



SASKPOWER CCS

CSLF TECHNOLOGY WORKSHOP

MIKE MONEA – PRESIDENT, CCS INITIATIVES, SASKPOWER

 **SaskPower**
Powering the future[®]

@SaskPowerCCS

WELCOME TO SASKATCHEWAN

**511,000
CUSTOMERS**

**151,000KM OF
TRANSMISSION LINE**

**4,181 MW AVAILABLE
GENERATING CAPACITY**



PORTFOLIO DIVERSIFICATION



COAL
44%



GAS
29%



HYDRO
20%



WIND
3%



OTHER
4%

An aerial photograph of the Boundary Dam power plant and its associated Carbon Capture and Storage (CCS) project. The central focus is a large, multi-story industrial building with a grey facade, prominently displaying the 'SaskPower Boundary Dam' logo. To the left of this building is a complex electrical substation with numerous metal structures and power lines. In the foreground, there are several large parking lots filled with cars and trucks, along with various smaller industrial buildings and construction equipment. The site is situated on a grassy plain with several bodies of water, including a large reservoir in the background and smaller ponds in the foreground. The sky is clear and blue. The text 'BOUNDARY DAM' and 'CCS PROJECT' is overlaid in large, white, sans-serif font at the bottom of the image.



BOUNDARY DAM
CCS PROJECT

REGULATIONS





COMPARING REGULATIONS

MODIFIED / REFURBISHED COAL UNITS

Kg CO2 / MWh net (less than 2,000 MMBtu/h)	
	
420*	861.8

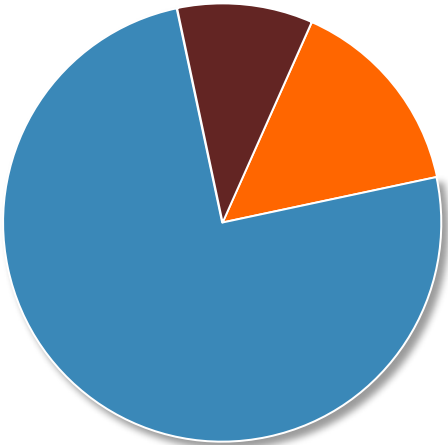
NEW COAL / NATURAL GAS UNITS

Kg CO2 / MWh net	
	
420*	644.5

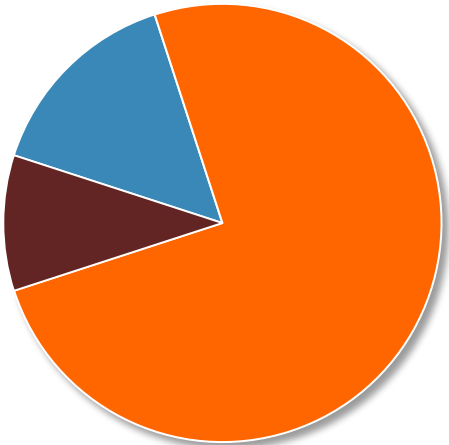
*Conversion based on SaskPower's BD3 unit at 124.6 MW net (after station services, SO2 capture, CO2 capture but before CO2 compression).

COMPARING COSTS

Baseload Natural Gas
Cost of Electricity



BD3 Carbon Capture
Cost of Electricity



- Capital Investment
- Fuel Expense
- O & M

Figures from 2009 - 2010

SECURING OFF-TAKERS



- Sale of CO₂ to oil company for EOR.



- Sale of sulphuric acid, used primarily for industrial purposes including fertilizer.



- Sale of flyash for concrete production 100%.

STORAGE

Pure CO₂ storage with
SaskPower's Carbon Storage
and Research Centre's host
project, Aquistore.





LEARNING STARTS HERE.
OUR NEXT PLANT WILL BE
UP TO 30% CHEAPER.

WHAT THE WORLD IS SAYING

“Boundary Dam is one of 10 Energy Breakthroughs in 2014 That Could Change Your Life.” **WENDY KOCH, NATIONAL GEOGRAPHIC**

“CCS on coal-fired power plants provide us the largest opportunity for application, and Boundary Dam shows how it can be done. Unless we do CCS, we’re never going to meet long-term climate change goals. This project provides us an opportunity to learn how we can directly apply CCS in China.”
ASHOK BHARGAVA, ASIAN DEVELOPMENT BANK (ADB)

“Carbon capture and storage is a very important technology where not enough investment is taking place.”
CHRISTIANA FIGUERES, UNITED NATIONS CLIMATE CHIEF

“As long as fossil fuels and carbon-intensive industries play dominant roles in our economies, carbon capture and storage (CCS) will remain a critical greenhouse gas reduction solution.”
MARIA VAN DER HOEVEN, INTERNATIONAL ENERGY AGENCY (IEA)



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