Before Pneumatic Controller Replacement												
2012 Non-Tribal Estimates	**VOCs** (tons/year)						[a]**Methane** (cf/yr)					
Description	Duchesne	Uintah	Carbon	Emery	Grand	Five Counties	Duchesne	Uintah	Carbon	Emery	Grand	Five Counties
Pneumatic devices	3,029	332	408	197	1,106	5,072	530,680,800	58,166,400	71,481,600	34,514,400	193,771,200	888,614,400

[a]Calculated based on Colorado's VOC molar fraction.

After Pneumatic Controller Replacement												
2012 Non-Tribal Reduced Estimates	**VOCs** (tons/year)						[a]**Methane** (cf/yr)					
Description	Duchesne	Uintah	Carbon	Emery	Grand	Five Counties	Duchesne	Uintah	Carbon	Emery	Grand	Five Counties
Pneumatic devices	810	89	109	53	296	1,356	141,865,920	15,559,488	19,118,848	9,228,912	51,814,112	237,536,432

[a]Calculated based on Colorado's VOC molar fraction.

Five Counties Combined		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
5,072	888,614,400	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 888,614,400 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		9,343
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		6,167
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		3,176
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*9,343)140,000 cf/yr + (.868*9,343)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		237,536,432
Estimated new VOC (tons/year) emissions =		1,356
Percent Emissions Reduction =		73.27%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.

Duchesne		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
3,029	530,680,800	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 530,680,800 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		5,580
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		3,682
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		1,898
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*5,580)140,000 cf/yr + (.868*5,580)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		141,865,920
Estimated new VOC (tons/year) emissions =		810
Percent Emissions Reduction =		73.27%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.

Uintah		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
332	58,166,400	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 58,166,400 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		612
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		404
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		208
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*612)140,000 cf/yr + (.868*612)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		15,559,488
Estimated new VOC (tons/year) emissions =		89
Percent Emissions Reduction =		73.25%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.

Carbon		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
408	71,481,600	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 71,481,600 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		752
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		497
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		255
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*752)140,000 cf/yr + (.868*752)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		19,118,848
Estimated new VOC (tons/year) emissions =		109
Percent Emissions Reduction =		73.25%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.

Emery		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
197	34,514,400	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 34,514,400 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		363
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		239
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		124
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*363)140,000 cf/yr + (.868*363)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		9,228,912
Estimated new VOC (tons/year) emissions =		53
Percent Emissions Reduction =		73.26%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.

Grand		
Before Replacement		
VOC (tons/yr)	**Methane (cf/yr)**	
1106	193,771,200	
[a]Assume that 66% of pneumatic controlles in the field are high bleed and 34% are low bleed.		
[b]Average Bleed rate (cf/yr):	**High Bleed**	**Low Bleed**
	140,000	8,000
Estimated number of pneumatic controllers in the field (x) = (.66x)140,000 cf/yr + (.34x)8,000 cf/yr = 193,771,200 cf/yr		
Estimated number of pneumatic controllers in the field (x) =		2,038
Estimated number of high bleed pneumatic controllers in the field (66% of total) =		1,346
Estimated number of low bleed pneumatic controllers in the field (34% of total)=		692
After Replacement		
[b]Assume that 80% of high bleed controllers can be replaced.		
% of total pneumatic controllers replaced:		52.80%
New % of high bleed controllers in field:		13.20%
New % of low bleed controllers in field:		86.80%
Estimated new methane (cf/yr) emissions = (.132x)140,000 cf/yr + (.868x)8,000 cf/yr		
Estimated new methane (cf/yr) emissions = (.132*2,038)140,000 cf/yr + (.868*2,038)8,000 cf/yr		
Estimated new methane (cf/yr) emissions =		51,814,112
Estimated new VOC (tons/year) emissions =		296
Percent Emissions Reduction =		73.26%

[a]EPA, 2002.; [b]US Environmental Production Agency (EPA), "Lessons Learned from Natural Gas STAR Partners: Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry", EPA430-B-03-004, Washington, DC, July 2003.