Fuel Choice, Nuclear Energy, Climate and Carbon

Presentation to CNS 2012 SNC

Al Shpyth - Saskatoon
Fuel Choice Matters

- Combustion sources, including electricity generation, contribute 45% of Canada’s GHGs
- The energy sector, including combustion sources, contribute 80%
- Both are tied to carbon-based fuels (coal, oil, gas)
- Alberta and Saskatchewan are two of the most coal-powered provinces in Canada
- They have the highest per capital GHG emissions
- They have the largest growth in GHG emissions since 1990
EIA Alone is Ineffective

- Project-specific EIA cannot deal with the climate problem
- Fuel choice matters to the climate problem
SEA is Better Suited

- Complexities of energy developments challenge IA
- SEA extends the aims and principles of EIA
  - Major alternatives are still open
  - Greater scope to integrate environmental considerations
- SEA can address “sources” rather than “symptoms”
LCA Adds Value

• Choose the least burdensome
• Can assist SEA with
  – The comparison and assessment of alternatives
  – The identification of strategic options
LCA and Fuel Choice

Total Life-Cycle Emissions (g/kwWh)

- Coal
- Lignite
- NGCC
- Nuclear
- PV
- Wind
- Hydro

CO2

Total Life-Cycle Emissions (g/kWWh)

Energy Developments and IA

Comprehensive Options Assessment (supply and demand)

Strategic Environmental Assessment (with LCA of alternative generation options)

Fuel Choice - Selection of Mix of Sources of Power (supported by regional EA for site selection)

Project/Site-specific Environmental Impact Assessment
Conclusion

• SEA + LCA = good practice
• Help deal with the climate problem by helping us make our fuel choice
• Help nuclear by increasing public support
Recommendation

• Invest in an industry-wide data collection effort
• Provide a more detailed and complete base for the use of LCA
Additional Slides
## Env’l Assessment & Management

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<thead>
<tr>
<th>Development Phase</th>
<th>Impact assessment/management tool</th>
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<tr>
<td>Policy/strategy (fuel choice)</td>
<td>Strategic environmental assessment (sector) or policy appraisal with input into project selection and environmental assessment</td>
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<tr>
<td>Project design (power station) and approval</td>
<td>Environmental impact assessment with input into environmental protection plans</td>
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<tr>
<td>Project construction/early operation</td>
<td>EPPs with input into environmental management systems</td>
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<td>Project operational period (and reclamation)</td>
<td>“Progressive” environmental management systems with a focus on continuing environmental improvements (and liability reduction)</td>
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<tr>
<td>Decommissioning</td>
<td>EIA update or new EIA with links to “progressive” EMS</td>
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LCA and Accidents at NPPs

ExternE: Methodology Update 2005 – Assessment of Major Accidents – Figure 9.2