Docket No. UE-141335 Petitioners' Exhibit List

Witness: Jennifer A. Boyer

Tab

- 1. PSE's Response to Petitioner's Data Request No. 008
- 2. PSE's Response to WUTC Staff Data Request No. 019
- 3. PSE's Response to WUTC Staff Data Request No. 021
- 4. PSE's Response to WUTC Staff Data Request No. 023
- 5. PSE's Response to WUTC Staff Data Request No. 024
- 6. PSE's Response to WUTC Staff Data Request No. 035
- 7. PSE's Response to WUTC Staff Data Request No. 036
- 8. PSE's Response to WUTC Staff Data Request No. 037

Docket No. UE-141335 Puget Sound Energy, Inc.'s Petition for Declaratory Order of King County et al. Regarding Maloney Ridge Line

PETITIONERS DATA REQUEST NO. 008

PETITIONERS DATA REQUEST NO. 008:

Concerning Puget's service area and its planning for its distribution system, please answer the following:

- A. Does Puget have service territory in urban areas and non-urban areas? Please explain.
- B. To the extent Puget has customers in urban areas, please estimate the cost of distribution line installation (by voltage level), operation and maintenance (by voltage level) for subtransmission voltage circuits and primary voltage circuits.
- C. Provide the same information and estimated cost of installing, maintaining and replacing equipment for distribution service starting at primary voltage circuits up through subtransmission voltage circuits in non-urban service territories.
- D. Please identify Puget's differential in pricing for distribution service if the service is provided to a customer in an urban part of Puget's service territory, or a non-urban part of the Puget's service territory.

Response:

- A. Puget Sound Energy, Inc. ("PSE") does have service territory in urban areas and non-urban areas, however PSE does not define its service area by urban and non-urban, nor does it have specific definitions as to whether an area is urban or non-urban.
- B.-C. PSE's typical distribution voltage is 12.5kV. Costs for a distribution line installation can vary based on a number of factors including type of construction (overhead or underground), single phase versus three-phase, site conditions, permitting requirements, real estate requirements (easements), and restoration. PSE estimates an average of \$150 per foot for underground and \$100 per foot for overhead distribution facilities; however actual costs can vary significantly based on the above listed factors.

Page 1

The annual operating and maintenance cost for a distribution line is defined in Schedule 62 of PSE's electric tariff and is based on the installed cost per mile and length of the line. Schedule 62 is for leased facilities; however, the operation and maintenance cost of all lines is the same.

D. There is no price differential for the distribution services provided to a customer in urban or non-urban part of PSE's service territory.

Docket No. UE-141335 Puget Sound Energy, Inc.'s Petition for Declaratory Order of King County et al. Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 019

WUTC STAFF DATA REQUEST NO. 019:

Safety, Reliability, and Technical Issues

Please provide all documents related to loss of service and the actions taken by PSE to repair the Maloney Ridge Line or to restore service to the Maloney Ridge customers since 1971.1

Response:

Attached as Attachment A to Puget Sound Energy, Inc.'s ("PSE") Response to WUTC Staff Data Request No. 019, please find an MS Excel spreadsheet, which provides dates of loss of service and duration times to repair and restore service related to loss of service of the Maloney Ridge Line.

PSE's current loss of service records for the Maloney Ridge Line only go back to 1990.

¹ Petition ¶27.

ATTACHMENT A to PSE's Response to WUTC STAFF Data Request No. 019

Cable # Fo	otage	Date	Year	I <i>-</i> #	WO#	Notification	Duration (hrs)	Root Cause
33550		9/27/2007		9152	594055313	E883340110	13.13	Cable Failure
	ľ	1/14/2008		9191	594057446	E054047094	35.18	Cable Failure
Size	1000	8/4/2008		4594			14.55	Cable Failure
		4/8/2013		2869	594090959	P00003129-1	19.47	Cable Failure
	ľ	8/27/2013		31804		P00031804-1	10.8	Cable Failure
	t	9/14/2013		36130		P00036130-1	6.37	Cable Failure
	ľ							
		······································						
38338	Γ	6/20/1995	1995					Cable Failure
	ľ	2/15/2002	2002	8942	594013034	E327643417	9.12	Cable Failure
Size	4500	10/12/2006	2006	5846	594048049	E105618402	21.97	Cable Failure
	Ī	10/21/2009	2009	9462	101060241	10908220	28.72	Cable Failure
	Ī							
	-							
33549	ſ	7/24/1993						Cable Failure
	I	7/28/2003		1055		E445018896		Cable Failure
Size	4752	9/30/2005		4728		E201640805		Cable Failure
		8/8/2006		1806		E487493112	·	Cable Failure
		1/20/2007		1901		E239233983		Cable Failure
		8/28/2007		7322		E339018017		Cable Failure
			2007	1183	594055459		1	Cable Failure
		10/20/2008		2971		E664355948		Cable Failure
		9/5/2009		5331		E791665731	1	Cable Failure
		7/2/2010		6143		E334511677		Cable Elbow
		9/30/2010		4504		E236070487		Cable Failure
		2/24/2011		9816		E423593012	I	Cable Failure
		7/25/2012		5107		E443592875		Cable Failure
		8/8/2012		6066		E099526743		Cable Failure Cable Failure
		8/18/2012		6691 6751		E547486631 E276527234		Cable Failure
		8/19/2012 9/21/2012		8594		E118739457		Cable Failure
		10/14/2013		46905		P00046905-1		Cable Failure
		10/14/2013	2013	40900	394093334	1 00040303-1	3.41	Cable Fallate
						I		
33548		9/5/1991	1001				T	Cable Failure
33340		6/27/1997						Cable Failure
Size	5300			3610	594011277	10445839	13.23	Cable Failure
a	0000	10/25/2003		7042		E938815040		Cable Failure
		8/11/2003		1852		E698248748		Cable Failure
		7/10/2004		4013		E441211763	49.58	Cable Failure
		7/27/2004		5067		E632482856	10.12	Cable Failure
		8/20/2004		6626	594031201	E467705346	10.37	Cable Failure
		10/4/2005	2005	5000	594040402	E302804379	11.65	Cable Failure
		7/14/2007		4068	594053520	E895934706	14.45	Cable Failure
		6/8/2009		6223		E010938074		Cable Failure
		7/20/2010	2010	7591		E410151121		Cable Failure
		8/10/2010	2010	9344		E669459896		Cable Failure
		9/21/2010	2010	3787		E099084679		Cable Failure
		7/11/2011		9892		E442860128		Cable Failure
		2/23/2012		4282		E266192939		Cable Failure
		7/24/2012	2012	5047	594087613	E814758599	14.73	Cable Failure

Cable #	Footage	Date	Year	l <i>-</i> #	WO#	Notification	Duration (hrs)	Root Cause
		8/17/2012	2012	6656	594088044	E864902240	11.22	Cable Failure
		9/20/2012	2012	8543	594088640	E622403730	12.67	Cable Failure
		10/7/2012	2012	9414	594088844	E381498539	11.43	Cable Failure
		7/21/2013	2013	24580	594092215	P00024580-1	16.77	Cable Failure
		8/17/2013	2013	29773	594092632	P00029773-1		Cable Failure
		8/21/2013	2013	30521	594092695	P00030521-1		Cable Failure
		11/15/2013	2013	59223		P00059223-1	29.30	Cable Failure
		4/24/2014	2014	90439	594095875	P00090439-1	8.85	Cable Failure
		7/3/2014	2014	100772	594096952	P00100772-1	14.75	Cable Failure

33547 Size

6336

8/11/2001	2001	2505	594011061			Cable Failure
9/14/2001	2001	4584				Cable Failure
8/29/2002	2002	1147	594016085	E497448316		Cable Failure
6/14/2003	2003	7365	594021945	E881654699	5.82	Cable Failure
9/21/2003	2003	4268	594024255	E896936584	17.27	Cable Failure
12/7/2003	2003		storm order	E596780038		Cable Failure
7/12/2004	2004	4202	594030201	E667464810		Cable Failure
6/30/2005	2005	7392	594038058	E863774093	11.67	Cable Failure
10/2/2005	2005	4807	594040418	E431567957		Cable Failure
9/10/2006	2006	3968	594047323	E558847633		Cable Failure
7/29/2007	2007	5233	594053841	E537773141		Cable Failure
7/31/2007	2007	5402	594053930	E769730031		Cable Failure
		4460				Cable Failure
		5390				Cable Failure
6/20/2009	2009	7349				Cable Failure
8/6/2009	2009	2807	594067897	E038295589		Cable Failure
7/31/2010	2010	8486				Cable Failure
9/26/2010	2010	4240				Cable Failure
10/7/2010	2010	4897				Cable Failure
10/10/2010	2010					Cable Failure
5/11/2011	2011	6004	594079682	E597428293		Cable Failure
5/27/2011	2011	7050				Cable Failure
7/3/2011	2011	9380				Cable Failure
10/3/2011	2011	7188				Cable Failure
10/18/2011	2011	8211				Cable Failure
11/4/2011	2011	9378				Cable Failure
						Cable Failure
7/31/2012	2012	5429				Cable Failure
	1					Cable Failure
						Cable Failure
8/4/2013	2013					Cable Failure
				1		Cable Failure
					1	Cable Failure
9/20/2013	2013					Cable Failure
11/14/2013	2013				<u> </u>	Cable Failure
11/19/2013	2013	59833			1	Cable Failure
						Cable Failure
7/20/2014	2014	103284			I	Cable Failure
7/23/2014	2014	103848	594097262	P00103848-1	10.67	Cable Failure
	9/14/2001 8/29/2002 6/14/2003 9/21/2003 12/7/2003 7/12/2004 6/30/2005 10/2/2005 9/10/2006 7/29/2007 7/31/2007 11/6/2008 11/14/2008 6/20/2009 8/6/2009 7/31/2010 10/7/2010 10/7/2010 10/10/2010 5/11/2011 5/27/2011 7/3/2011 10/18/2011 10/18/2011 11/4/2011 7/19/2012 8/20/2012 8/24/2012 8/24/2013 8/19/2013 11/14/2013 11/19/2013 9/20/2014 6/18/2014 7/20/2014	9/14/2001 2001 8/29/2002 2002 6/14/2003 2003 9/21/2003 2003 12/7/2004 2004 6/30/2005 2005 10/2/2005 2005 9/10/2006 2006 7/29/2007 2007 11/6/2008 2008 11/14/2008 2008 6/20/2009 2009 8/6/2009 2009 7/31/2010 2010 9/26/2010 2010 10/17/2010 2010 5/11/2011 2011 5/27/2011 2011 7/3/2011 2011 10/3/2011 2011 10/18/2011 2011 10/19/2012 2012 8/20/2012 2012 8/24/2012 2012 8/4/2013 2013 9/10/2013 2013 9/10/2013 2013 11/14/2013 2013 6/18/2014 2014 7/20/2014 2014 </td <td>9/14/2001 2001 4584 8/29/2002 2002 1147 6/14/2003 2003 7365 9/21/2003 2003 4268 12/7/2004 2004 4202 6/30/2005 2005 7392 10/2/2005 2005 7392 10/2/2005 2005 4807 9/10/2006 2006 3968 7/29/2007 2007 5233 7/31/2007 2007 5402 11/6/2008 2008 4460 11/14/2008 2008 5390 6/20/2009 2009 7349 8/6/2009 2009 7349 8/6/2009 2009 7349 8/6/2010 2010 8486 9/26/2010 2010 4240 10/7/2010 2010 4897 10/10/2010 2010 4897 10/10/2011 2010 5125 5/11/2011 2011 7050 7/3/2011 2011</td> <td>9/14/2001 2001 4584 594011515 8/29/2002 2002 1147 594016085 6/14/2003 2003 7365 594021945 9/21/2003 2003 4268 594024255 12/7/2004 2004 4202 594030201 6/30/2005 2005 7392 594038058 10/2/2005 2005 4807 594040418 9/10/2006 2006 3968 594047323 7/29/2007 2007 5233 594053930 11/6/2008 2008 4460 594063133 11/14/2008 2008 5390 594063296 6/20/2009 2009 7349 594066908 8/6/2009 2009 7349 594066908 8/6/2009 2009 7349 594067897 7/31/2010 2010 8486 594074425 9/26/2010 2010 4897 594075832 10/10/2010 2010 4897 594075857 5/11/2011 2011<td>9/14/2001 2001 4584 594011515 E926118688 8/29/2002 2002 1147 594016085 E497448316 6/14/2003 2003 7365 594021945 E881654699 9/21/2003 2003 4268 594024255 E896936584 12/7/2004 2004 4202 594030201 E667464810 6/30/2005 2005 7392 594030201 E667464810 6/30/2005 2005 7392 594030201 E667464810 6/30/2005 2005 4807 594040418 E431567957 9/10/2006 2006 3968 594047323 E558847633 7/29/2007 2007 5233 594053930 E769730031 11/6/2008 2008 4460 594063133 E503277808 11/14/2008 2008 5390 594066908 E642321030 8/6/2009 2009 7349 594066908 E642321030 8/6/2010 2010 4846 594074425 E237521346</td><td>9/14/2001 2001 4584 594011515 E926118688 11.55 8/29/2002 2002 1147 594016085 E497448316 17.92 6/14/2003 2003 7365 594021945 E881654699 5.82 9/21/2003 2003 4268 594024255 E896936584 17.27 12/7/2003 2003 storm order E596780038 7/12/2004 2004 4202 594030201 E667464810 21.80 6/30/2005 2005 7392 59403058 E863774093 11.67 10/2/2005 2005 4807 594040418 E431567957 13.88 9/10/2006 2006 3968 594047323 E558847633 32.48 7/29/2007 2007 5233 594053841 E537773141 34.17 7/31/2007 2007 5402 594053930 E769730031 12.90 11/6/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2009 7349 594066908 E642321030 9.38 8/6/2009 2009 2807 594067897 E038295589 15.27 7/31/2010 2010 8486 594074425 E237521346 10.38 9/26/2010 2010 4240 594075613 E360004566 8.60 10/7/2010 2010 42897 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E974228459 13.30 5/11/2011 2011 7050 594080705 E724228459 13.30 5/11/2011 2011 9338 594082703 E779007817 7.12 11/4/2011 2011 9338 594080725 E224625034 11.67 7/31/2011 2011 9338 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E03829569 11.65 7/31/2011 2011 9378 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E189487045 12.58 7/31/2012 2012 5429 59408778 E189487045 12.58 7/31/2013 2013 35327 594083076 E764496700 8.53 7/19/2012 2012 6819 594088137 E018522829 10.50 8/24/2012 2012 7042 594088137 E018522829 10.50 8/24/2013 2013 35327 594093025 P00035327-1 13.68 9/20/2013 2013 35327 594093026 P00037526-1 13.68 9/20/2013 2013 35876 594093036 P00039829-1 6.5 9/10/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2014 2014 98299 594093037 P00058726-1 13.68</td></td>	9/14/2001 2001 4584 8/29/2002 2002 1147 6/14/2003 2003 7365 9/21/2003 2003 4268 12/7/2004 2004 4202 6/30/2005 2005 7392 10/2/2005 2005 7392 10/2/2005 2005 4807 9/10/2006 2006 3968 7/29/2007 2007 5233 7/31/2007 2007 5402 11/6/2008 2008 4460 11/14/2008 2008 5390 6/20/2009 2009 7349 8/6/2009 2009 7349 8/6/2009 2009 7349 8/6/2010 2010 8486 9/26/2010 2010 4240 10/7/2010 2010 4897 10/10/2010 2010 4897 10/10/2011 2010 5125 5/11/2011 2011 7050 7/3/2011 2011	9/14/2001 2001 4584 594011515 8/29/2002 2002 1147 594016085 6/14/2003 2003 7365 594021945 9/21/2003 2003 4268 594024255 12/7/2004 2004 4202 594030201 6/30/2005 2005 7392 594038058 10/2/2005 2005 4807 594040418 9/10/2006 2006 3968 594047323 7/29/2007 2007 5233 594053930 11/6/2008 2008 4460 594063133 11/14/2008 2008 5390 594063296 6/20/2009 2009 7349 594066908 8/6/2009 2009 7349 594066908 8/6/2009 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7392 59403058 E863774093 11.67 10/2/2005 2005 4807 594040418 E431567957 13.88 9/10/2006 2006 3968 594047323 E558847633 32.48 7/29/2007 2007 5233 594053841 E537773141 34.17 7/31/2007 2007 5402 594053930 E769730031 12.90 11/6/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2009 7349 594066908 E642321030 9.38 8/6/2009 2009 2807 594067897 E038295589 15.27 7/31/2010 2010 8486 594074425 E237521346 10.38 9/26/2010 2010 4240 594075613 E360004566 8.60 10/7/2010 2010 42897 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E974228459 13.30 5/11/2011 2011 7050 594080705 E724228459 13.30 5/11/2011 2011 9338 594082703 E779007817 7.12 11/4/2011 2011 9338 594080725 E224625034 11.67 7/31/2011 2011 9338 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E03829569 11.65 7/31/2011 2011 9378 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E189487045 12.58 7/31/2012 2012 5429 59408778 E189487045 12.58 7/31/2013 2013 35327 594083076 E764496700 8.53 7/19/2012 2012 6819 594088137 E018522829 10.50 8/24/2012 2012 7042 594088137 E018522829 10.50 8/24/2013 2013 35327 594093025 P00035327-1 13.68 9/20/2013 2013 35327 594093026 P00037526-1 13.68 9/20/2013 2013 35876 594093036 P00039829-1 6.5 9/10/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2014 2014 98299 594093037 P00058726-1 13.68</td>	9/14/2001 2001 4584 594011515 E926118688 8/29/2002 2002 1147 594016085 E497448316 6/14/2003 2003 7365 594021945 E881654699 9/21/2003 2003 4268 594024255 E896936584 12/7/2004 2004 4202 594030201 E667464810 6/30/2005 2005 7392 594030201 E667464810 6/30/2005 2005 7392 594030201 E667464810 6/30/2005 2005 4807 594040418 E431567957 9/10/2006 2006 3968 594047323 E558847633 7/29/2007 2007 5233 594053930 E769730031 11/6/2008 2008 4460 594063133 E503277808 11/14/2008 2008 5390 594066908 E642321030 8/6/2009 2009 7349 594066908 E642321030 8/6/2010 2010 4846 594074425 E237521346	9/14/2001 2001 4584 594011515 E926118688 11.55 8/29/2002 2002 1147 594016085 E497448316 17.92 6/14/2003 2003 7365 594021945 E881654699 5.82 9/21/2003 2003 4268 594024255 E896936584 17.27 12/7/2003 2003 storm order E596780038 7/12/2004 2004 4202 594030201 E667464810 21.80 6/30/2005 2005 7392 59403058 E863774093 11.67 10/2/2005 2005 4807 594040418 E431567957 13.88 9/10/2006 2006 3968 594047323 E558847633 32.48 7/29/2007 2007 5233 594053841 E537773141 34.17 7/31/2007 2007 5402 594053930 E769730031 12.90 11/6/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2008 4460 594063133 E503277808 21.90 11/14/2008 2009 7349 594066908 E642321030 9.38 8/6/2009 2009 2807 594067897 E038295589 15.27 7/31/2010 2010 8486 594074425 E237521346 10.38 9/26/2010 2010 4240 594075613 E360004566 8.60 10/7/2010 2010 42897 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E411980496 14.00 10/10/2010 2010 5125 594075832 E974228459 13.30 5/11/2011 2011 7050 594080705 E724228459 13.30 5/11/2011 2011 9338 594082703 E779007817 7.12 11/4/2011 2011 9338 594080725 E224625034 11.67 7/31/2011 2011 9338 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E03829569 11.65 7/31/2011 2011 9378 594083076 E764496700 8.53 7/19/2012 2012 4620 59408778 E189487045 12.58 7/31/2012 2012 5429 59408778 E189487045 12.58 7/31/2013 2013 35327 594083076 E764496700 8.53 7/19/2012 2012 6819 594088137 E018522829 10.50 8/24/2012 2012 7042 594088137 E018522829 10.50 8/24/2013 2013 35327 594093025 P00035327-1 13.68 9/20/2013 2013 35327 594093026 P00037526-1 13.68 9/20/2013 2013 35876 594093036 P00039829-1 6.5 9/10/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2013 2013 59833 594094087 P00058736-1 13.68 11/19/2014 2014 98299 594093037 P00058726-1 13.68

Cable #	Footage	Date	Year	I-#	WO#	Notification	Duration (hrs)	Root Cause
Oabic #	1 ootage			104424		P00104424-1		Cable Failure
				112950		P00112950-1		Cable Failure
		3/11/2014	2014	112000	00 1000 1			
	ı							
33546	51 I	7/11/1998	1998					Cable Failure
55540	[7/13/1998						Cable Failure
Size	5800		2001	2971	594011168	E641421104	13.1	Cable Failure
U.Z.	1 0000		2001	4457		E974987952	14.58	Cable Failure
			2001	5504		E148358063	17.12	Cable Failure
		8/16/2002		9457		E945038331	11.63	Cable Failure
		6/12/2003		7287		E484742230	24.25	Cable Failure
		10/6/2003		5059		E890267978	11.45	Cable Failure
		7/12/2006		8789		E417915767	10.67	Cable Failure
		7/1/2008		2026		E404026075	14.8	Cable Failure
		7/23/2009		1330	594067674		9.38	Cable Failure
		8/11/2009		3288		E069506421	10.68	Cable Failure
		8/20/2009		4155		E498331002	10.13	Cable Failure
		8/26/2009		4533	594068626		6.15	Cable Failure
		2/21/2010		4049		E959731613	12.13	Cable Failure
		2/28/2010	4	4535		E923899550	19.23	Cable Failure
		3/1/2010		4618		E029789339	12.4	Cable Failure
		7/22/2010	1	7842		E395167498	10.6	Cable Failure
		9/2/2010		2393	594075168	10968990	8.33	Cable Failure
		9/11/2010		2995		E356723930	9.77	Cable Failure
		10/18/2010		5665		E250007869	12.43	Cable Failure
		3/8/2011		1935		E480347739	35.85	Cable Failure
		7/5/2011		9467	594080723	E082518312	8.35	Cable Failure
		7/16/2011		1331	594080906	E569874898	12.9	Cable Failure
		11/13/2011				E019070336	11.28	Cable Failure
		3/20/2012	·	l		E364472896	12.46	Cable Elbow
		7/16/2012			594087431	E355308389	18.63	Cable Failure
		8/18/2012			594088086	E547486631	17.4	Cable Failure
		7/20/2013			594092206	P00024473-1	14.62	Cable Failure
		8/3/2013			594092427	P00027199-1	8.2	Cable Failure
		9/28/2013	2013	38766	593139463	P00038766-1	37.32	Cable Failure
		7/25/2014				P00104077-1	10.72	Cable Failure
			-1					
3339	0	5/1/1996	1996					Cable Failure
0000	-	3/23/2000				1040746	1 2.3	Cable Failure
Siz	e 2112					10414859	9	Cable Failure
		1/30/2004			594026866	E107623222	10.8	Cable Failure
		.,,						
				A				
804	6	1/24/2002	2002	7974	594012830	E988905385	14.43	Cable Failure
004	Ĭ	7/15/2009					9 13.47	Cable Failure
Siz	e 1584				1	E355308389		Junction Box
012	٠٠٠٠						1	
		L	<u>.l</u>				-1	<u> </u>
3354	Al .	7/27/1996	1006					Cable Failure

Cable #	Footage	Date	Year	I <i>-</i> #	WO#	Notification	Duration (hrs)	
		6/11/2003	2003	7235	594021913	E057028094		Cable Failure
Size	6336	7/9/2008	2008	2708	594060612	E303449303		Cable Failure
<u> </u>	4	5/16/2012	2012	9439	594086245	E844793340	I	Cable Failure
		10/11/2012	2012	9642	594088897	E487111862	1	Cable Failure
		7/28/2013	2013	25969	594092280	P00025969-1		Cable Failure
		9/16/2013	2013	36423	594093087	P00036423-1	10.5	Cable Failure
		7/22/2014	2014			P00103540-1		Cable Failure
		9/18/2014	2014	113140	594098183	P00113140-1	10.9	Cable Failure
	:							

33545 Size

ı	7/30/1990	1990					Cable Failure	
	4/6/2005	2005	1990	594036041	E474284572	20.9	Cable Failure	
5808				594069305	E485013419	12.18	Cable Failure	
	2/27/2010	2010	4535	594071804	E923899550	19.24	Cable Elbow	
	7/2/2011			594080699	E208511664	14.43	Cable Failure	
	9/19/2013	2013	36946	594093177	P00036946-1	6.67	Cable Failure	

0

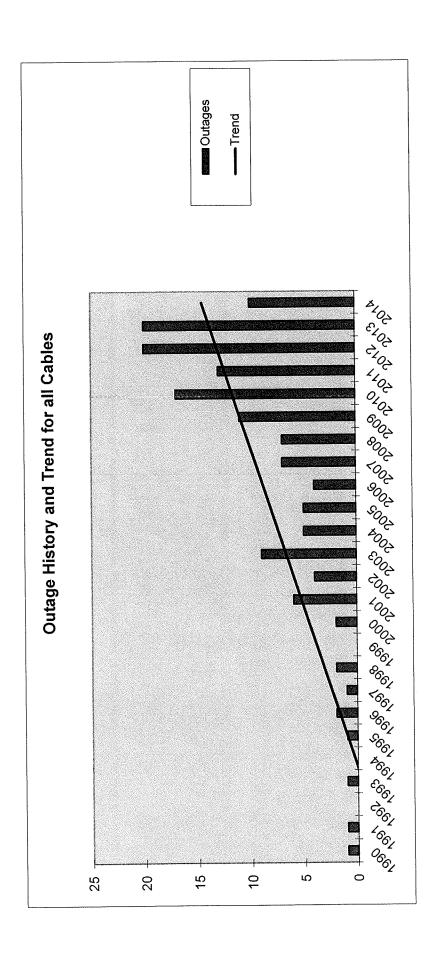
Total Footage 43528
Total footage of

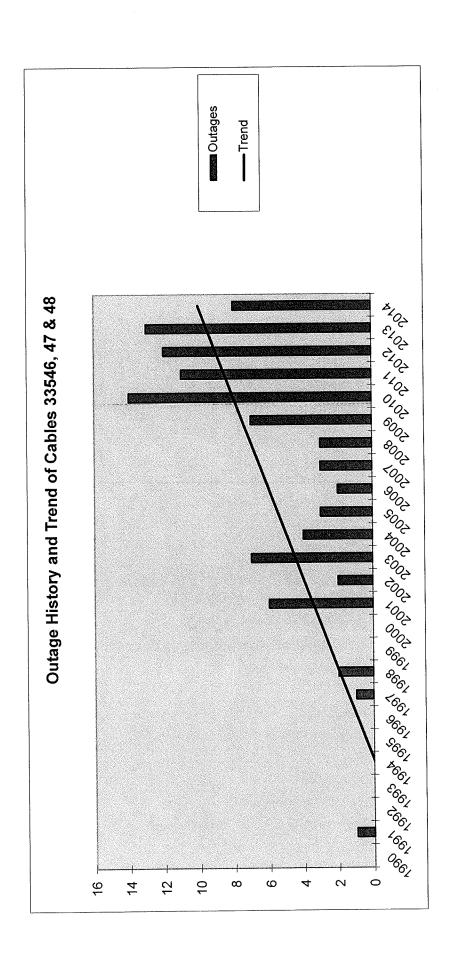
worst cables

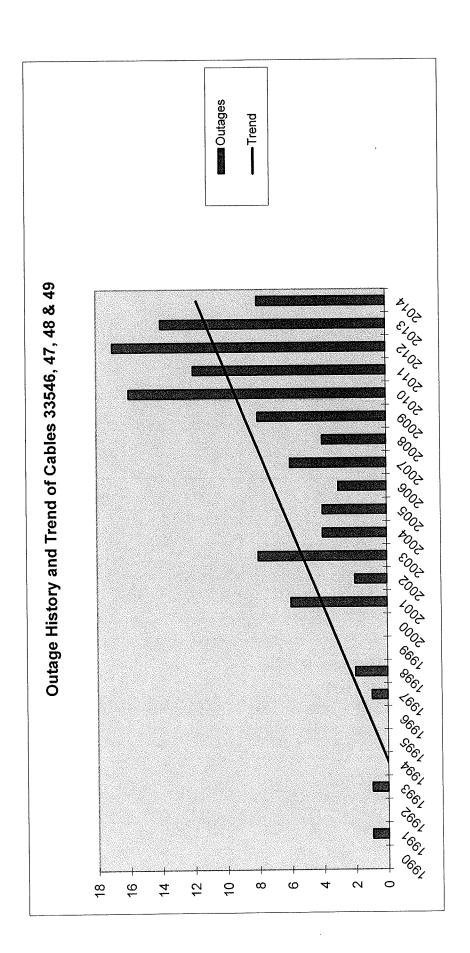
(33546, 47, 48) 17436

'al Outages

149







Outage histo	ry for all cables
	Outages by
Year	year
1990	1
1991	1
1992	0 1 0
1993	1
1994	0
1995	
1996	2 1 2 0 2 6 4 9 5
1997	1
1998	2
1999	0
2000	2
2001	6
2002	4
2003	9
2004	5
2005	5
2006	4 7
2007	
2008	7
2009	
2010	
2011	13
2012	
2013	
2014	10
Total	149

Outage history for cables 33546, 47, & 48		
	Outages by	
Year	year	
1990	0	
1991	1	
1992	0	
1993	0	
1994	0	
1995	0	
1996	0	
1997	1	
1998	2	
1999	0	
2000	0	
2001	6	
2002	2	
2003	7	
2004	4	
2005	3	
2006	2	
2007	3	
2008		
2009		
2010		
2011		
2012		
2013		
2014		
Total	99	

	ory for cables 7, 48, & 49
Year	Outages by year
1990	
1990	0
1991	0
1993	1
1994	1 0
1995	Ö
1996	0
1997	0 1
1998	2
1999	2 0
2000	0
2001	6
2002	2
2003	2 8
2004	4
2005	4
2006	3
2007	6
2008	4
2009	8
2010	16
2011	12
2012	
2013	
2014	
Total	117

Cable #	Lengths	(ft)1
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8046	1584
33390	2112
33544	6336
33545	5808
33546	5800
33547	6336
33548	5300
33549	4752
33550	1000
38338	4500 ²
Total	43528

Footages are approximate
 Route of cable not along road but direct feed through trees. Footage taken from Google maps based on distance of approximate location of junction box and transformer.

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Puget Sound Energy, Inc.'s
Petition for Declaratory Order of King County et al.
Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 021

WUTC STAFF DATA REQUEST NO. 021:

Safety, Reliability, and Technical Issues

What kind of cable and casing is installed underground on the Maloney Ridge Line? Who was the manufacturer? Is there a more reliable type of power line available now?

Response:

The underground cable at the Maloney Ridge Line is a #1/0 stranded conductor with 175 mils of High Molecular Weight Polyethylene ("HMWPE") insulation and jacketed concentric neutral. The underground cable is not installed in casing or conduit. The cable that PSE now installs is a slightly different design due to advancements in cable technology over the last forty years. It features a different insulation compound and is considered more reliable. It is #1/0 solid conductor 175 mils of Tree Resistant Extra Long Polyethylene ("TR-XLPE") insulation and jacketed concentric neutral installed in conduit.

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Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 023

WUTC STAFF DATA REQUEST NO. 023:

Safety, Reliability, and Technical Issues

How does the reliability and performance of the Maloney Ridge Line's cable and casings compare with currently available underground cables and casings used for similar underground distribution system applications?

a. In your response, please provide a brief description of modern underground cables and casings, how they differ from the Maloney Ridge Line, and the average expected service life of modern underground installations today.

Response:

Puget Sound Energy, Inc. ("PSE") currently installs #1/0 solid conductor Tree Resistant Extra Long Polyethylene ("TR-XLPE") insulated cable with jacketed concentric neutral in conduit. This material and design performs very well with very few failures. The installations since the change to conduit in 1992 represent less than 3% of the system failures. The main differences from the Maloney Ridge Line is the type of insulation, solid versus stranded conductor, jacketed concentric neutral, and use of conduit. It is difficult to predict the expected service life of modern underground installations; however industry expectation is 2 to 2.5 times the original High Molecular Weight Polyethylene ("HMWPE") cable life.

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Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 024

WUTC STAFF DATA REQUEST NO. 024:

Safety, Reliability, and Technical Issues

Can the life of the Maloney Ridge Line be extended by cable injection(s)?

- a. If so, please provide a detailed explanation of any technical challenges associated with cable injection(s) on the Maloney Ridge Line and the likelihood of success?
- b. Can the cost-effectiveness of such a project be estimated for this line in its current condition?

Response:

- Provided that a cable meets important criteria, cable Injection is a method of a. rejuvenating the cable. Current estimates of life extension are 20 to 30 years. There are several technical issues at the Maloney Ridge Line, however, that make cable injection difficult. The major technical difficulties are the lengths of the cables, the number of splices, the elevation gain, and neutral corrosion. The cable sections exceed a mile in length in some locations, which makes it more difficult to inject fluid through that length of cable. The number of splices on the lines from previous failures also makes injection difficult because the older no flow splices would have to be dug up and replaced with splices that allow fluid flow. The elevation gain further provides technical difficulty because it makes it difficult to manage the fluid pressure and could damage fittings. The last technical difficulty is the possibility of neutral corrosion on the line, though none has been noted to date. The concentric neutral is necessary to provide a safe return for the current back to the substation. If there are locations of neutral corrosion this could lead to hot spots and continued failures even after injection.
- b. It would be difficult to estimate the cost effectiveness for this project due to the technical hurdles discussed above.

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Puget Sound Energy, Inc.'s
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Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 035

WUTC STAFF DATA REQUEST NO. 035:

Safety, Reliability, and Technical Issues

Please provide the usual safety, reliability, cost-effectiveness, and other criteria and methods that PSE would use to determine the need for and timing of replacement of distribution lines for this tariff class?

Response:

Puget Sound Energy, Inc. ("PSE") would use the same criteria and methods as described in PSE's Response to WUTC Staff Data Request No. 036 for this tariff class. The difference in this case is due to the atypical service agreement that stipulates the customers pay for the operation and maintenance on this line. In other arrangements where the replacement would have an impact in the customer costs, such as leased facilities, we would meet with the customer to explain the issues and only replace with their agreement.

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Puget Sound Energy, Inc.'s
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Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 036

WUTC STAFF DATA REQUEST NO. 036:

Safety, Reliability, and Technical Issues

Please provide the usual safety, reliability, cost-effectiveness and other criteria and methods that PSE would use to determine the need and timing of replacement of distribution feeder lines, for all parts of PSE's distribution system.

Response:

There are two paths that would lead to replacement of the distribution lines. The first path would be through the Cable Remediation Program. Puget Sound Energy, Inc. ("PSE") reviews every underground outage and scopes a replacement project whenever a cable has a second outage or when there is a third failure within the cable system. The project is added to a master list of possible cable projects. The cable projects are prioritized using criteria such as number and length of outages, customers impacted, cost to replace and proposed in the annual capital budget process. The second path is used infrequently and that would be unplanned replacement due to either a safety issue (for example lack of a solid neutral) or escalating failures that make the replacement financially justified.

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Puget Sound Energy, Inc.'s
Petition for Declaratory Order of King County et al.
Regarding Maloney Ridge Line

WUTC STAFF DATA REQUEST NO. 037

WUTC STAFF DATA REQUEST NO. 037:

Safety, Reliability, and Technical Issues

Does PSE have any adopted policy or criteria or methods that would apply differently to the maintenance and replacement of the Maloney Ridge Line, as compared with the usual PSE distribution line replacement criteria? Please provide documentation of any such differences and rationale for the same.

Response:

Puget Sound Energy, Inc. ("PSE") has not adopted any new policy or criteria or methods that would apply differently to the maintenance and replacement of the Maloney Ridge Line, as compared with the usual PSE distribution line replacement criteria. Due to the remoteness and topography of the Maloney Ridge Line cable, PSE does not respond to outages that occur at night during the winter until the next morning for safety reasons. The difference is that due to the economic feasibility, remote location, and small load PSE bills the customers directly for all maintenance and repair costs of the cable under the existing contractual agreement.