

Hi Brian,

Here are the digester gas sampling results for 2015 for South Plant. Average methane content was 60.47%.

Carol, do you know how much of the Brightwater flow comes from Snohomish County vs. King County?

Thanks,

Felix

**From:** Brian Harmon [<mailto:brian@cascadiaconsulting.com>]

**Sent:** Tuesday, April 25, 2017 8:58 AM

**To:** Brandli, Felix

**Cc:** Steinke, Curtis

**Subject:** RE: Data request for South Treatment Plant

Hi Felix,

Thank you for the information. This goes a long way to helping fill in some of our data gaps. Two additional follow up questions: Curtis mentioned the biogas is typically about 60% methane, is there a more firm estimate? Also, do you happen to know the proportion of individuals served for Brightwater that are in King County, as opposed to Snohomish County?

Thank you for your help,

Brian

**From:** Brandli, Felix [<mailto:Felix.Brandli@kingcounty.gov>]

**Sent:** Tuesday, April 25, 2017 8:30 AM

**To:** Brian Harmon <[brian@cascadiaconsulting.com](mailto:brian@cascadiaconsulting.com)>

**Cc:** Steinke, Curtis <[Curtis.Steinke@kingcounty.gov](mailto:Curtis.Steinke@kingcounty.gov)>

**Subject:** RE: Data request for South Treatment Plant

Hi Brian,

Below is a table showing digester gas used and combusted (flared) at our three treatment plants in 2015. For all three treatment plants we assume an average energy content of 600Btu/scf of raw digester gas.

As Curtis mentioned, the use of the gas is different at all three plants. At Brightwater biogas is used in the boiler. At West Point biogas is used for the raw sewage pumps, for a cogen facility and a boiler. At South Plant it is used in a boiler, in a cogen facility, and/or sold to PSE.

2015	South Plant	West Point	Brightwater	Total
Biogas used / sold [therms]	2,668,869	2,052,079	605,959	5,326,908
Biogas combusted [therms]	156,475	561,101	389,619	1,107,195
Biogas used % of total	94.5%	78.5%	60.9%	82.8%

Let me know if you have other questions.

Thank you,

Felix

**Felix Brändli, CEM, PMP**

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**From:** Steinke, Curtis

**Sent:** Monday, April 24, 2017 4:41 PM

**To:** 'Brian Harmon'; Brandli, Felix

**Subject:** RE: Data request for South Treatment Plant

Brian,

I am forwarding on the request to Felix Brandli in our energy group because he has the values for the other facilities in addition to South Plant. As you are aware the gas is used differently at the different facilities. South Plant either uses it internally in the boiler or Cogeneration facility, sells it to PSE or burners it.

**Curtis Steinke** | Process Engineer II – South Plant

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**From:** Brian Harmon [<mailto:brian@cascadiaconsulting.com>]

**Sent:** Monday, April 24, 2017 9:32 AM

**To:** Steinke, Curtis

**Subject:** Data request for South Treatment Plant

Mr. Steinke,

Thanks for the quick chat on the phone. I'm working to complete a 2015 greenhouse gas inventory with King County. As part of that inventory, we are seeking the following information:

Quantity of digester gas produced (annually or daily)  
Measured fraction of methane in biogas

On the phone you mentioned that your measurement for digester gas was likely confined to a heat output, in which case that would be okay as well. Additionally, do you know if the methane content of the biogas be an acceptable estimate for the other two plants (Brightwater and West Point), or is there significant variance between the three plants?

Thank you for your help,

Brian Harmon

**Brian Harmon, Associate**

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