



- BP Alaska is working to **reduce** carbon emissions – in line with Group strategy
- **Screening projects** based on emission reduction criteria
- Advancing technologies to **improve** air emissions quantification

## Redacted - First Amendment



BP Alaska is working to reduce carbon emissions across their business through project execution and focus on current business strategy, such as:

Electrification at drill sites for rig use, reducing reliance on diesel use for drill rig equipment

Optical Gas Imaging (OGI) surveys across facilities and drill sites, including a prioritized leak repair program, reducing methane emissions for process safety and regulatory compliance

Using green completions in drilling operations to capture emission losses

Operational Efficiencies:

Strategic replacement of some compressors with electric driven models where feasible, reducing fuel gas use

Optimization of drilling program

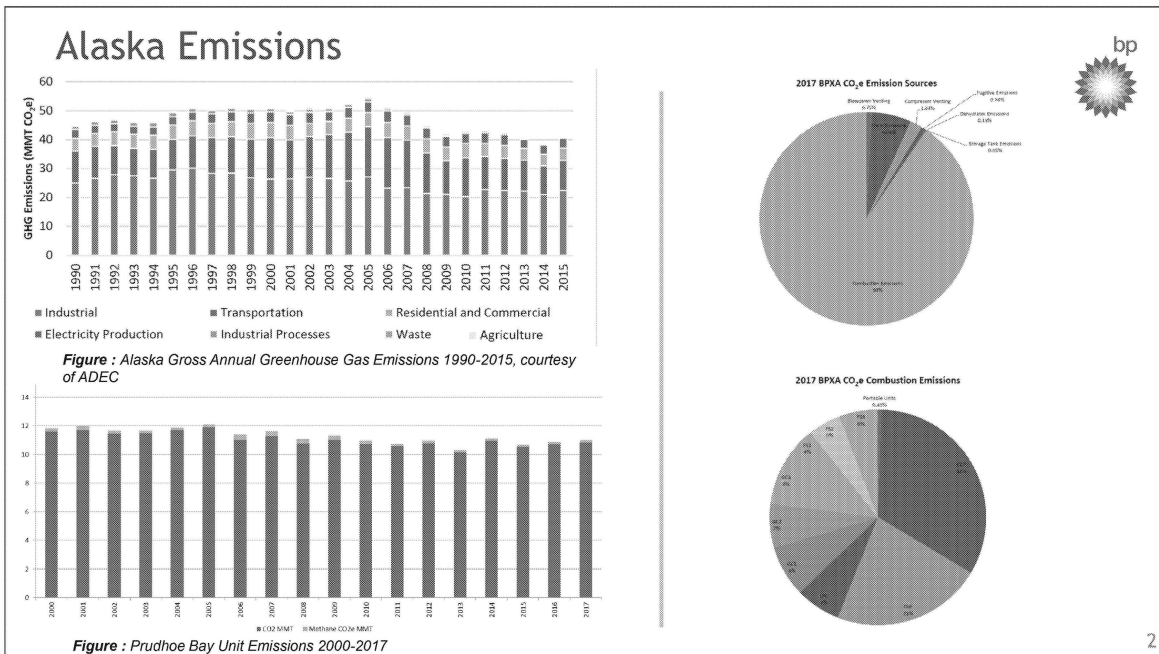
Trucks and light duty vehicles program simplification to encourage vehicle sharing, site shuttle usage, and thus reducing the number of overall vehicles on the road in Prudhoe

Optimization of Shared Services Fights

Maximizing production while maintaining current emission levels

All projects screened for emission reduction opportunities

Continuously maintaining two ambient air quality monitoring stations in Prudhoe Bay



**Emission reduction opportunities & recommendations:**

Bringing the Alaska LNG project to market would reduce need for gas injection handling and capacity across the north slope and would bring lower carbon gas to the global marketplace

Continue to evaluate new projects for emission reduction opportunities and energy efficient technologies

Follow new and emerging technologies and evaluate for brownfield deployment

Continue sharing of industry best practices through trade associations (AOGA and API)

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## BP Alaska Emission Reduction Activities



- Emerging **industry panel** to address/ inform issue of emission
- **Electrification of drillsites** for rig use- will reduce reliance on diesel for running rig equipment
- Strategic **replacement of fuel gas compressors** with electric driven ("STVIP") compressors
- Use of **green completions** - capturing gas during drilling rather than venting
- Piloting **advanced technology- algorithm** for improved quantification of emissions and flare efficiency
- Reduced **trucks and light duty fleet to encourage** ridesharing and use of site shuttles; reduced flights by optimizing flight planning and work schedule

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Green completions - This involves capturing gas during well completion operations (rather than venting).

STVIP description - At each of the Flow Stations, we replaced two compressors powered with fuel gas with one electric driven compressor with smaller overall horsepower. The change was driven by rising unreliability and maintenance cost; the machines were oversized for current operations and just didn't work well. The replacements resulted in "Real Sustainable Reductions" at FS1, 2 and 3. ( I can get exact details and dates to you later.) We are not doing anything similar at the Gathering Centers because they have different equipment that is not in need of replacement.

Description of technology trials

Fugitive emissions quantification - This involves use of current OGI cameras with added technology to quantify leaks found. The added technology is an iPad with installed software that connects directly to the OGI camera. It uses temperature differential to make the quantification, and the trial requires low wind conditions.

Flare efficiency- We would prefer not to talk about this trial until the study has been completed and we know what the results are. This trial involves use of a thermal camera which is connected to a computer that calculates flare combustion efficiency. We're unsure how this technology will perform in the arctic and using flares with low purge rates. This may or may not work at all - it hasn't been field tested.

The trials will be conducted at BP expense, and will not generate technology Intellectual Property. The study results will be owned by BP, and the vendor (Providence) cannot disclose the existence and results of the study. Rachel will advise Upstream Technology that Janet plans to speak about the trials with the Governor's panel.