Big Move Four: Renewable Energy Generation

Renewable energy generation makes a significant contribution to GHG reduction. It can take many forms, but all shifts to renewable energy require drastic changes that are challenging to scale up to meet current energy demand. However, when done in tandem with energy efficiency measures, renewable energy can meet much of Regina’s energy needs while decreasing emissions.

Case Study: Cowessess First Nation

Cowessess First Nation, located 150 kilometres east of Regina, has been generating local renewable energy since 2013 and continues to expand its renewable energy assets. The community’s first major project was a 800 kW wind project. They won a 1 MW power purchase agreement with SaskPower through a competitive RFP process and also installed batteries to store energy to be used as needed. The second project, completed in 2018, was a 400 kW ground-mount solar installation. The project maxed out the power purchase agreement with SaskPower and leverages existing battery-based storage capability.

In 2021, Cowessess installed more than 800 solar panels with a capacity of 321 kW on five community buildings. The energy generated is expected to decrease annual energy costs by $20,000. Local labour was used to construct the solar panels.

In 2021, Cowessess and partner Renewable Energy Systems signed an additional 200 MW power purchase agreement with SaskPower. They are planning to install 40 wind turbines across 20,000 acres, which will produce enough energy to power 100,000 homes.

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3 Cowessess First Nation Energizes Their Community and The Grid - Industry West (industrywestmagazine.com)
4 Cowessess First Nation Power Purchase Agreement | Profiles | Government of Saskatchewan
5 Cowessess unveils new solar project, aiming to become greenest First Nation in Canada | CBC News
6 Cowessess unveils new solar project, aiming to become greenest First Nation in Canada | CBC News
## Big Move Four: Renewable Energy Generation Actions

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<th>ACTION</th>
<th>GREENHOUSE GAS (GHG) IMPACT</th>
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<tr>
<td>4.1 Maximize rooftop solar on new buildings</td>
<td>Equity: Low</td>
<td>Employment: Low</td>
<td>$$$$$</td>
<td>Program: Develop solar PV programs for all building sectors.</td>
<td>Start: Immediately</td>
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<td>Cost Effectiveness: High</td>
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<tr>
<td>4.2 Maximize rooftop solar on existing buildings</td>
<td>Equity: Low</td>
<td>Employment: Low</td>
<td>$$$$$</td>
<td>Program: Develop solar PV programs for all building sectors.</td>
<td>Start: Immediately</td>
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<tr>
<td></td>
<td>Cost Effectiveness: High</td>
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<td>Leading by example: add solar PV to municipal buildings.</td>
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<tr>
<td>4.3 Meet energy needs through local energy generation: solar PV</td>
<td>Equity: Low</td>
<td>Employment: High</td>
<td>$$$$$</td>
<td>Infrastructure: Create solar farms.</td>
<td>Start: 2025</td>
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<tr>
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<td>Cost Effectiveness: High</td>
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<tr>
<td>4.4 Meet energy needs through local energy generation: wind farms</td>
<td>Equity: Low</td>
<td>Employment: Low</td>
<td>$$$$$</td>
<td>Infrastructure: Create wind farms.</td>
<td>Start: 2025</td>
</tr>
<tr>
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<td>Cost Effectiveness: High</td>
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<tr>
<td>4.5 Meet energy needs through local energy generation: geothermal heating at University of Regina</td>
<td>Equity: Low</td>
<td>Employment: Low</td>
<td>$$$$$</td>
<td>Initiative: Work with the University of Regina to determine support and collaboration opportunities.</td>
<td>Start: 2025</td>
</tr>
<tr>
<td></td>
<td>Cost Effectiveness: Medium</td>
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### GHG IMPACT
- **Low:** <1,000 ktCO₂e
- **Medium:** 1,000 – 2,000 ktCO₂e
- **High:** >2,000 ktCO₂e

### CO-BENEFITS
- **Equity** – No discernible direct effect, but positive outcomes may occur in concert with other actions
  - **Low:** May favour certain groups or create greater disparity
  - **Medium:** More likely to be implemented fairly, but existing powerful groups may still be at an advantage
  - **High:** Contributes to enhanced equity

- **Employment** – Enables employment
  - **Low:** 0 – 5 person years of employment per $1 million invested
  - **Medium:** 5 – 10 person years of employment per $1 million invested
  - **High:** >10 person years of employment per $1 million invested

- **Cost Effectiveness** –
  - **Low:** This action will have a net cost
  - **Medium:** This action will break even
  - **High:** This action will have a net return/benefit