.0393
WKDL	Kewdale	1.0345	1.0301
WKDN	Kondinin	1.0478	1.0471
WKDP	Kwinana Desalination Plant	1.0236	1.0185
WKEL	Kellerberrin	1.0895	1.0797
WKEM	Kemerton PWS	1.0106	1.0082
WKMC	Cataby Kerr McGee	1.0534	1.0321
WKMK	Kerr McGee Kwinana	1.0210	1.0172
WKMM	Muchea Kerr McGee	1.0428	1.0340
WKND	Kwinana Donaldson Road (Western Energy)	1.0286	1.0191
WKOJ	Kojonup	1.0334	1.0332
WKPS	Kwinana PWS	1.0212	1.0174
WLDE	Landsdale	1.0488	1.0407
WMAG	Manning Street	1.0491	1.0405
WMBR	Mt Barker	1.0744	1.0541
WMCR	Medical Centre	1.0501	1.0428
WMDN	Maddington	1.0334	1.0312
WMDY	Munday	1.0360	1.0367
WMED	Medina	1.0291	1.0243

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
WMER	Merredin 66kV	1.0758	1.0628
WMGA	Mungarra GTs	1.0146	0.9963
WMHA	Mandurah	1.0319	1.0281
WMIL	Milligan Street	1.0485	1.0404
WMJP	Manjimup	1.0180	1.0179
WMJX	Midland Junction	1.0406	1.0345
WMLG	Malaga	1.0436	1.0359
WMOR	Moora	1.0575	1.0461
WMOY	Morley	1.0480	1.0400
WMPS	Muja PWS	1.0000	1.0000
WMRR	Marriot Road	1.0127	1.0124
WMRV	Margaret River	1.0986	1.1003
WMSR	Mason Road	1.0227	1.0182
WMSS	Meadow Springs	1.0308	1.0271
WMUC	Muchea	1.0449	1.0358
WMUL	Mullaloo	1.0488	1.0404
WMUR	Murdoch	1.0305	1.0262
WMWR	Mundaring Weir	1.0506	1.0432
WMYR	Myaree	1.0477	1.0398
WNBH	North Beach	1.0491	1.0411
WNED	Nedlands	1.0505	1.0430
WNFL	North Fremantle	1.0428	1.0340
WNGK	NewGen Kwinana	1.0243	1.0209
WNGN	Narrogin	1.0485	1.0490
WNOR	Northam	1.0643	1.0475
WNOW	Nowgerup		1.0341
WNPH	North Perth	1.0488	1.0398
WOCN	O'Connor	1.0457	1.0382
WOPK	Osborne Park	1.0488	1.0408
WPBY	Padbury	1.0500	1.0415
WPCY	Piccadilly	1.1660	1.1943
WPIC	Picton 66kv	1.0163	1.0149
WPJR	Pinjar	1.0396	1.0298
WPKS	Parkeston	1.1604	1.1896
WPLD	Parklands	1.0303	1.0265

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
WPNJ	Pinjarra	1.0226	1.0200
WRAN	Rangeway	1.0339	1.0096
WRGN	Regans	1.0720	1.0342
WROH	Rockingham	1.0294	1.0244
WRTN	Riverton	1.0317	1.0276
WRVE	Rivervale	1.0350	1.0305
WSFT	South Fremantle 66kV	1.0246	1.0246
WSNR	Southern River	1.0326	1.0281
WSPA	Shenton Park	1.0493	1.0413
WSRD	Sutherland		1.0402
WSUM	Summer St	1.0496	1.0403
WSVY	Sawyers Valley	1.0502	1.0422
WTLN	Tomlinson Street	1.0378	1.0307
WTSG	Three Springs	1.0478	1.0336
WTST	Three Springs Terminal		1.0443
WTTS	Tate Street	1.0368	1.0309
WUNI	University	1.0504	1.0431
WVPA	Victoria Park	1.0352	1.0352
WWAG	Wagin	1.0546	1.0537
WWAI	Waikiki	1.0309	1.0261
WWCL	Western Collieries	0.9951	0.9949
WWDN	Wembley Downs	1.0515	1.0436
WWEL	Welshpool	1.0345	1.0299
WWGA	Wangara	1.0480	1.0406
WWGP	Wagerup	0.9924	0.9964
WWKT	West Kalgoorlie	1.1535	1.1848
WWLN	Willetton	1.0318	1.0275
WWMG	Western Mining	1.0247	1.0208
WWNO	Wanneroo	1.0450	1.0359
WWNT	Wellington Street	1.0505	1.0421
WWSD	Westralian Sands	1.0306	1.0283
WWUN	Wundowie	1.0654	1.0543
WWWF	Walkaway Windfarm	0.9027	0.9384
WYCP	Yanchep	1.0442	1.0358
WYER	Yerbillon	1.1640	1.1920

TLF Code	Description	Applied in 2014/15	To apply in 2015/16
WYKE	Yokine	1.0479	1.0398
WYLN	Yilgarn	1.0890	1.0950

4 Average Distribution Loss Factors

Western Power has calculated the following average distribution loss factors for the 2015/16 financial year.

Table 2 - Average Distribution Loss Factors

DLF Code	Description	Applied in 2014/15	To apply in 2015/16
QRT1	A1 - Anytime Energy (Residential)	1.0770	1.0658
QRT2	A2 - Anytime Energy (Business)	1.0465	1.0440
QRT3	A3 - Time of Use Energy (Residential)	1.0770	1.0658
QRT4	A4 - Time of Use Energy (Business)	1.0465	1.0440
QRT5	A5 - High Voltage Metered Demand	1.0202	1.0198
QRT6	A6 - Low Voltage Metered Demand	1.0359	1.0366
QR7Z	A7 - High Voltage Contract Maximum Demand (Zone Substation Connected)	1.0055	1.0055
QZSC	Zone Substation Connections	1.0055	1.0055
QNLF	Transmission Connected (No DLF)	1.0000	1.0000
QNWM	Notional Wholesale Meter	1.0698	1.0612
QAVG	Distribution System Wide Average Loss Factor	1.0532	1.0481
QR13	C1 – Anytime Energy (Residential) Bi-directional	1.0770	1.0658
QR14	C2 – Anytime Energy (Business) Bi-directional	1.0465	1.0440
QR15	C3 – Time of Use Energy (Residential) Bi-directional	1.0770	1.0658
QR16	C4 – Time of Use Energy (Business) Bi-directional	1.0465	1.0440

5 Individual Distribution Loss Factors

Western Power has calculated the following individual distribution loss factors for the 2015/16 financial year.

Table 3 - Individual Distribution Loss Factors

DLF Code	Description	Applied in 2014/15	To apply in 2015/16
QAAL	AIR LIQUIDE WA PTY LTD	1.0065	1.0087
QAAM	AMP CAPITAL INVESTORS LIMITED (GARDEN CITY SHOPPING CENTRE)	1.0099	1.0100
QANF	ANDERSON WIND FARM	1.0318	1.0311
QARG	ARGENT (BULLANT) PTY LTD		1.0121
QAUS	AUSWEST PTY LTD	1.0455	1.0451
QAWF	ALBANY WINFARM	0.9787	0.9824
QBGB	BGC (AUSTRALIA) PTY LTD	1.0120	1.0113
QBGC	BGC (AUSTRALIA) PTY LTD	1.0073	1.0076
QBGM	BODDINGTON GOLD MINE	1.0566	1.0556
QBGP	BGC (AUSTRALIA) PTY LTD	1.0057	1.0057
QBGQ	BGC (AUSTRALIA) PTY LTD	1.0325	1.0378
QBLB	AUSTRALBRICKS (WA) PTY LTD (BELLEVUE)	1.0071	1.0071
QBLM	AUSTRALBRICKS (WA) PTY LTD (MALAGA)	1.0062	1.0062
QBMA	ST BARBARA MINES (L1)	1.0120	1.0137
QBMB	ST BARBARA MINES (L1 B)	1.0130	1.0125
QBMC	ST BARBARA LIMITED	1.0123	1.0120
QBNB	BGC (AUSTRALIA) PTY LTD	1.0160	1.0145
QBOC	BOC GASES (COMMONWEALTH INDUSTRIAL)	1.0078	1.0078
QBPA	BUNBURY PORT AUTHORITY	1.0062	1.0063
QBTF	INVESTA PROP & SAS TRUSTEE CORPORATION (QV1)	1.0059	1.0060
QBUL	CO-OPERATIVE BULK HANDLING LTD		1.0206
QBUR	BURSWOOD RESORT CASINO	1.0077	1.0065
QBWE	BANKWEST	1.0071	1.0070
QCBC	COCKBURN CEMENT	1.0673	1.0933
QCBH	COOPERATIVE BULK HANDLING LTD	1.0549	1.0520
QCEM	COCKBURN CEMENT LIMITED	1.0063	1.0063
QCMA	CRISTAL MINING AUSTRALIA LIMITED	1.0631	1.0344
QCUR	CURTIN UNIVERSITY OF TECHNOLOGY	1.0062	1.0057
QDCS	DEPARTMENT OF CORRECTIVE SERVICES	1.0250	1.0247
QDMS	DORAL MINERAL SANDS	1.0669	1.0720
QDOD	DEPT OF DEFENCE - HMAS STIRLING	1.0153	1.0157
QDWF	DENMARK WINDFARM	1.3243	1.3039

DLF Code	Description	Applied in 2014/15	To apply in 2015/16
QFFM	WESTERN AREAS NL - FLYING FOX MINESITE	1.1110	1.1309
QFIE	FLETCHER INTERNATIONAL EXPORTS	1.0612	1.0744
QFLM	LA MANCHA (FROGS LEGS MINE - COOLGARDIE)	1.0351	1.0272
QFPA	FREMANTLE PORT AUTHORITY	1.0057	1.0060
QGES	APF MANAGEMENT AND PERRON INVEST (CENTRAL PARK)	1.0085	1.0084
QGLM	GUNNS LIMITED (MANJIMUP)	1.0348	1.0348
QGRI	GRIFFIN COAL MINE	1.0283	1.0345
QHFM	HARVEY FRESH MILK	1.0944	1.0692
QHLG	HENDERSON LANDFILL GAS (WASTE GAS RESOURCES PTY LTD)	1.0056	1.0053
QHMP	HIGGINSVILLE MINING PTY LTD	1.0754	1.0557
QHRO	HR OPERATIONS PTY LTD	1.0075	1.0075
QHVI	EG GREEN & SONS PTY LTD/HARVEY INDUSTRIES	1.1135	1.1210
QIRG	ILUKA RESOURCES LIMITED	1.0192	1.0206
QIRL	ILUKA RESOURCES LIMITED	1.1104	1.0964
QJJM	JUBILEE MINE AND TREATMENT FACILITY	1.0435	1.0437
QKBG	KANOWNA BELLE GOLD MINES LIMITED	1.0673	1.0693
QKEM	KEMERTON SILICA SAND PTY LTD	1.0542	1.0707
QKPS	KALBARRI PHOTOVOLTAIC SYSTEM	1.2362	1.2436
QKUD	KUDANA GOLD PTY LTD	1.0229	1.0137
QKWF	KALBARRI WIND FARM	1.2111	1.2134
QLGA	LANDFILL GAS & POWER PTY LTD (RED HILL)	1.0378	1.0156
QLGC	LANDFILL GAS POWER PTY LTD (KALAMUNDA)	1.0287	1.0260
QLGD	LANDFILL GAS POWER PTY LTD (TAMALA PARK)	1.0187	1.0188
QLJS	ARMSTRONG JONES MANAGEMENT PTY LIMITED (JOONDALUP SHOPPING CENTRE)	1.0104	1.0093
QLMR	LA MANCHA RESOURCES	1.1887	1.0891
QMBW	MT BARKER POWER COMPANY	1.0302	1.0302
QMGS	MIDLAND GATE SHOPPING CENTRE	1.0059	1.0059
QMIC	BORAL BRICKS WESTERN AUSTRALIA PTY LTD	1.0314	1.0325
QMID	MIDLAND BRICK COMPANY PTY LTD	1.0177	1.0354
QMIE	MIDLAND BRICK COMPANY PTY LTD	1.0151	1.0166
QNEW	NEWMONT POWER PTY LTD		1.0971
QNFM	NATIONAL FOODS MILK WA LIMITED	1.0087	1.0088
QPAG	PADDINGTON GOLD PTY LTD	1.0659	1.0674
QPEA	LMS SOUTH CARDUP	1.0101	1.0152
QPEB	A G L ENERGY SERVICES (ROCKINGHAM)	1.0120	1.0031
QPED	LMS ATLAS	1.0124	1.0100
QPTC	AMP CAPITAL INVESTORS LIMITED (KARRINYUP SHOPPING CENTRE)	1.0297	1.0222

DLF Code	Description	Applied in 2014/15	To apply in 2015/16
QRCS	ROCKINGHAM CITY SHOPPING CENTRE	1.0072	1.0096
QRPH	ROYAL PERTH HOSPITAL	1.0058	1.0058
QRRR	DEPARTMENT OF DEFENCE	1.1298	1.1297
QSER	SERCO AUSTRALIA PTY LTD	1.0261	1.0287
QSIT	SITA AUSTRALIA PTY LTDY	1.0113	1.0120
QSMP	ST MARTINS PROPERTIES PTY	1.0064	1.0070
QTAL	TALISON MINERALS PTY LTD	1.0697	1.0699
QTCG	TESLA CORPORATION - GERALDTON	0.9931	0.9978
QTCK	TESLA CORPORATION - KEMERTON	1.0052	1.0053
QTCL	TELSTRA	1.0069	1.0071
QTCN	TESLA CORPORATION - NORTHAM	0.9565	0.9569
QTES	TESLA CORPORATION PICTON G1	1.0019	1.0016
QTMH	FOCUS OPERATIONS PTY LTD	1.0866	1.1035
QVEW	VERVE ENERGY - WOOD PROCESS CHARCOAL POWER STN	1.0057	1.0057
QWAC	WESTRALIA AIRPORTS CORPORATION PTY LTD	1.0108	1.0149
QWAN	WESTERN AREAS NL (COSMIC BOY)	1.0829	1.0976
QWCA	WATER CORPORATION		1.0095
QWCB	WATER CORP (BELMONT)	1.0081	1.0081
QWCD	WATER CORPORATION	1.0122	1.0122
QWCE	WATER CORP (BEENYUP WWTP)	1.0074	1.0067
QWCF	WATER CORPORATION	1.0220	1.0179
QWCG	WATER CORPORATION (GHOOLI)	1.0110	1.0854
QWCH	WATER CORPORATION		1.0159
QWCI	WATER CORPORATION		1.0069
QWCJ	WATER CORPORATION		1.0064
QWCK	WATER CORPORATION		1.0065
QWCS	WESTFIELD CAROUSEL SHOPPINGTOWN	1.0190	1.0184
QWCT	WATER CORPORATION SEWERAGE TREAT	1.0120	1.0120
QWCW	WATER CORP (WANNEROO GS)	1.0307	1.0307
QWGS	CPM (WA) PTY LTD (GALLERIA)	1.0094	1.0122
QWHF	WEST HILLS FARM	1.1026	1.1003
QWHS	WHITFORD CITY SHOPPING CENTRE	1.0149	1.0138
QWMD	THE LAMINEX GROUP	1.0263	1.0262

6 Explanation for changes in loss factors

In accordance with clause 2.21(b)ii of the *Market procedure for determining loss factors* Western Power is required to provide an explanation for any changes of more than 0.025 in any transmission or distribution loss factors when compared to the previous year.

In general, loss factors increase with demand at a node and decrease with increasing generation at a node. Loss factors can also be affected by changes in network configuration.

6.1 Transmission Loss Factors

Loss factors for the transmission network are calculated based on half hour data for the whole system over the whole year. Individual transmission loss factors are not only affected by the quantity of usage at a node but also the time the usage occurs, and being a meshed network they are also affected by usage at other nearby nodes.

Table 4 is a list of the transmission loss factors that moved by more than 0.025 in 2015/16. Exact reasons for the movements are difficult to determine but are most likely due to two major factors:

- The commissioning of the Mid West Energy Project has affected most of the loss factors in the Mid West region.
- The transformer failures at Muja substation resulted in a change of operating patterns at many substations, affecting many loss factors near Muja and on the 220kV system.

Table 4 - Transmission Loss Factors changed by more than 0.025 – Muja to West Kalgoorlie

TLF Code	Description	Applied in 2014/15	To apply in 2015/16	Change
TKRA	Karara Three Springs	1.0660	1.0355	-0.0305
TMBA	Mumbida Wind Farm	0.9097	0.9570	0.0473
TMDP	Merredin Power Station	0.9629	1.0439	0.0810
TMGS	Greenough River Solar Farm (Mungarra)	1.0329	1.0010	-0.0319
WBDE	Baandee (WC)	1.0857	1.1554	0.0697
WBKF	Black Flag	1.1663	1.2004	0.0341
WBLD	Boulder	1.1607	1.1906	0.0299
WCAR	Carrabin	1.1586	1.1848	0.0262
WCPN	Chapman	1.0354	1.0100	-0.0254
WENB	Eneabba	1.0596	1.0304	-0.0292
WPCY	Piccadilly	1.1660	1.1943	0.0283
WPKS	Parkeston	1.1604	1.1896	0.0292
WRGN	Regans	1.0720	1.0342	-0.0378
WWKT	West Kalgoorlie	1.1535	1.1848	0.0313
WWWF	Walkaway Windfarm	0.9027	0.9384	0.0357
WYER	Yerbillon	1.1640	1.1920	0.0280

6.2 Average Distribution Loss Factors

No average distribution loss factors have changed by more than 0.025 when compared to the previous year.

6.3 Individual Distribution Loss Factors

The following individual distribution loss factors have changed by more than 0.025 when compared to the previous year:

Table 5 - Individual Distribution Loss Factors changed by more than 0.025

DLF Code	Description	Applied in 2014/15	To apply in 2015/16	Change
QCBC	COCKBURN CEMENT	1.0673	1.0933	0.0260
QCMA	CRISTAL MINING AUSTRALIA LIMITED	1.0631	1.0344	-0.0287
QHFM	HARVEY FRESH MILK	1.0944	1.0692	-0.0252
QLMR	LA MANCHA RESOURCES	1.1887	1.0891	-0.0996
QWCG	WATER CORPORATION (GHOOLI)	1.0110	1.0854	0.0744

The following table sets out the reasons for the changes in the individual distribution loss factors:

Table 6 – Reason for Individual Distribution Loss Factors change by more than 0.025

DLF Code	Reason for change in loss factor
QCBC	The increase is driven by an increase of the feeder peak. The value is now much closer to historical values (e.g. 1.1073 in 2013/14)
QCMA	The feeder peak has changed significantly from last year's study, reducing the losses.
QHFM	Capacitor banks are improving losses on the line.
QLMR	The feeder peak has changed significantly from last year's study, reducing the losses.
QWCG	The loss factor this year has increased due to updated network data being used. Previous year's have been based on estimated network values.

Appendix A. Individual Transmission Loss Factors by NMI

The following NMIs are for customers connected directly to the transmission system along with the transmission loss factor code Western Power has assigned.

Table 7 - Transmission Loss Factors by NMI

NMI	TLF Code
8001000116	WBHK
8001000118	WKMK
8001000126	WWMG
8001000127	WWMG
8001000128	WWMG
8001000129	WCCL
8001000279	WPKS
8001000291	WAFM
8001000347	WEDG
8001000499	TMSK
8001000500	TMSK
8001000616	WKMM
8001000640	WWCL
8001000641	WWCL
8001000646	WGGV
8001000659	WKMC
8001000707	WALB
8001000708	WALB
8001000732	TAPA
8001000733	WAKW
8001000736	WCBP
8001000741	TBLS
8001000743	TWOW
8001000744	TWOJ
8001000764	WSUM
8001000776	WWSD
8001000823	WTLN
8001000954	TAPA
8001001007	WWGP
8001001211	WWWF
8001001212	WWWF
8001016070	WBEC
8001018020	WKEM

NMI	TLF Code
8001018021	WKEM
8001018932	TAPL
8001019478	TWOW
8001019484	WEMD
8001019485	WEMD
8001019487	WKDP
8001019590	TOLA
8001019784	TLWA
8001019785	TLWA
8001019790	WPLD
8001019791	WGNI
8002013337	TBLB
8002013343	WNGK
8002013364	WMPS
8002013365	WKPS
8002013366	WCPS
8002013368	WPJR
8002013369	WKPS
8002013370	WGTN
8002013371	TWKG
8002013372	WMGA
8002013375	WBGM
8002013379	WKMK
8002013796	TBLB
8002014313	WPKS
8002015326	WGNN
8002016124	WKND
8002016403	WCGW
8002016404	WCGW
8002016407	TWOW
8002016415	WBSI
8002016416	WBSI
8002016417	WBSI
8002016490	TKRA
8002016491	TKRA
8002016504	WKPS
8002016505	WKPS
8002016506	TMGS

NMI	TLF Code
8002016510	TMDP
8002016519	TMBA
8002016571	WNOW
8002016585	WSRD
8002112635	WBDP

Appendix B. Individual Distribution Loss Factors by NMI

The individual distribution loss factors calculated for the 2015/16 financial year are associated with the following NMIs.

Table 8 - Individual Distribution Loss Factors by NMI

NMI	DLF Code	Required or Optional ²
8001000110	QAAL	Required
8001000121	QTAL	Required
8001000122	QPEB	Required
8001000125	QKEM	Required
8001000130	QCEM	Required
8001000158	QLGA	Required
8001000234	QLGD	Required
8001000259	QWCA	Required
8001000269	QJJM	Required
8001000270	QMID	Optional
8001000274	QBGp	Optional
8001000280	QWCB	Optional
8001000281	QWCH	Required
8001000282	QWCE	Optional
8001000284	QWCW	Required
8001000286	QAAL	Required
8001000287	QFFM	Required
8001000300	QNFM	Optional
8001000325	QWMD	Required
8001000329	QBPA	Required
8001000333	QDOD	Required
8001000345	QHVI	Required
8001000356	QTMH	Required
8001000359	QBMB	Required
8001000428	QCBC	Required
8001000451	QHMP	Required
8001000493	QARG	Required
8001000510	QPTC	Required
8001000511	QPTC	Required

² Individual distribution loss factors have been assessed as either required or optional in accordance with section 3.2.5 of the *Market procedure for determining loss factors*. The calculation of optional distribution loss factors is at the cost of the retailer.

NMI	DLF Code	Required or Optional²
8001000514	QMIE	Optional
8001000515	QMIE	Optional
8001000519	QSMP	Optional
8001000520	QSMP	Optional
8001000527	QWCT	Optional
8001000528	QWCT	Optional
8001000529	QWCF	Required
8001000530	QWCF	Required
8001000533	QWAC	Required
8001000534	QWAC	Required
8001000539	QFIE	Required
8001000541	QBWE	Optional
8001000542	QBWE	Optional
8001000546	QGES	Optional
8001000547	QGES	Optional
8001000612	QFPA	Optional
8001000613	QFPA	Optional
8001000623	QWCK	Required
8001000624	QWCK	Required
8001000652	QBUR	Required
8001000653	QBUR	Required
8001000661	QIRG	Required
8001000662	QIRG	Required
8001000665	QRPH	Optional
8001000666	QRPH	Optional
8001000667	QLJS	Optional
8001000668	QLJS	Optional
8001000669	QKUD	Required
8001000670	QKUD	Required
8001000673	QAAM	Required
8001000674	QAAM	Required
8001000677	QWGS	Required
8001000678	QWGS	Required
8001000681	QMGS	Required
8001000682	QMGS	Required
8001000687	QRCS	Required

NMI	DLF Code	Required or Optional²
8001000688	QRCS	Required
8001000691	QWHS	Required
8001000692	QWHS	Required
8001000693	QWCS	Optional
8001000703	QBTF	Optional
8001000704	QBTF	Optional
8001000706	QMIC	Required
8001000707	QAWF	Required
8001000708	QAWF	Required
8001000716	QBMA	Required
8001000717	QBMA	Required
8001000738	QLGC	Required
8001000745	QPAG	Required
8001000780	QCBH	Required
8001000790	QWCG	Required
8001000791	QBLB	Optional
8001000824	QKBG	Required
8001000830	QBMC	Required
8001000831	QTCL	Optional
8001000846	QBLM	Optional
8001000863	QRRR	Required
8001000864	QBGC	Optional
8001000878	QWAN	Required
8001000916	QPEA	Required
8001000998	QNEW	Required
8001001009	QBMA	Required
8001002378	QVEW	Required
8001002460	QAUS	Required
8001003787	QBNB	Required
8001006864	QSER	Required
8001008047	QWCI	Required
8001008631	QDCS	Required
8001009577	QBUL	Required
8001011455	QDMS	Required
8001011882	QGLM	Required
8001016701	QKPS	Required

NMI	DLF Code	Required or Optional²
8001017256	QHRO	Optional
8001017284	QGRI	Required
8001018080	QPED	Required
8001019433	QHLG	Required
8001019750	QFPA	Optional
8001020053	QWCD	Required
8001020092	QBGM	Required
8002013336	QKWF	Required
8002013376	QCUR	Required
8002013377	QCUR	Required
8002013378	QCUR	Required
8002016408	QMBW	Required
8002016420	QTES	Required
8002016475	QAWF	Required
8002016499	QWHF	Required
8002016507	QTCG	Required
8002016508	QTCK	Required
8002016509	QTCN	Required
8002016529	QDWF	Required
8002016580	QHFM	Required
8002019353	QBGB	Optional
8002034918	QFLM	Required
8002051925	QCUR	Required
8002055189	QSIT	Required
8002067264	QBGQ	Required
8002109233	QWCJ	Required
8002114136	QIRL	Required
8002148204	QANF	Required
8002166160	QCMa	Required
8002191360	QLMR	Required
8002206185	QBOC	Required

Appendix C. Extinct Loss Factor Codes

The following loss factor codes have not been recalculated for the 2015/16 financial year.

Table 9 - Individual Distribution Loss Factors by NMI

Loss Factor Code	Reason not calculated
WWEB	Customer no longer active
QCPL	Retailer did not request calculation
QBLC	Customer moved to tariff with average DLF
QCSG	Customer moved to tariff with average DLF
QLGB	Customer no longer active as generator
QPHG	Customer no longer active as generator
QRGP	Customer no longer active
QSBC	Customer no longer active

Appendix D. Alternative Presentation of Average DLFs

To enable comparison with distribution loss factors within the NEM the following table presents the average distribution loss factors based on network level. However, for the purposes of the WA market the average distribution loss factors are as per section 4.

Table 10 - Average Distribution Loss Factors by Network Level – For Information Only

Network Level	Distribution Loss Factor	
	Applied in 2014/15	To apply in 2015/16
6.6kV/11kV/22kV/33kV Bus Connected	1.0055	1.0055
6.6kV/11kV/22kV/33kV Line Connected	1.0202	1.0198
LV Bus Connected	1.0359	1.0366
LV Line Connected (Commercial)	1.0465	1.0440
LV Line Connected (Streetlighting/UMS)	1.0698	1.0612
LV Line Connected (Residential)	1.0770	1.0658
Transmission Connected (No DLF)	1.0000	1.0000
Distribution System Wide Average Loss Factor	1.0532	1.0481