MSHDA Set Back Requirements for Buried High-Pressure Gas Lines.

The tables listed below are to be used for determining minimal set back distance in feet from a buried high-pressure gas transmission line to a building footprint. These set back distances were derived from full-scale field studies conducted by BG Technology's Gas Research and Technology Centre. This research modeled and validated the effects of thermal radiation from high-pressure gas pipeline ruptures over a wide range of pipe diameters and operating pressures.

Thermal flux limits for building structures and outdoor areas of congregation were chosen to coincide with HUD's Thermal Radiation Safety protocols, and are applicable only for below grade high-pressure gas utilities. High-pressure gas transmission lines are defined to be pipelines 4 inches in diameter or larger and operating at 400 psi or above. These high-pressure set back distances do not substitute for calculating the Acceptable Separation Distances (ASD) when required for HUD assisted projects (see HUD's document: "Siting of HUD-Assisted Projects Near Hazardous Facilities").

Proposed MSHDA developments must meet all the appropriate requirements set forth in the attached tables. Building structures must meet the requirements for both building set back requirements (Table A or B) and the primary egress (Table D) set back requirements.

Multifamily structures must comply with set backs listed in "Table A". These standards provide for a maximum allowable thermal flux (heat) of 10,000 btu/sf/hr. The 10,000 btu/sf/hr limit provides for an evacuation and emergency response time of 15 to 20 minutes. At the intensity of 10,000 btu/sf/hr the structure may ignite after a 15-minute exposure. **Set backs for rural developments or sites served by volunteer fire departments that can not respond to the site within 15 minutes are found in Table B.**

Table A does not account for structures with primary egress facing a buried high-pressure gas line. Buildings with primary egress facing a buried high-pressure gas line must use **Table D** for determining the set back distance.

Elderly and Handicapped units must comply with set backs listed in "Table B". The increased setbacks were chosen to accommodate the needs of elderly and handicapped individuals who may have difficultly exiting the building with in the time frame of 15 to 20 minutes. Primary egress from the structure may be on the same side as the buried high-pressure pipeline, provided it also meets the setback requirements in Table D.

Unshielded areas of congregation (tot lots, play grounds, etc.) must meet the set back requirements listed in "Table C". The 450 btu/sf/hr limit was chosen to limit the effect of the thermal radiation to be comparable to "bad sunburn". Areas designated for set back may be utilized for other purposes such as parking, or retention ponds.

Primary egress set back requirement is listed in "Table D". All primary egress points for proposed structures must also comply with the set back requirements noted in "Table D".

Table A: Minimal Setback (ft) Required for Buried High Pressure Gas Lines for Multi Family Developments

Operating Pressure, psi	Pipe Diameter, Inches											
	4	6	8	10	12	14	16	18	20	22	24	26
400	40	47	62	76	93	106	118	135	145	164	173	182
500	40	52	69	83	103	114	132	145	161	176	191	202
600	40	57	75	90	111	122	143	155	174	188	205	219
700	40	60	80	95	117	129	152	163	185	198	217	233
800	41	64	85	100	123	136	160	172	195	207	228	245
900	43	67	89	104	128	142	167	179	203	216	237	256
1000	46	70	92	109	133	148	173	187	211	226	245	265
1100	48	72	95	112	137	152	179	192	218	231	253	274
1200	49	75	98	116	141	156	184	197	224	237	260	282
1300	51	77	101	120	144	162	189	204	230	247	266	289
1400	53	80	103	124	148	168	193	212	235	256	272	296
1500	54	81	105	126	151	171	197	216	240	261	278	302
1600	55	83	107	129	154	174	201	220	244	266	283	308
1700	57	86	109	132	156	179	205	225	249	272	287	313
1800	58	88	111	136	159	183	208	231	253	278	292	318

Table B: Minimal Setback (ft) Required for Buried High Pressure Gas Lines for Elderly and Handicapped Units

Operating Pressure, psi	Pipe Diameter, Inches											
	4	6	8	10	12	14	16	18	20	22	24	26
400	67	116	145	189	223	263	295	336	361	409	419	446
500	76	126	164	203	247	280	325	357	397	434	463	495
600	84	135	178	216	268	297	349	379	427	460	499	534
700	91	144	191	229	284	313	370	397	452	482	530	568
800	97	153	202	241	299	328	388	416	473	504	556	596
900	102	160	211	251	312	341	404	432	492	523	579	622
1000	107	167	220	261	324	354	418	448	509	542	600	645
1100	111	173	228	270	334	366	431	463	525	560	619	665
1200	115	179	235	279	344	379	443	479	539	579	636	684
1300	118	184	241	287	352	390	454	494	552	597	652	701
1400	122	189	247	296	361	402	464	508	564	615	667	717
1500	125	194	253	304	368	414	473	524	575	634	681	732
1600	127	199	258	313	375	427	482	540	586	654	693	746
1700	130	203	263	319	382	436	490	553	595	669	705	759
1800	133	206	268	326	388	445	497	565	605	685	717	772

Table C: Minimal Setback (ft) Required for Buried High Pressure Gas Lines for Unprotected Areas of Congregation

Operating Pressure, psi	Pipe Diameter, Inches											
	4	6	8	10	12	14	16	18	20	22	24	26
400	147	245	385	485	628	725	879	965	1141	1205	1404	1540
500	160	279	415	545	676	810	946	1076	1228	1341	1511	1656
600	173	313	445	604	724	895	1013	1186	1315	1478	1618	1772
700	186	333	475	646	772	959	1080	1272	1402	1585	1725	1888
800	199	353	505	688	820	1023	1147	1358	1489	1692	1832	2004
900	212	375	535	730	868	1085	1214	1440	1576	1795	1939	2120
1000	225	396	565	771	916	1146	1281	1521	1663	1897	2046	2236
1100	238	417	595	811	964	1204	1348	1597	1750	1991	2153	2352
1200	251	438	625	850	1012	1262	1415	1673	1837	2085	2260	2468
1300	264	458	655	887	1060	1315	1482	1744	1924	2172	2367	2584
1400	277	477	685	923	1108	1369	1549	1814	2011	2260	2474	2700
1500	290	494	715	956	1156	1418	1616	1879	2098	2341	2581	2816
1600	303	511	745	989	1204	1467	1683	1944	2185	2422	2688	2932
1700	316	574	775	1066	1252	1558	1750	2050	2272	2543	2795	3048
1800	329	636	805	1143	1300	1650	1817	2157	2359	2663	2902	3164

Table D: Minimal Setback (ft) Required for Buried High Pressure Gas Lines for Primary Egress

Operating Pressure, psi	Pipe Diameter, Inches										
	4	6	8	10	12	14	16	18	20	24	26
400	40	63	87	130	183	211	271	308	374	519	585
500	41	71	97	148	201	240	301	350	419	575	649
600	43	78	107	165	219	268	332	392	464	631	714
700	46	83	117	179	237	293	362	428	509	687	779
800	48	88	127	193	255	318	393	464	554	742	843
900	51	97	137	214	272	352	423	514	599	798	908
1000	53	106	147	235	290	386	454	564	644	854	972
1100	55	113	157	243	308	399	484	583	688	910	1037
1200	58	120	167	252	326	411	515	602	733	966	1102
1300	60	123	177	269	344	442	545	648	778	1021	1166
1400	63	126	187	286	361	474	576	693	823	1077	1231
1500	65	131	197	298	379	492	606	719	868	1133	1295
1600	67	135	207	309	397	511	637	746	913	1189	1360
1700	70	142	217	324	415	538	667	787	958	1245	1425
1800	72	148	227	340	433	565	698	827	1003	1300	1489