CO$_2$ Revisions Under Consideration for the 2018 GHGI

Stakeholder Webinar

August 24, 2017

Overview

- Available Subpart W Data
- CO_2 Revisions Under Consideration
- Requests for Stakeholder Feedback
- Stakeholder Feedback and Considerations
- Next Steps

Available Subpart W Data

- Subpart W activity and emissions data are used in the current GHGI to calculate CH_4 emissions for several production, processing, and transmission and storage sources

- For these sources, CO_2 emissions data from subpart W have not yet been incorporated into the GHGI

- Facilities use an identical reporting structure for CO_2 and CH_4. Therefore, where subpart W CH_4 data have been used, the CO_2 data may be incorporated in an identical manner

Available Subpart W Data

- Subpart W data for AGR vents (CO_2) and flare stacks (both CH_4 and CO_2) have not been incorporated into GHGI

- Flare stacks data available for:
  - Production ("miscellaneous flaring") - reported under "flare stacks" source if emissions originate from sources not otherwise covered. For example, production tank flaring is reported under the tanks source and not under flare stacks
  - Transmission compression, underground natural gas storage, LNG storage and LNG import and export equipment. As of RY2015, all flaring emissions are reported under flare stacks

CO$_2$ Revisions Under Consideration

- Production
  - Associated Gas
  - Production Tanks
  - Miscellaneous Production Flaring
  - HF Gas Well Completions and Workovers
  - Pneumatic Controllers
  - Pneumatic Pumps
  - Liquids Unloading

- Processing
  - Grouped Sources (e.g., Flares, Compressors)
  - AGR
  - Blowdowns and Venting

- Transmission and Storage
  - Flares
  - Pneumatic Controllers

Requests for Stakeholder Feedback

1. The general approach of using subpart W reported CO_2 emissions data to revise the current CO_2 emissions calculation methodology

2. Developing an emissions per well EF for miscellaneous production flaring

3. Years of subpart W data to include for miscellaneous production flaring and transmission and storage flares

4. Time series considerations for transmission and storage flares; apply the subpart W EFs to all years or assume flares did not operate in 1990 (i.e., an EF of 0)

Summary of Stakeholder Feedback

National Emissions for 2015 (mt CO_2)

Industry Segment & Emission Source	Natural Gas Systems		Petroleum Systems	
	2017 GHGI	Draft Update	2017 GHGI	Draft Update
Production	**18,585,048**	**4,855,904**	**640,443**	**44,233,703**
Associated Gas	n/a	n/a	826	28,582,015
Tanks	30,426	1,108,346	519,934	8,643,876
Miscellaneous Flaring	17,628,522	1,860,355	incl. w/NG	6,864,989
Gas HF Completions/Workovers	91,965	1,129,883	n/a	n/a
Other Production Sources	834,135	757,319	119,683	142,823
Processing	**23,713,206**	**20,826,478**	**n/a**	**n/a**
Transmission & Storage	**38,694**	**250,095**	**n/a**	**n/a**
Distribution	**13,988**	**13,988**	**n/a**	**n/a**
Refining	**n/a**	**n/a**	**2,926,666**	**2,926,666**
Source Category Total	**42,350,936**	**25,946,465**	**3,567,110**	**47,160,369**
Source Category Difference	**-16,404,470**		**+43,593,260**	

Associated Gas – CO_2 EF

- National-level associated gas EFs from subpart W

Year	Venting EF (kg/well)	Flaring EF (kg/well)
2011	1,336	661,723
2012	1,902	948,057
2013	773	1,081,842
2014	1,754	906,608
2015	2,675	477,254

Associated Gas – Activity Data

- Developed for 2017 GHGI CH_4 revisions, would stay as-is for CO_2

- 12% of wells flare or vent, based on RY2015 subpart W data (applied for all time series years)

- Split between venting and flaring for 2011 forward is based on reported subpart W data

Year	% that Vent	% that Flare
2011	61%	39%
2012	54%	46%
2013	44%	56%
2014	37%	63%
2015	17%	83%

Production Tanks – CO$_2$ EF

- Subpart W RY2015 data:

Tank Category	Oil Tanks EF (kg/bbl)	Condensate Tanks EF (kg/bbl)
Large Tanks with Flaring	7.16	8.44
Large Tanks with VRU	0.040	0.12
Large Tanks without Controls	0.016	0.020
Small Tanks with Flaring	0.26	1.95
Small Tanks without Flares	0.078	0.28
Malfunctioning Dump Valves	0.013	8.28E-05

Production Tanks – Activity Data

- Developed for 2017 GHGI CH$_4$ revisions, would stay as-is for CO$_2$
- Data are for 2015 and throughput is in MMbbl

Parameter	Subpart W Tank Throughput	% of Throughput Sent to Tanks
Total	1,578	--
Condensate Production	236	79%
Oil Production	1,342	63%

Tank Category	Condensate Tank Throughput			Oil Tank Throughput		
	Subpart W - Large Tanks	Subpart W - Small Tanks	2016 GHGI	Subpart W - Large Tanks	Subpart W - Small Tanks	2016 GHGI
All Tanks	77%	23%	100%	93%	7%	
Tanks with Flaring	53%	8%	50%	55%	2%	
Tanks with VRU	10%	n/a		20%	n/a	100%
Tanks without Controls	14%	n/a	50%	18%	n/a	
Tanks without Flares	n/a	15%		n/a	5%	

Miscellaneous Production Flaring

- EPA developed EFs specific to natural gas and oil production using subpart W RY2015 reported emissions and well counts:

CO_2 EF (kg/well)	
Gas Production	**Oil Production**
4,223	11,299

National Emissions for 2015 (mt CO_2)

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Next Steps

- For sources with existing CH_4 methodology
  - Develop draft time series of CO_2 revisions under consideration, considering any additional feedback on Associated Gas and Production Tanks
  - Incorporate RY2016 data where appropriate, including Associated Gas
- For sources without existing CH_4 methodology (Miscellaneous Production Flares and Transmission & Storage Flares)
  - Review RY2016 data and compare to RY2015; consider whether there are differences or notable trends