

## Chapter 9: Boiler Emissions

If upgrading and natural gas grid injection is selected as the biogas energy production option there will be very little spare heat from the process. It is therefore necessary to have an on-site auxiliary heat source to heat the digester up to required operating temperature. In this case auxiliary heating can be accomplished through running a boiler on diverted biogas (in the range of 15-30% of produced raw biogas). Reject gas from the biogas upgrading process can also be sent to the boiler burner to utilize any remaining energy content and to destroy any remaining methane and H<sub>2</sub>S. Reject gas is the carbon dioxide rich gas that has been stripped out of the raw biogas in the biogas upgrading process in order to produce the highly concentrated (95%+) methane product that is to be injected into the natural gas grid. Out of the biogas upgrading methods presented in Chapter 7, only pressure swing adsorption, membrane separation and potentially regenerative water scrubbing, will have a reject gas stream that is rich enough to burn in an auxiliary boiler.

### 9.1 Boiler Design and Installation

Boilers would have to comply with the *Safety Standards Act*, Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation and CSA B51 Boiler, Pressure Vessel and Pressure Piping Code. Proponents are advised to consult with the BC Safety Authority regarding applicable requirements, inspections and approvals.

### 9.2 Boiler Emission Factors

Emission factors for biogas boilers are provided in the following study: Feasibility Study – Biogas Upgrading and Grid Injection in the Fraser Valley, British Columbia. The study is available for download at: [www.lifesciencesbc.ca/files/PDF/feasibility\\_study\\_biogas.pdf](http://www.lifesciencesbc.ca/files/PDF/feasibility_study_biogas.pdf).

Proponents should identify the following in an application:

- The type of gas combusted in the boiler (raw biogas, reject gas, fossil natural gas or a combination thereof)
- If a combination of gasses are combusted in the boiler, then describe the proportion of the respective gas streams in the combined mix
- Expected discharge levels from the boiler (use vendor information and/or real data from the facility to address all potential discharges).