HONOURS AND AWARDS
FOR THE BD3 ICCS PROJECT
The SaskPower BD3 ICCS Project is less than a year old but it has already garnered many awards for its pioneering work in commercializing CCS at a coal-fired power station.

### TABLE 4 | AWARDS FOR THE SASKPOWER BD3 ICCS PROJECT

<table>
<thead>
<tr>
<th>TYPE OF AWARD</th>
<th>PRESENTING ASSOCIATION</th>
<th>REASON</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 CSCE Award for Governmental Leadership in Sustainable Infrastructure</td>
<td>Canadian Society for Civil Engineering</td>
<td></td>
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<tr>
<td>2015 Edison Award 2015</td>
<td>Edison Electric Institute</td>
<td>Impressive pioneering work to demonstrate CCS technology</td>
</tr>
<tr>
<td>2015 Exceptional Engineering / Geoscience Project Award</td>
<td>APEGS</td>
<td></td>
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<tr>
<td>2015 Power Magazine's Plant of the Year</td>
<td>Power Magazine</td>
<td></td>
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<tr>
<td>2015 Power Engineering's Project of the Year</td>
<td>Renewable Energy World Magazine</td>
<td></td>
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<tr>
<td>2015 Clean Air Leadership Award</td>
<td>Southeast Saskatchewan Airshed Association (SESAA)</td>
<td></td>
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<tr>
<td>2015 Coal Association of Canada Special Recognition Award</td>
<td>Coal Association of Canada</td>
<td>Environmental and technological achievements</td>
</tr>
<tr>
<td>2015 ITT Goulds Heart of the Industry Award</td>
<td>Goulds Pumps</td>
<td>Use of pump technology to improve the efficiency and reliability of industrial processes.</td>
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<tr>
<td>2015 Award of Excellence</td>
<td>The Communicator Awards, Academy of Visual Arts</td>
<td>Excellence Award in web / experiential</td>
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<tr>
<td>2014 Emerging Media Award – Summit International Awards</td>
<td></td>
<td>Awarded for the development of a virtual tour using a custom experiential website.</td>
</tr>
<tr>
<td>2014 CCBJ – Business Achievement Award</td>
<td>Climate Change Business Journal</td>
<td>Other Renewable and Low Carbon Power</td>
</tr>
<tr>
<td>2012 CEA -Environmental Commitment Award</td>
<td>Canadian Electricity Association</td>
<td>Leading edge project that will define technical, environmental and economic performance of CCUS.</td>
</tr>
<tr>
<td>2012 Distinguished Service Award – Research &amp; Development</td>
<td>Lignite Energy Council</td>
<td>Leadership in the lignite industry for CCS.</td>
</tr>
<tr>
<td>2011 CCBJ – Business Achievement Award</td>
<td>Climate Change Business Journal</td>
<td>Carbon Capture &amp; Storage</td>
</tr>
</tbody>
</table>
ABBREVIATIONS

This is not a comprehensive list.

**BD3** – Boundary Power Plant Station Unit 3

**CCS** – Carbon Capture, Transportation and Storage

**CCPC** – Canadian Clean Power Coalition

**CCTF** – SaskPower’s Carbon Capture Test Facility (at Shand Power Station)

**CEPA** – The Canadian Environmental Protection Act

**CIC** – Crown Investments Corporation of the Government of Saskatchewan (owner of all Crown corporations such as SaskPower)

**CO₂e** – The climate forcing factor associated with a greenhouse gas expressed as “carbon dioxide equivalents”. For example, the climate forcing factor of methane (CH4) is 21 times the factor for CO₂. Hence, one methane molecule is equivalent to 21 carbon dioxide molecules in terms of greenhouse impact on the climate.

**C$** – Canadian Dollars

**EC** – European Commission

**ECRF** – SaskPower’s Emissions Control Research Facility (at Poplar River Power Station)

**EOR** – Enhanced Oil Recovery

**EU** – European Union

**GHG** – Greenhouse Gas

**GWh** – Giga-Watt-Hour, the energy unit of total power generation

**ICCS** – Integrated Carbon Capture and Storage, which is the name of the combined BD3 power plant retrofit project and the geological storage of its captured CO₂.

**IEAGHG** – IEA Greenhouse Gas R&D Programme

**MW** – Mega-Watt, the energy unit used for power-generating capacity

**PCC** – Post-Combustion Capture

**PM₂.₅** – Fine Particulate Matter found in the air that is less than or equal to 2.5 mm (micrometres) in diameter and normally only observed by electron microscope. This material is often associated with energy combustion and the fine particulate matter is believed to cause serious health issues upon entering lungs of air-breathing animals.

**PM₁₀** – Coarse Particulate Matter found in the air that is less than or equal to 10 (mm) micrometres in diameter. It can be seen with the human eye in the air as soot, dust, dirt and liquid droplets. This material is often associated with energy combustion.

**PTRC** – Petroleum Technology Research Centre, a non-profit R&D corporation located in Regina, Saskatchewan

**R&D** – Research and Development

**QA/QC** – Quality Assurance and Quality Control

**SE** – Southeast

**SaskPower** – Saskatchewan Power Corporation
REFERENCES

1. 2014 SaskPower Annual Report
2. SaskPower’s fiscal year runs from January 1 to December 31.
3. From 2010–2014, SaskPower invested C$4.7 billion in capital assets (upgrades, new construction)
5. Provided by SaskPower
9. From Leasing Mineral Rights: “Unitization of a producing field: The purpose of unitization is to produce oil or gas more efficiently and effectively by bringing together an area involving a large number of sections. Unitization is used where the industry feels that a large portion of the oil and gas can be produced with fewer wells. Upon unitization, an owner within the boundaries of the unitized field is entitled to participate in production, even though no well is located on his land. The provisions of a lease may therefore permit “pooling,” in which case you receive a portion of the royalty, based on the number of acres you put in the pool. The lease may permit “unitization,” which converts your royalty into a “tract factor,” based on a complex formula. Even though unitization in the vast majority of cases provides a better total income for the miner owner, an owner should not grant the right to unitize automatically; nor should he leave it up to the company’s discretion. Because participation in a unit is not based on the number of acres you have in the unit but is determined by the company, based on geological factors, you should very carefully assess your position. For example, while you may hold five per cent of the area in a unit, you may be allocated only two per cent of the production.”
11. Pan Canadian was a subsidiary company of Canadian Pacific Railway until it merged with Alberta Energy Company in 2002 to form EnCana Corporation, an independent oil and gas corporation. In December 2009, Cenovus Corporation split from EnCana to operate as an independent integrated oil company, including all of the oil assets from the original firm. EnCana continues to operate the natural gas assets of the original firm and is a leading independent Canadian natural gas producer.
12. Numac Energy Inc. was incorporated in Alberta in 1971 and was an independent oil producing company until it was purchased by Anderson Exploration Inc. in early 2010. Anderson was subsequently purchased by Devon Energy (USA) to form Devon Canada Corporation in late 2010. Numac, in partnership with Nexen Inc., operated a CO$EOR pilot at its Elswick Midale oil leases in 2001 using trucked CO$ from the Air Liquide plant in Medicine Hat, Alberta. It ultimately decided not to proceed with full-scale operation of CO$EOR due to various technical issues it encountered during the pilot as well as poor economics due, in part, to the lack of a pipelined source of CO$. The Elswick oil field is one of many potential CO$EOR targets in SE Saskatchewan.
The agreement came into force in 2005 upon ratification by 55 signatory parties belonging to the UNFCCC. Those signatories include Canada but notably exclude the USA as of mid-2015.


http://www.nrcan.gc.ca/energy/coal/carbon-capture-storage/4307

http://www.nrcan.gc.ca/energy/coal/carbon-capture-storage/4333


The Midale and Weyburn oil fields are operated in the same geological formation, along with several surrounding oil leases/operations. Each of the two oil fields is owned by approximately 30 owners but each field was “unitized” in the 1960s to support water flooding infrastructure investment. Each unitized oil field is operated by one major oil company on behalf of the owners. Pan Canadian was an owner of part of the Midale oil field and consequently had access to the CO₂-EOR pilot program undertaken by Shell Canada.

Apache Canada began a commercial CO₂-EOR flood at Midale in 2006 using approx. 1800 tonnes per day of CO₂ supplied by DGC. At that time Apache Canada contributed data and sponsorship to the renamed IEAGHG Weyburn-Midale CO₂ Monitoring and Storage Project.


Approximately one-third of the CO₂ injected in a given oil production cycle is “lost” to the reservoir. The uncertainty prior to the IEAGHG Weyburn CO₂ Monitoring Project beginning its work was, “Where does the CO₂ go?”

http://ptrc.ca/projects/weyburn-midale

http://www.canadiancleanpowercoalition.com/


By this time, CO₂ sequestration in deep saline aquifers associated with “acid gas reinjection” at natural gas producing operations was an accepted practice, e.g. StatOil’s Sleipner field. See Tore A. Torp and John Gale, Proceedings of the 6th Conference on Greenhouse Gas Control Technologies, 2003, Volume 1, p. 311–316.


There are many sources of ENGO criticism of the BD3 ICCS Project. One example from the Sierra Club of Canada is embedded in the newspaper article noted in reference 51.