Decarbonization of Buildings in Canadian Cities: Using Property Assessed Clean Energy (PACE) Financing to Attract Private Capital

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*Moderator:* Kass Forman, Manager, Programs and Research, Institute on Municipal Finance and Governance

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Land Acknowledgement

We wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional lands of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.
Questions?

Ask in person

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Decarbonization of Buildings in Canadian Cities: Using Property Assessed Clean Energy (PACE) Financing to Attract Private Capital

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Agenda

• Emissions from buildings in Canadian cities
• Describe PACE financing arrangements
• Outline a funding arrangement that could support PACE financing
• Outline sustainability-linked debt
• Provide a building decarbonization framework for cities
Motivation:
Buildings are a major source of GHG emissions for cities

Emissions mitigation plans must include strategies for decarbonizing buildings
Motivation: Buildings as major sources of city emissions

<table>
<thead>
<tr>
<th>Canadian city</th>
<th>GHG emissions from buildings (% of total emissions)</th>
<th>GHG reporting year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancouver, BC</td>
<td>26%</td>
<td>2015</td>
</tr>
<tr>
<td>Montréal, QC</td>
<td>28%</td>
<td>2015</td>
</tr>
<tr>
<td>Winnipeg, MB</td>
<td>30%</td>
<td>2011</td>
</tr>
<tr>
<td>Edmonton, AB</td>
<td>38%</td>
<td>2021</td>
</tr>
<tr>
<td>GTHA, ON</td>
<td>45%</td>
<td>2020</td>
</tr>
<tr>
<td>Ottawa, ON</td>
<td>46%</td>
<td>2020</td>
</tr>
<tr>
<td>Calgary, AB</td>
<td>57%</td>
<td>2021</td>
</tr>
<tr>
<td>Halifax, NS</td>
<td>72%</td>
<td>2016</td>
</tr>
</tbody>
</table>

- Cities moving towards 2050 net-zero emissions
  - Majority of buildings that will exist in 2050 have already been built
  - Retrofitting for building decarbonization has a critical role to play
  - A study by the Pembina Institute in 2021 estimated retrofitting costs of $20 billion per year over the next 20 years (considered only provinces not territories)
What are reasonable approaches to finance building retrofitting for building decarbonization?
Financing approaches to building decarbonization

Standard loan arrangements can be used to finance retrofit activities for building decarbonization

Performance risk and credit risk carried by the customer

Building owner

Contractor

Lender

Performance risk shared, and credit risk carried by the service provider

Energy savings Agreements

Repayment through shared cost savings agreement

Capital & service delivery

Building owner

Cost savings

New energy costs

Initial energy costs
Where does PACE financing fit?

- PACE financing is designed to address certain capital hurdles associated with financing retrofit
  - Upfront capital
  - Loan term

- PACE financing is designed to support building decarbonization investments by making financing arrangements more favorable
What is PACE financing

- Supported by established provincial legislation
- Participating municipality passes by-law to administer PACE program
- Participating building owners engage with approved PACE program administrator
- Tax authority establishes tax lien on the building
- Tax lien secures the loan
  - Repayment is through property tax arrangement
Where does PACE financing fit in?

Performance risk and credit risk carried by the customer

- Building owner
- Contractor
- Lender

Performance risk shared, and credit risk carried by the service provider

- Energy service provider
- Capital & service delivery
- Building owner

- Repayment through shared cost savings agreement
- Capital savings
- Initial energy costs
- New energy costs
- Cost savings

PACE financing provides more favourable loan terms for building owner

PACE financing provides additional capacity for commercial building decarbonization
How are PACE programs delivered?
Administering PACE programs

- Program arrangement varies (three general arrangements)
  - Government financed and administered
  - Government financed but privately/quasi-publicly administered
  - Privately financed and administered
How PACE financing works

Government financed and administered

- Program can be government financed and government administered
  - City of Toronto’s HELP – Home Energy Loan Program

- Government financing can be provided at the municipal level or by other levels of government
  - City of Toronto initially financed program locally
  - In 2021, City received funding from the Federation of Canadian Municipalities Green Municipal Fund
How PACE financing works

Government financed but privately administered

- Third-party PACE administrator
- Approved third-party administrators
  - PACE Atlantic CIC – NS
- Can be quasi-public
  - CT Green Bank
  - NYCEEC – US
  - Alberta Municipal Services Corporation – AB
- Public financing remains the primary source of funding from the administrator
How PACE financing works

Privately financed and administered

- Private administrators source private capital
  - These can be fully private entities
    - Ygrene – US
    - Renovate America – US
  - Quasi-public entities that attract private capital
    - CT Green Bank
    - NYCEEC – US
- In these cases, private capital or public-private financing arrangements are used
- Administrative burden again removed from municipal government
Privately financed and administered PACE

- This model appears superior
  - Reduces administrative and funding demand from municipality

- Municipalities can focus on policy development
  - Building emissions policies

- US programs have developed around private administration and private funding/public-private funding
  - Municipality approves private PACE administrators
  - Municipalities manage property-tax lien (and repayment arrangements)
Performance in the US

- PACE financing arrangement first established in 2008
  - California - US
- US market has grown substantially over time

<table>
<thead>
<tr>
<th></th>
<th>Active PACE programs</th>
<th>Estimated cumulative # of projects</th>
<th>Cumulative value of investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial PACE</td>
<td>30 US States</td>
<td>3,100</td>
<td>USD 5.2 billion</td>
</tr>
<tr>
<td>Residential PACE</td>
<td>California Missouri Florida</td>
<td>323,000</td>
<td>USD 7.7 billion</td>
</tr>
</tbody>
</table>

- Residential PACE challenges in the US
  - Energy upgrades don’t provide reported savings
  - Consumer protection issues

PACENation. [https://www.pacenation.org/pace-market-data/](https://www.pacenation.org/pace-market-data/)
Performance in the US

Residential PACE challenges in the US

• Ygrene Energy Fund, Inc.
  • Largest US residential PACE administrator
  • Alleged to have engaged in predatorial sales practices
  • FTC & State of California lawsuit and settlement in 2022
  • USD 3MM in fraud relief for customers

• Renovate America Inc.
  • Filed for bankruptcy in 2020
  • Significant revenue losses between 2016 and 2019 (81%)
  • Losses attributed to revenue decline due to 2018 changes to PACE legislation in CA – require stricter ability-to-pay standards
PACE in Canada
**PACE programs in Canadian cities**

- **PACE in Canada**
  - Much less common
  - Many current PACE financing programs are funded by GMF’s Community Efficiency Finance (CEF) program
  - CEF allocates $300 MM (2020–2026) to support energy efficiency/energy upgrade investments

<table>
<thead>
<tr>
<th>Provinces with explicit PACE legislation</th>
<th>Year legislation established</th>
<th>Major cities with PACE by-laws</th>
<th>R-PACE/C-PACE</th>
<th>Notable PACE administrators</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>2018</td>
<td>Calgary Edmonton</td>
<td>R-PACE</td>
<td>Energy Efficiency Alberta</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C-PACE in the city of Edmonton only</td>
<td>Alberta Municipal Services Corporation</td>
</tr>
<tr>
<td>NS</td>
<td>2010</td>
<td>Halifax</td>
<td>R-PACE</td>
<td>Solar City</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>City of Halifax</td>
</tr>
<tr>
<td>ON</td>
<td>2012</td>
<td>Toronto</td>
<td>R-PACE</td>
<td>City of Toronto</td>
</tr>
<tr>
<td>SK</td>
<td>2020</td>
<td>Saskatoon</td>
<td>R-PACE</td>
<td>City of Saskatoon</td>
</tr>
</tbody>
</table>

PE and YK also have enabled legislation for PACE arrangements
Recommendation

• Allow LC3 entities to become PACE administrators for designated cities

• Cities with PACE program
  • Calgary – Climate Innovation Fund (CIF)
  • Edmonton – Climate Innovation Fund (CIF)
  • Toronto – The Atmospheric Fund (TAF)
  • Halifax – Halifax Climate Investment, Innovation and Impact (HCi3) Fund

• Cities without PACE program
  • Vancouver – Zero-Emissions Innovation Centre (ZEIC)
  • Ottawa – Ottawa Climate Action Fund (OCAF)
  • Montréal – Greater Montréal Climate Fund (GMCF)

• Consider private administrators (municipality approved), especially for commercial PACE programs
Designing a PACE financing framework for Canadian cities
Designing a PACE program for Canadian cities

Residential-PACE

LC3 – Low Carbon Cities Canada
CEF – Community Efficiency Finance
GMF – Green Municipal Fund

How to fund PACE financing vehicle
Sustainability-Linked Debt?

Municipality sets up financing vehicle
GMF – set-up costs + base equity

Municipality

Repayment through property tax
Tax lien placed on the properties

On-payment

Soft loans
Returns
Impact capital

Private Investors

CEF - GMF

PACE financing vehicle

LC3 entity as PACE Administrator

Contractors

Service delivery

Building retrofit

Building retrofit

Building retrofit
Designing a PACE program for Canadian cities

Commercial-PACE

LC3 – Low Carbon Cities Canada
CEF – Community Efficiency Finance
GMF – Green Municipal Fund
CIB – Canada Infrastructure Bank

How to fund PACE financing vehicle
Sustainability-Linked Debt?

Municipality sets up financing vehicle
GMF – set-up costs + base equity

CEF-GMF + CIB
Private Investors

Contractors

LC3 entity as PACE Administrator

Service delivery

Building retrofit

Repayment through property tax

Tax lien placed on the properties

On-payment

Capital

Municipality

CIB financing through their Building Retrofits Initiative.
Designing a PACE program for Canadian cities

Commercial-PACE

CIB - Canada Infrastructure Bank

CIB financing through their Building Retrofits Initiative

Private Investors

How to fund PACE financing vehicle
Sustainability-Linked Debt?

PACE financing vehicle

Private entity sets up financing vehicle & provides base equity

Returns

Impact capital

Soft loans

Returns

Service delivery

Contractors

Building retrofit

Repayment through property tax

Tax lien placed on the properties

On-payment

Municipality

Capital
Sustainability-linked debt (bonds/loans)
Sustainability-linked debt

- Financial characteristics vary based on the issuer achieving predefined sustainable/ESG objectives
  - For example, GHG emissions

- The characteristic of the loan or bond that varies is the coupon/interest rate
  - For example, a step-up in the coupon/interest rate if the objective target is not met

- Predefined objectives are established via KPIs and SPTs (sustainability performance targets)
  - KPIs are used to define performance measure (e.g., GHG reduction)
  - SPTs are used to set the targets for the KPIs (e.g., xx% GHG reduction level relative to year yyyy)
Sustainability-linked debt

Traditional bond progression

- Bond is issued with defined coupon rate, payment schedule, and maturity date
- Coupon payments made over time
- Bond matures

Key features: Principal; coupon; term

SLB progression

- Bond is issued with defined coupon rate, payment schedule, and maturity date
- Bond agreement also defines sustainability performance targets
- Performance outcomes evaluated on target dates, and coupon adjustments determined based on defined parameters
- Coupon payment made over time
- Performance target dates established
- Coupon adjustment rates and dates established
- Bond matures

Key features: Principal; coupon; term; KPI; SPT; SPT evaluation date; coupon adjustment rate; coupon adjustment date
## Sustainability-linked bond issuances

<table>
<thead>
<tr>
<th>Issuer</th>
<th>Issue size</th>
<th>Maturity date</th>
<th>Coupon</th>
<th>Step-Up coupon</th>
<th>Evaluation date</th>
<th>Sustainability performance targets (SPTs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enel</td>
<td>USD 1.5 billion</td>
<td>2024 (5 yrs)</td>
<td>2.65%</td>
<td>0.25%</td>
<td>2021</td>
<td>55% of installed renewable energy generation capacity</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telus</td>
<td>CAD 750MM</td>
<td>2031 (10 yrs)</td>
<td>2.85%</td>
<td>1%</td>
<td>2030</td>
<td>Reduce Scope 1 (direct) and Scope 2 (indirect) GHG emissions by 46% (relative to 2019 levels) by 2030</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Telus</td>
<td>USD 900 MM</td>
<td>2032 (10 yrs)</td>
<td>3.4%</td>
<td>1%</td>
<td>2030</td>
<td>Reduce Scope 1 and Scope 2 GHG emissions by 46% (relative to 2019 levels) by 2030</td>
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</tbody>
</table>
| Chile  | USD 2 billion | 2042 (20 yrs) | 4.34%  | 0.125%; 0.25%  | 2034           | 1a. Annual GHG emissions of 95 MtCO2e by 2030  
1b. Max GHG budget of 1,100 MtCO2e between 2020 and 2030  
2a. 50% electricity generation derived from non-conventional renewable sources by 2028  
2b. 60% electricity generation derived from non-conventional renewable sources by 2032 |

Scope 1 emissions – direct emissions from owned or controlled sources.  
Scope 2 emissions – indirect emissions from electricity purchased and used
# Canadian Big-5 sustainable financing pledges

<table>
<thead>
<tr>
<th>Bank</th>
<th>Pledge</th>
<th>Pledged achieved</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC</td>
<td>$500 billion (2025)</td>
<td>$282 billion (2022)</td>
<td>$218 billion</td>
</tr>
<tr>
<td>Scotiabank</td>
<td>$350 billion (2030)</td>
<td>$96 billion (2022)</td>
<td>$246 billion</td>
</tr>
<tr>
<td>TD Bank</td>
<td>$100 billion (2030)</td>
<td>$86 billion (2021)</td>
<td>$14 billion</td>
</tr>
<tr>
<td>BMO</td>
<td>$300 billion (2025)</td>
<td>$267 billion (2022)</td>
<td>$33 billion</td>
</tr>
<tr>
<td>CIBC</td>
<td>$300 billion (2030)</td>
<td>$77 billion (2021)</td>
<td>$223 billion</td>
</tr>
<tr>
<td></td>
<td>$1.550 trillion (2030)</td>
<td>$808 billion</td>
<td>$734 billion</td>
</tr>
</tbody>
</table>
Sustainability-linked debt as a funding source for PACE Financing Vehicles

• SLBs creates strong incentive to deliver PACE financing performance outcomes

• Further supports municipalities in achieving GHG emissions targets for buildings

• Loans/Bonds are backed by revenues from PACE financing vehicles
  • No debt added to municipalities balance sheet
Framework for supporting cities’ approach to building decarbonization
## Framework for cities to support building decarbonization

<table>
<thead>
<tr>
<th>Actions</th>
<th>Implementation state</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities set GHG reduction goals</td>
<td>Common among major cities</td>
<td>Major Canadian cities have made 2050 net-zero commitments</td>
</tr>
<tr>
<td>Cities set GHG reductions from buildings</td>
<td>Policies on new buildings being established</td>
<td>BC – Energy Step Code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>City of Vancouver – net-zero buildings by 2030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>City of Toronto – Toronto Green Standard</td>
</tr>
<tr>
<td>Cities should consider emissions compliance policies for existing buildings</td>
<td>Not seen in Canada</td>
<td>NYC Local Law 97 (passed Apr 2019)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Establishes a cap-and-pay policy on buildings over 25,000 sq ft</td>
</tr>
</tbody>
</table>
## Framework for cities to support building decarbonization

<table>
<thead>
<tr>
<th>Actions</th>
<th>Implementation state</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities establish policies for commercial vs residential buildings and implement PACE bylaws</td>
<td>PACE available in AB, SK, ON, NS, PE, YK</td>
<td>Residential PACE programs in several major Canadian cities: Calgary, Edmonton, Saskatoon, Toronto, Halifax</td>
</tr>
<tr>
<td>Cities establish PACE financing vehicles</td>
<td>PACE financing vehicles have yet to be used in Canada</td>
<td>Similar entities have been used by quasi-public and private PACE administrators in the US</td>
</tr>
<tr>
<td>Cities establish SLB/SLL Principles</td>
<td>SLBs/SLLs do not appear to have reached municipalities as yet</td>
<td>SLBs have been issued at the state (AZ) and country level (Chile)</td>
</tr>
</tbody>
</table>
Conclusions

- Buildings are a major source of emissions in Canadian cities
  - Plans to reduce city emissions must have a dedicated strategy around building decarbonization
  - Different approaches available to support building decarbonization

- PACE (Property Assessed Clean Energy) financing is one arrangement to provide long-term financing for building decarbonization retrofitting
  - Loans are secured by tax lien on the property
  - Loans remain with the property
  - Loan rates are fixed with long-term financing that make payments more affordable
Conclusions

• Cities can use PACE financing to support building decarbonization

• PACE financing vehicles can be designed to tap the sustainability-linked debt market
  • Investors have shown an attraction to this market
  • Provide capital with financial incentives that support emissions reduction
  • Attract lower-cost debt

• Cities should develop a Sustainability-Linked Bond framework
  • Used to support the issuance of SLBs for building decarbonization
Q & A