

# Pacific Carbon Trust

## Monetizing the Value of Vented Methane

March 14, 2013



# Agenda

- British Columbia carbon policy landscape
- PCT overview
- PCT oil & gas projects to date
- Example projects
  - Spectra Energy, ARC Resources and Devon Energy
- How to work with Pacific Carbon Trust

# BC carbon policy landscape

## Standards (Regulations)

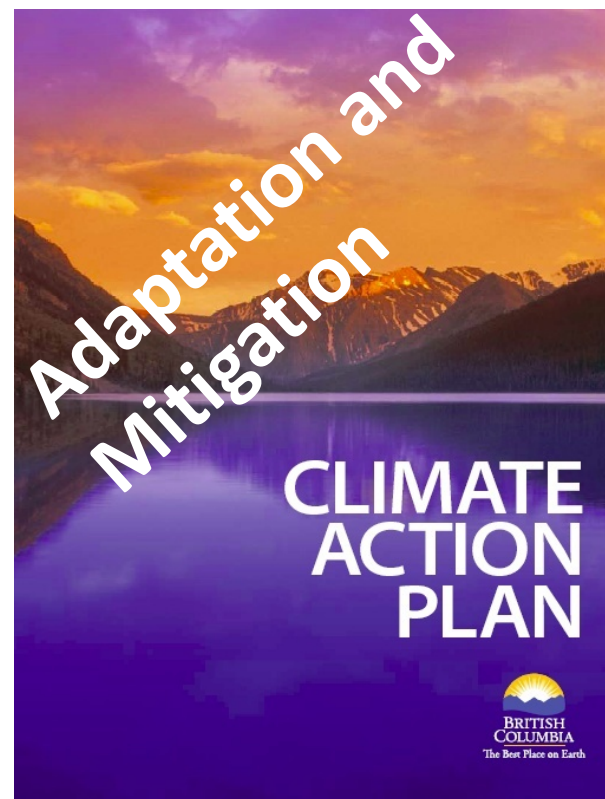
Greenhouse Gas Reduction Act  
Vehicle Emissions Standards  
Landfill Gas Regulation

## Investments (Programs)

LiveSmart  
Innovative Clean Energy (ICE) Fund  
Pacific Institute for Climate Solutions

## Carbon Pricing (Fiscal/Market)

Carbon Tax Act  
Cap and Trade (WCI) (Under consideration)  
**Pacific Carbon Trust**



# BC emissions dropped 4.5% 2007-2010 ... while both population and GDP grew

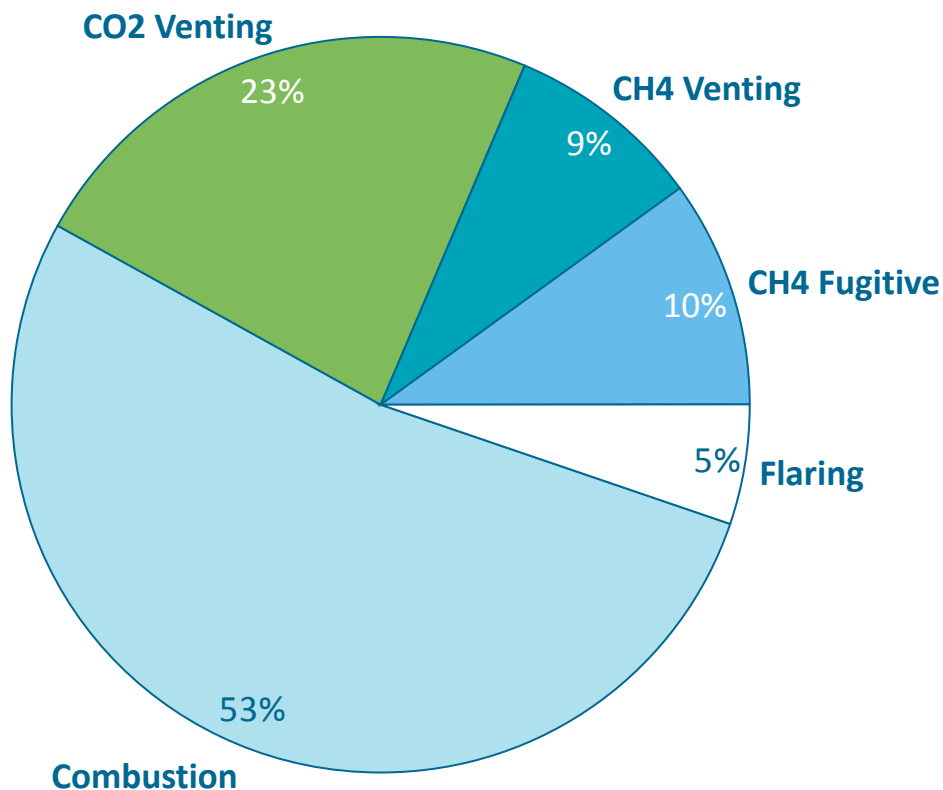
## Contributing Factors:

- Fossil fuel use down compared to rest of Canada
- 20% of Canada's LEED buildings in BC
- BC has over twice the Canadian rate of hybrid vehicle adoption
- 48% growth in clean tech sector sales between 2008-2010



The British Columbia carbon tax applies to combustion emissions and covers 58% of emissions from the oil and gas sector

## BC Oil and Gas: 10.5 million tonnes CO<sub>2</sub>e



## Key Sources:

**CH<sub>4</sub> Venting:** High Bleed Controllers, Gas Driven Pumps

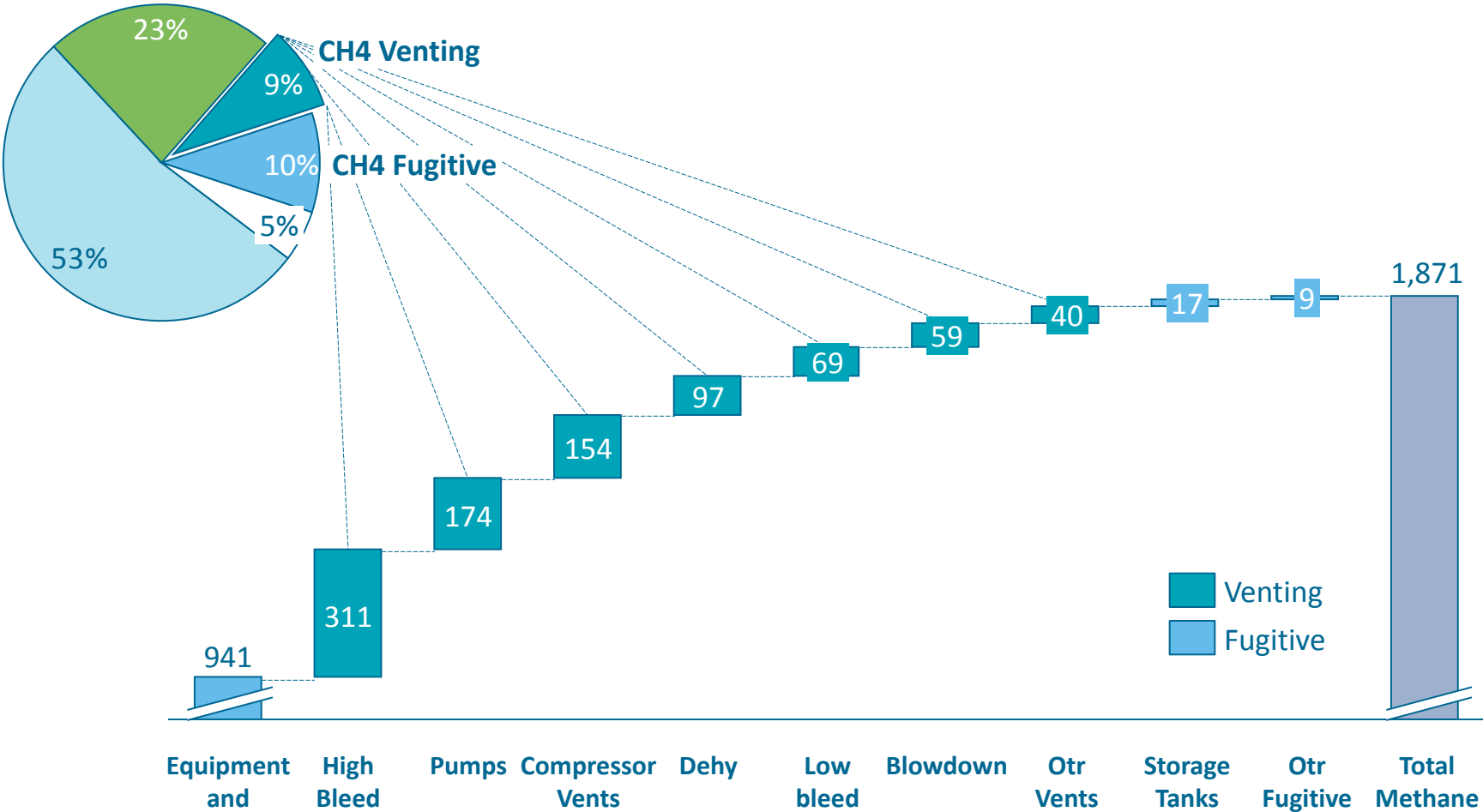
**CH<sub>4</sub> Fugitive:** Equipment Leaks

**CO<sub>2</sub> Venting:** Acid Gas Removal

**Combustion:** Compressors, Boilers, line heaters

**Pacific Carbon Trust provides a price signal to reduce emissions from vented methane**

# Detailed breakdown of vented methane sources in the British Columbia oil and gas sector



# Pacific Carbon Trust overview

## Summary of PCT's mandate

Deliver quality, BC based emission reduction projects to help clients meet their carbon reduction goals

**AND**

Support the growth of BC's low carbon economy

- Established as a BC Crown corporation in 2008
- Built a robust offset market in BC delivering offsets from 32 offset projects totaling 1.6 million tonnes CO<sub>2</sub>e to date
- Ensured BC government was carbon neutral in 2010 and 2011 and is on track for 2012
- Moving forward with 36 additional projects in the pipeline
- Supports offset projects from across BC's economy in all sectors and regions



# Offset project types in the BC carbon market

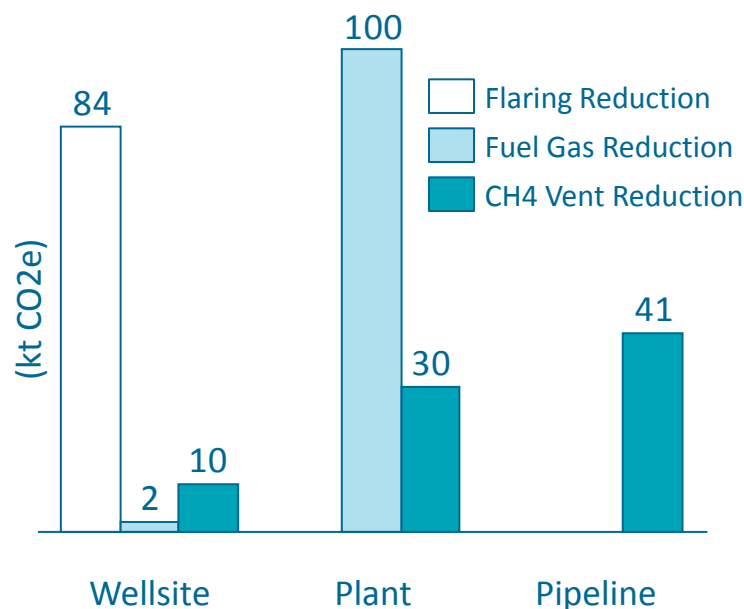
	Description	Examples
<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>Improve productivity</li> <li>Minimise waste</li> <li>Methane capture</li> </ul>	<ul style="list-style-type: none"> <li>Engine fuel management</li> <li>Solar chemical pumps</li> <li>High to low bleed controllers</li> <li>Landfill gas</li> </ul>
<b>Fuel Switching</b>	<ul style="list-style-type: none"> <li>Electrification</li> <li>Biomass</li> </ul>	<ul style="list-style-type: none"> <li>Electric well pads</li> <li>Electric compression</li> <li>Burn wood waste</li> </ul>
<b>Sequestration</b>	<ul style="list-style-type: none"> <li>Forest biomass</li> <li>CCS</li> </ul>	<ul style="list-style-type: none"> <li>Improved forest management</li> <li>Afforestation/reforestation</li> <li>Acid gas injection</li> </ul>

**PCT has a priority focus on sourcing energy efficiency projects**

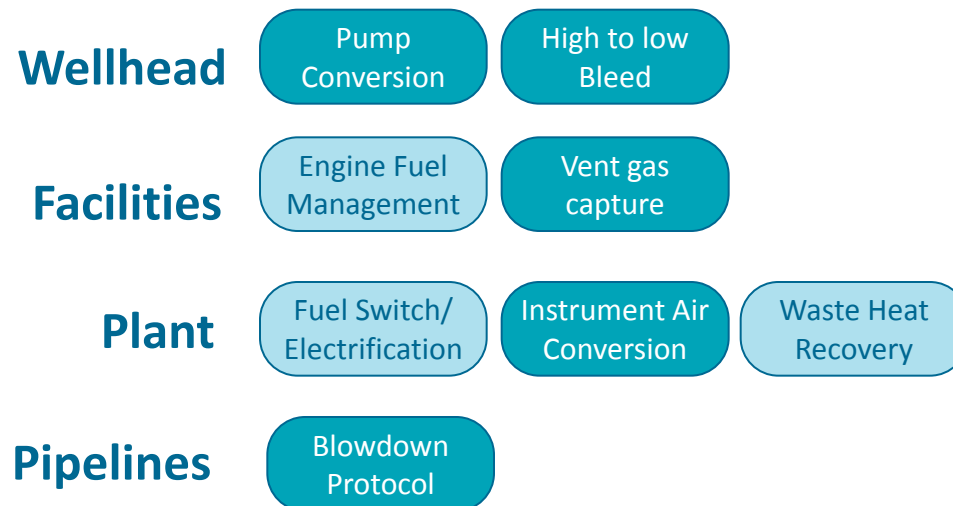


# Overview of PCT oil & gas projects to date

## Oil and Gas Projects



Pacific Carbon Trust has a large number of suggested protocols for Oil & Gas projects in BC



# Carbon offset projects require a number of parties to be involved

Here are some of the entities we have worked with to date

## ASSET OWNERS



## DATA PLATFORM PROVIDERS / CARBON OFFSET DEVELOPERS



## EMISSION MANAGEMENT FIRMS



## VALIDATORS AND VERIFIERS



# Example Project #1: Spectra Energy



## Reduction Of Methane Venting From Gas Transmission Pipeline System

**OVERVIEW:** Pumpdown/incineration events between 2008-2010

**TYPE:** Venting Reduction (Energy Efficiency)

**LOCATION:** Various locations on Spectra Energy's BC system

**PROJECT VOLUME:** 41,000 tCO<sub>2</sub>e

**PROJECT START:** 2008

**PROTOCOL:** Blowdown Protocol for Pipeline Systems

### HIGHLIGHTS:

- First of a kind carbon offset quantification protocol for activity
- Sophisticated hydraulic modeling of incremental compressor dispatch
- Knowledge transfer with CNPC

# Example Project #2: ARC Resources

## Well Pad Electrification

**OVERVIEW:** Project consists of electrification of multi-well pads in Montney

**TYPE:** Energy Efficiency & Fuel Switching

**LOCATION:** British Columbia - Montney

**ESTIMATED PROJECT VOLUME:** 10,000 tCO<sub>2</sub>e/yr

**PROJECT START:** 2011

### PROTOCOLS:

- 1) Meta Protocol for Oil & Gas Emission Reductions: Instrument Gas to Air Module, Pump Conversion Module,
- 2) BC Fuel Switching Protocol

### HIGHLIGHTS:

- Time-series data on Pumps, Controllers and Pumpjacks
- Instrument air system and electric pumps
- Sophisticated data management





# Example Project #3: Devon Energy and others

## High-Bleed to Low-Bleed Conversion of Pneumatic Controllers

**OVERVIEW:** Project consists of converting or retrofitting high-bleed controllers to low or no bleed controllers

**TYPE:** CH<sub>4</sub> Venting (Energy Efficiency)

**LOCATION:** NE British Columbia – Various Fields

**ESTIMATED PROJECT VOLUME:** up to 50,000 tCO<sub>2</sub>e/yr

**PROJECT START:** 2012

### PROTOCOLS USED:

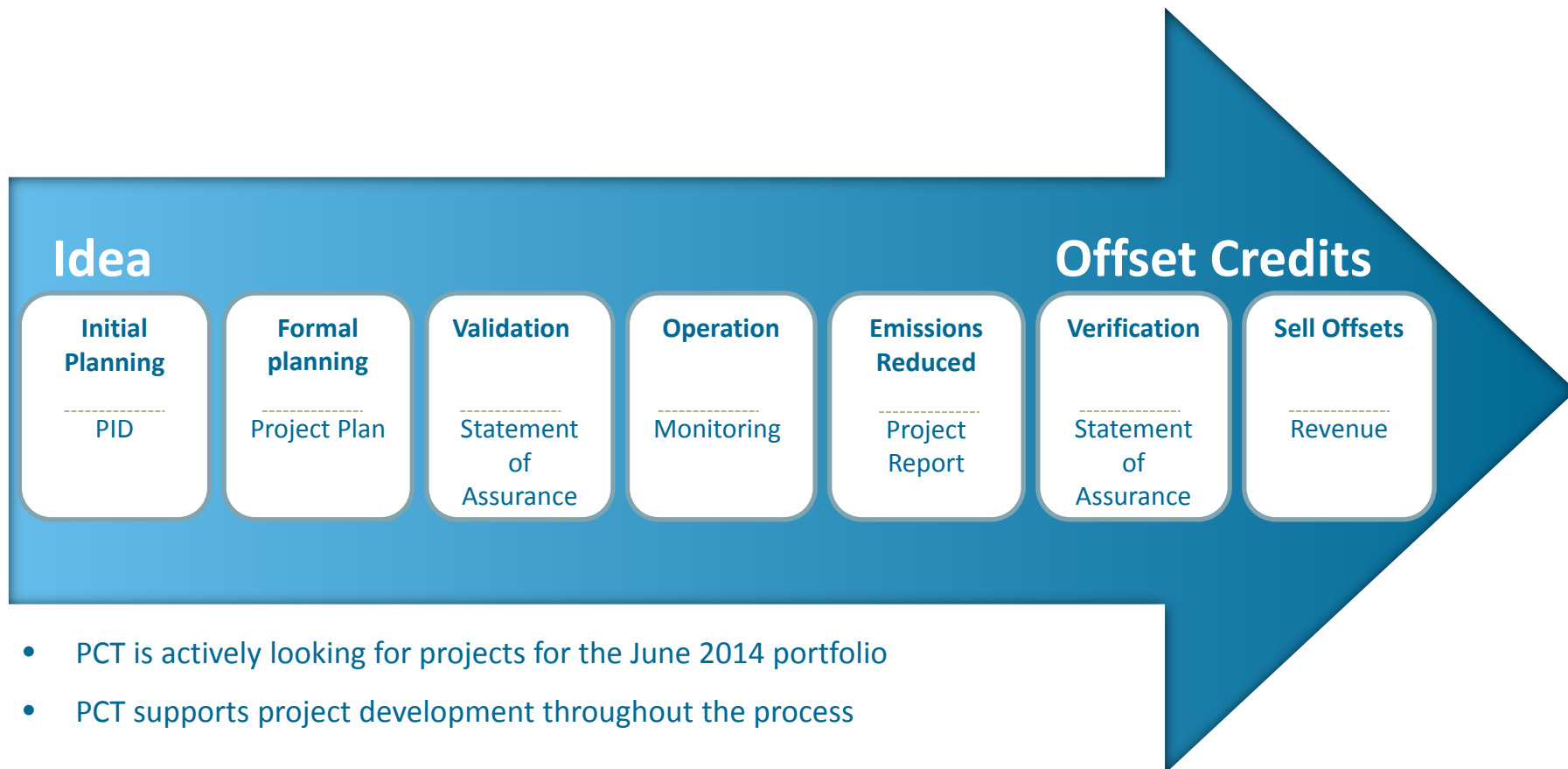
High Bleed to Low Bleed Module

### HIGHLIGHTS:

- First programmatic validated project plan
- Data aggregation across companies
- Mizer retrofits performing better than expected



# Offset project development process



- PCT is actively looking for projects for the June 2014 portfolio
- PCT supports project development throughout the process

# Presentation Summary and Takeaways

- BC climate change policy leadership
- PCT has been successful providing a price signal on vented methane in BC
- PCT continues to search for new technologies that reduce emissions
- PCT continues to support the development of new protocols and project structures
- PCT is actively pursuing methane reduction projects across all sectors of the BC economy





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# Offset generation is a data driven process

