

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

Speaker:

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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

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

- **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)

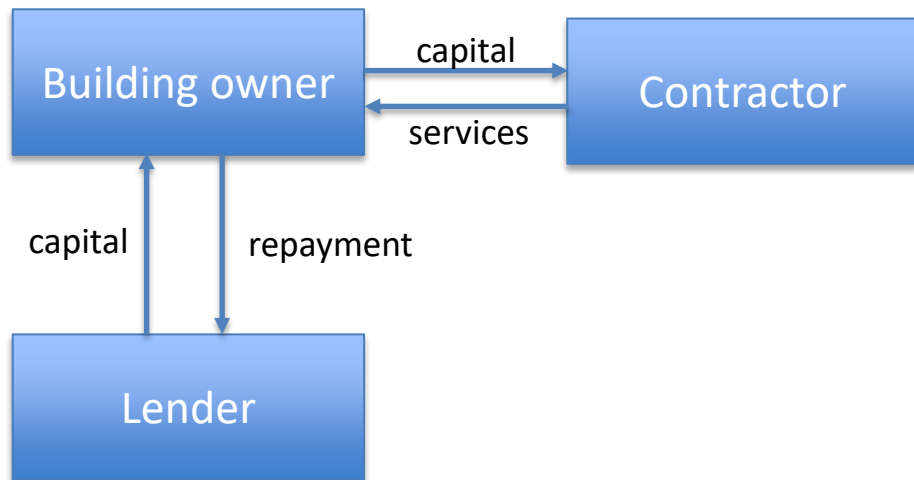
What are reasonable approaches to finance building retrofitting for building decarbonization?



# Financing approaches to building decarbonization

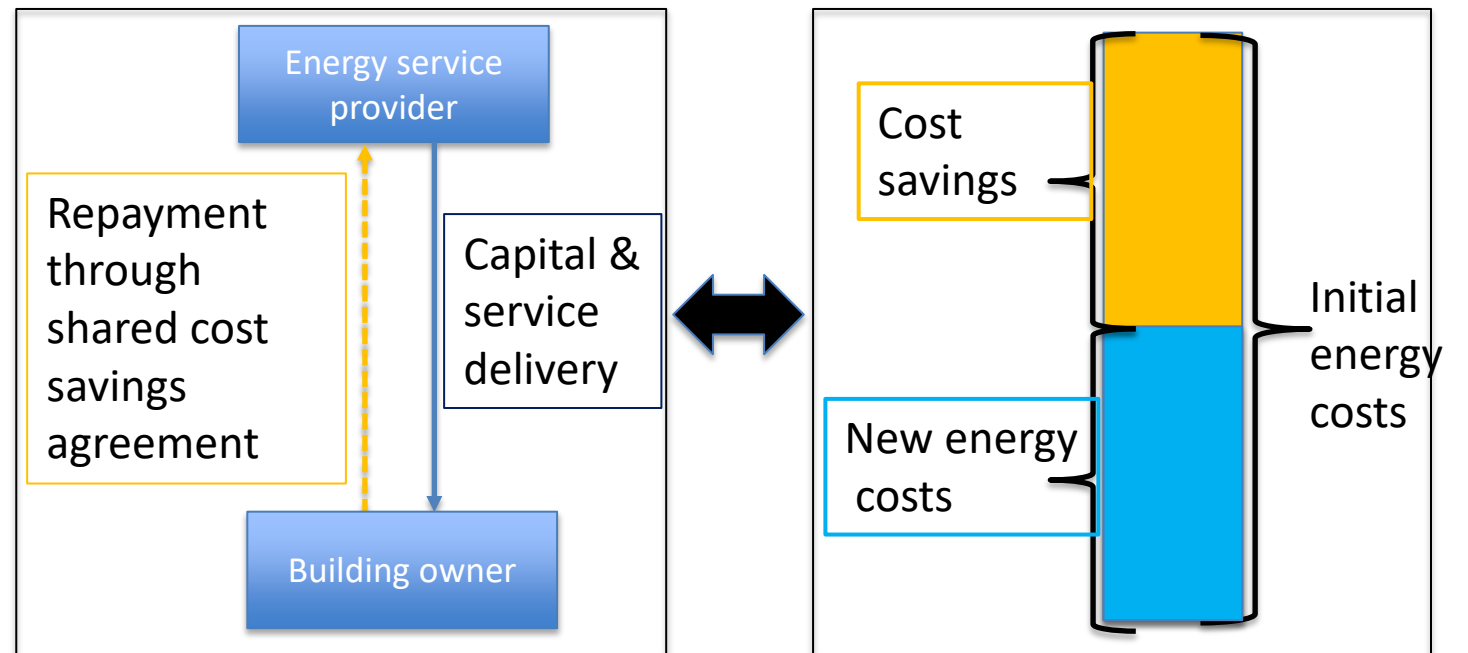
Standard loan arrangements can be used to finance retrofit activities for building decarbonization

Performance risk and credit risk carried by the customer



Energy Savings Agreements

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



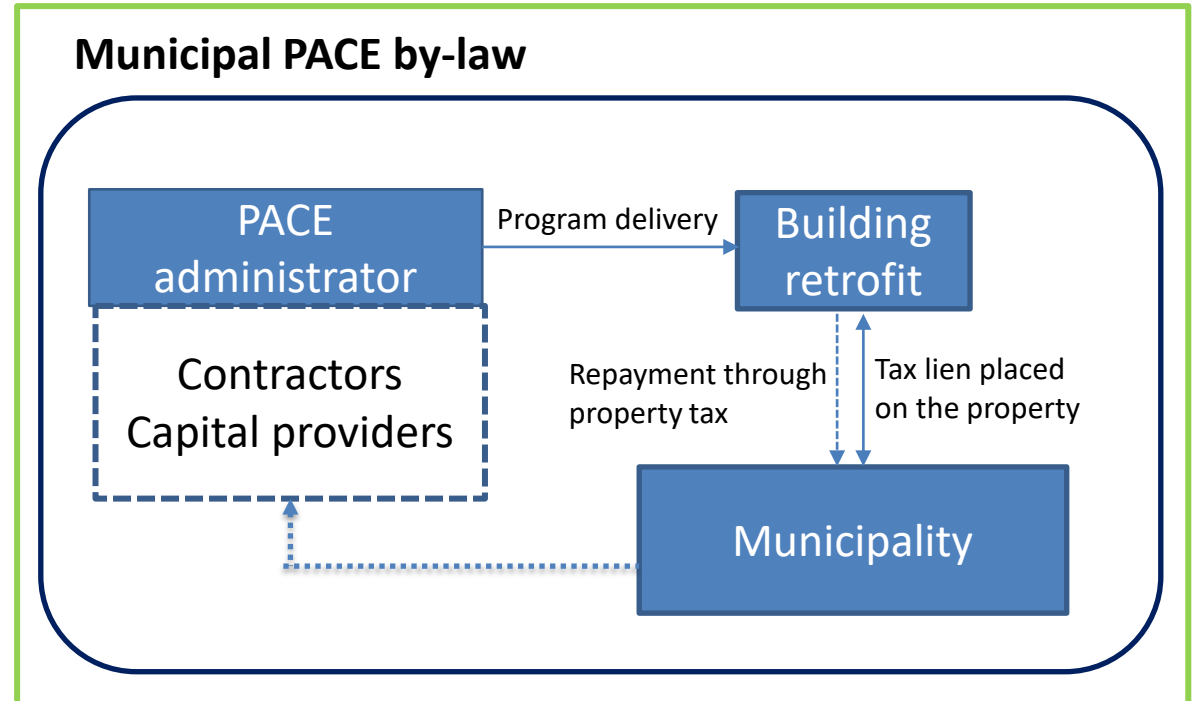
# Where does PACE financing fit?

- 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

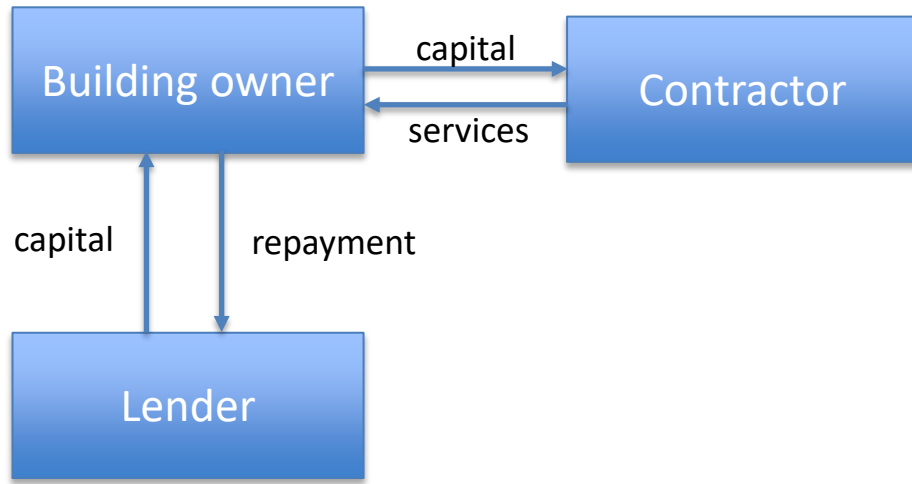
- Supported by established provincial legislation
- Participating municipality passes by-law to administer PACE program
- Participating building owners engage with approved PACE program administrator
- Tax authority establishes tax lien on the building
- Tax lien secures the loan
  - Repayment is through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

## PACE legislation



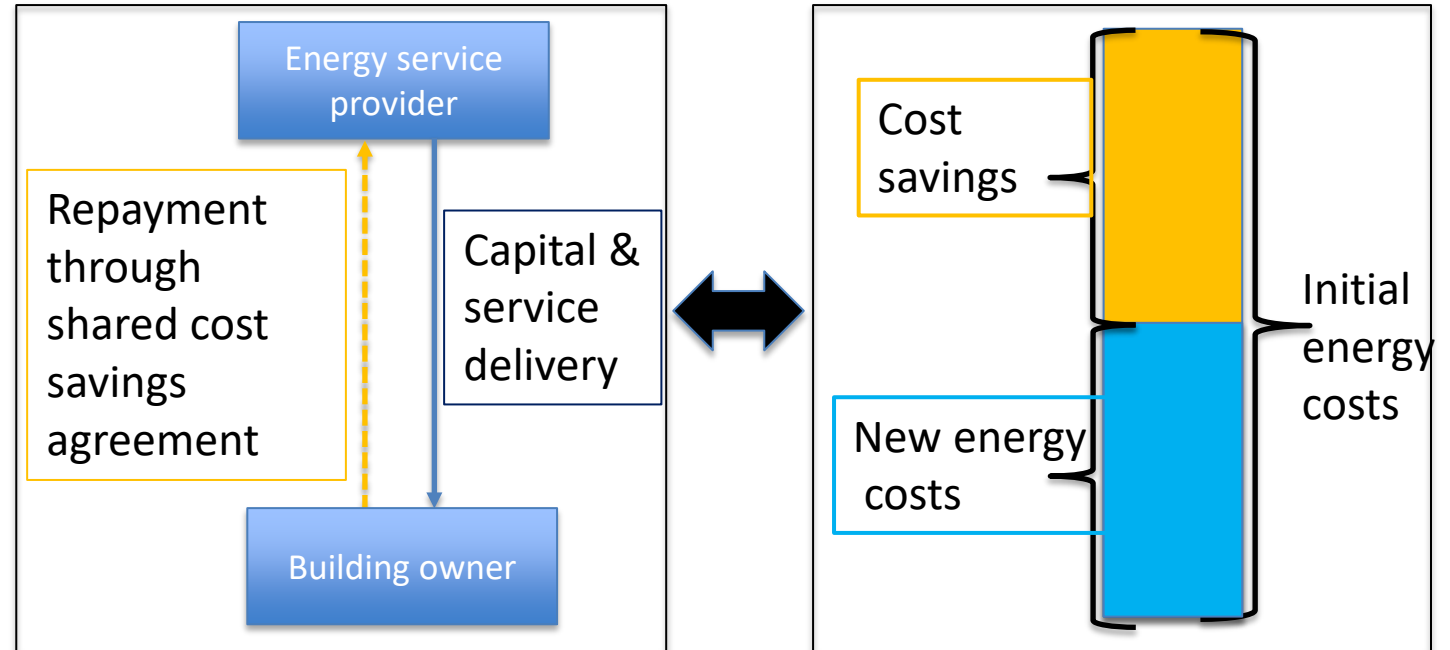
# Where does PACE financing fit in?

Performance risk and credit risk carried by the customer



PACE financing provides more favourable loan terms for building owner

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



PACE financing provides additional capacity for commercial building decarbonization

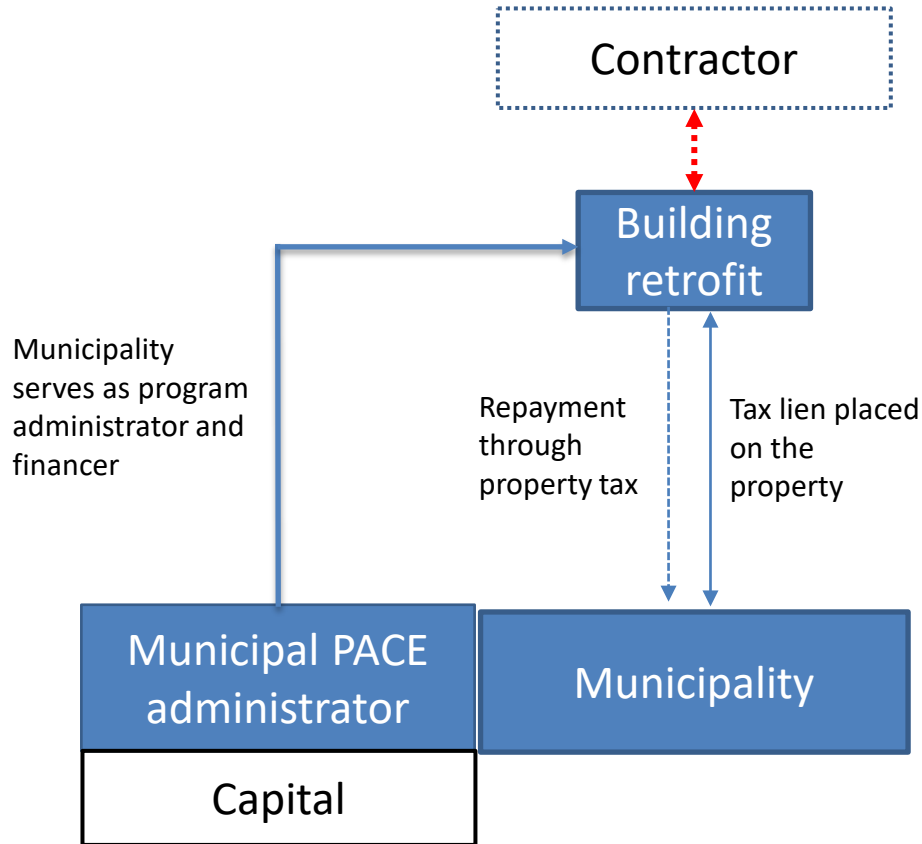
# How are PACE programs delivered?

# 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

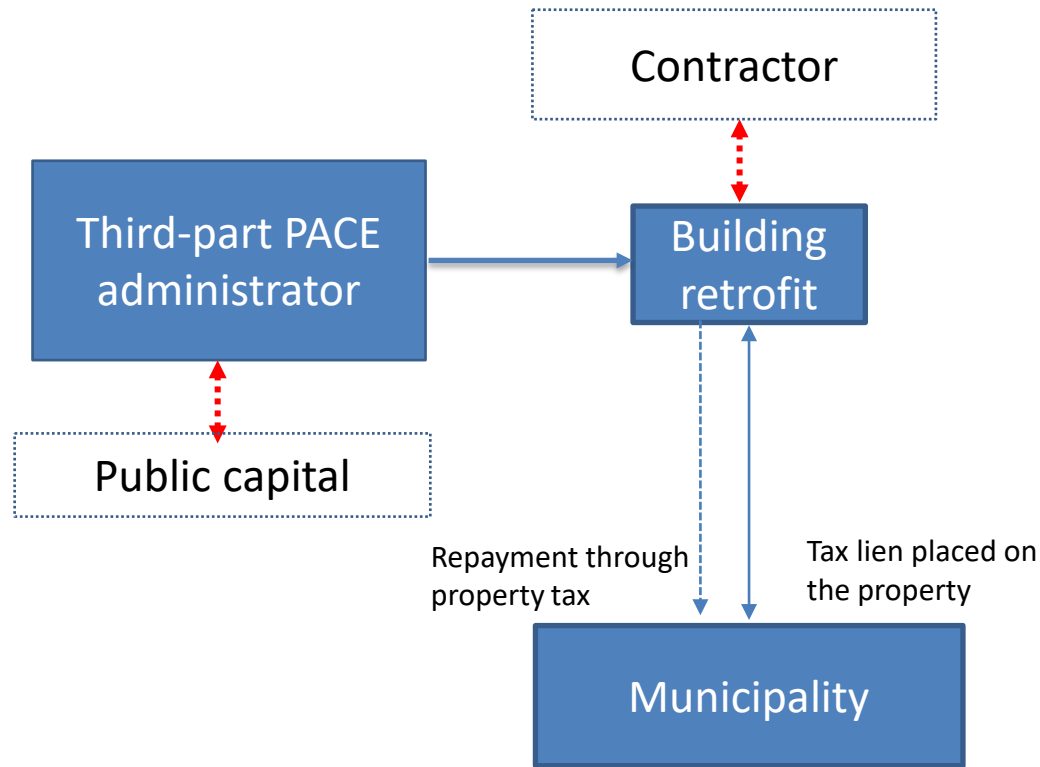
## Government financed and administered



- 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

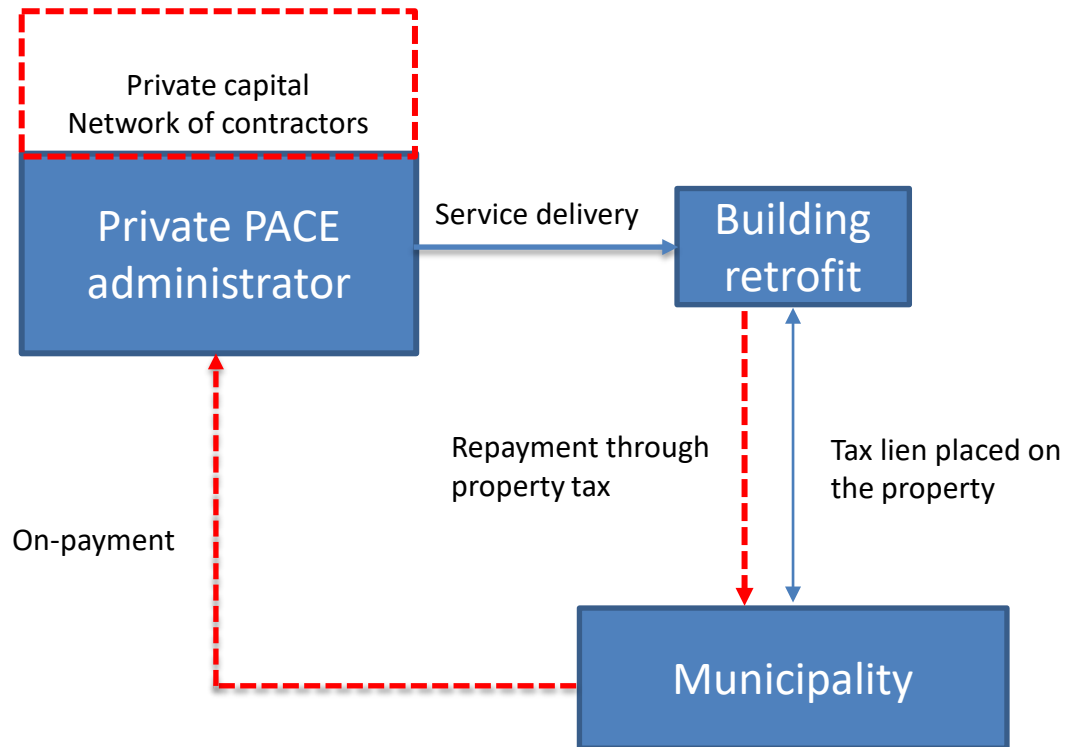


- Third-party PACE administrator
- Approved third-party administrators
  - PACE Atlantic CIC - NS
- Can be quasi-public
  - CT Green Bank
  - NYCEEC - US
  - Alberta Municipal Services Corporation - AB
- Public financing remains the primary source of funding from the administrator



# 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

	Active PACE programs	Estimated cumulative # of projects	Cumulative value of investments	
Commercial PACE	30 US States	3,100	USD 5.2 billion	2009 – 2022
Residential PACE	California Missouri Florida	323,000	USD 7.7 billion	2010 – 2021

PACENation. <https://www.pacenation.org/pace-market-data/>

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

# Performance in the US

## Residential PACE challenges in the US

- **Ygrene Energy Fund, Inc.**
  - Largest US residential PACE administrator
  - Alleged to have engaged in predatory 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

Provinces with explicit PACE legislation	Year legislation established	Major cities with PACE by-laws	R-PACE/C-PACE	Notable PACE administrators	
AB	2018	Calgary Edmonton	R-PACE C-PACE in the city of Edmonton only	Energy Efficiency Alberta Alberta Municipal Services Corporation	Quasi-public
NS	2010	Halifax	R-PACE	Solar City City of Halifax	Public
ON	2012	Toronto	R-PACE	City of Toronto	Public
SK	2020	Saskatoon	R-PACE	City of Saskatoon	Public

PE and YK also have enabled legislation for PACE arrangements

# PACE programs in Canadian cities

## 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**

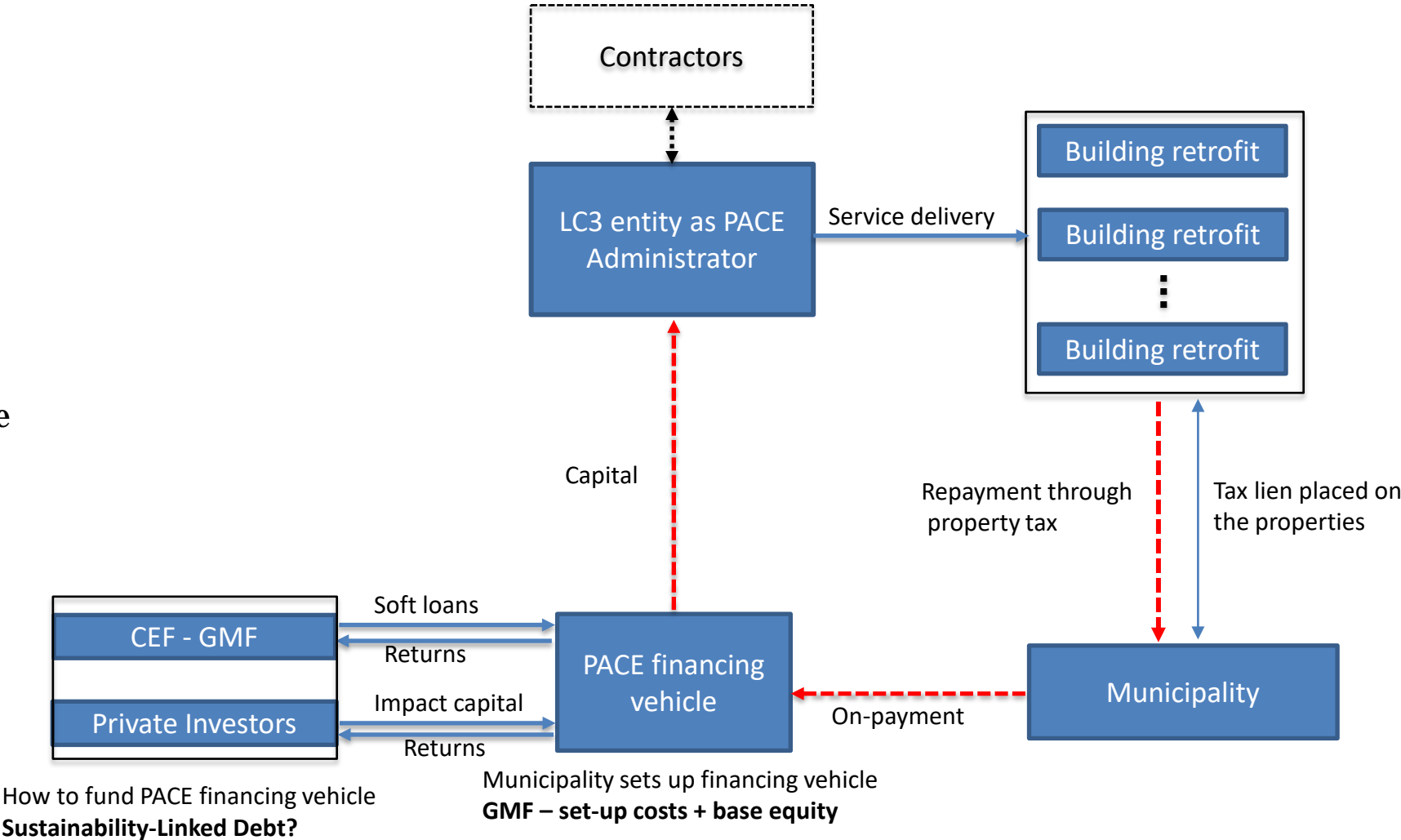
# Designing a PACE financing framework for Canadian cities



# Designing a PACE program for Canadian cities

## Residential-PAVE

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

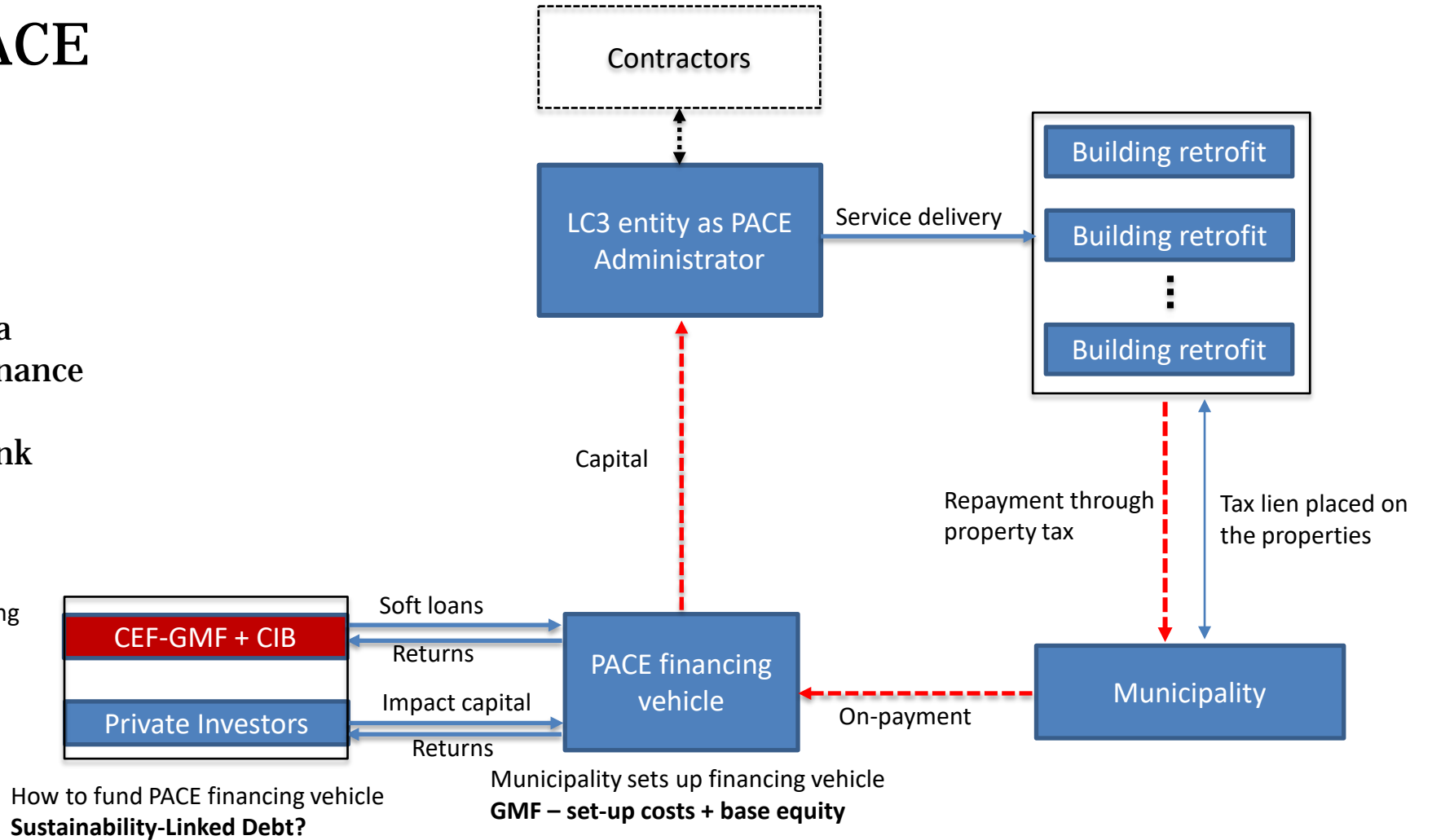


# Designing a PACE program for Canadian cities

## Commercial-PACE

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

CIB financing through their Building Retrofits Initiative.

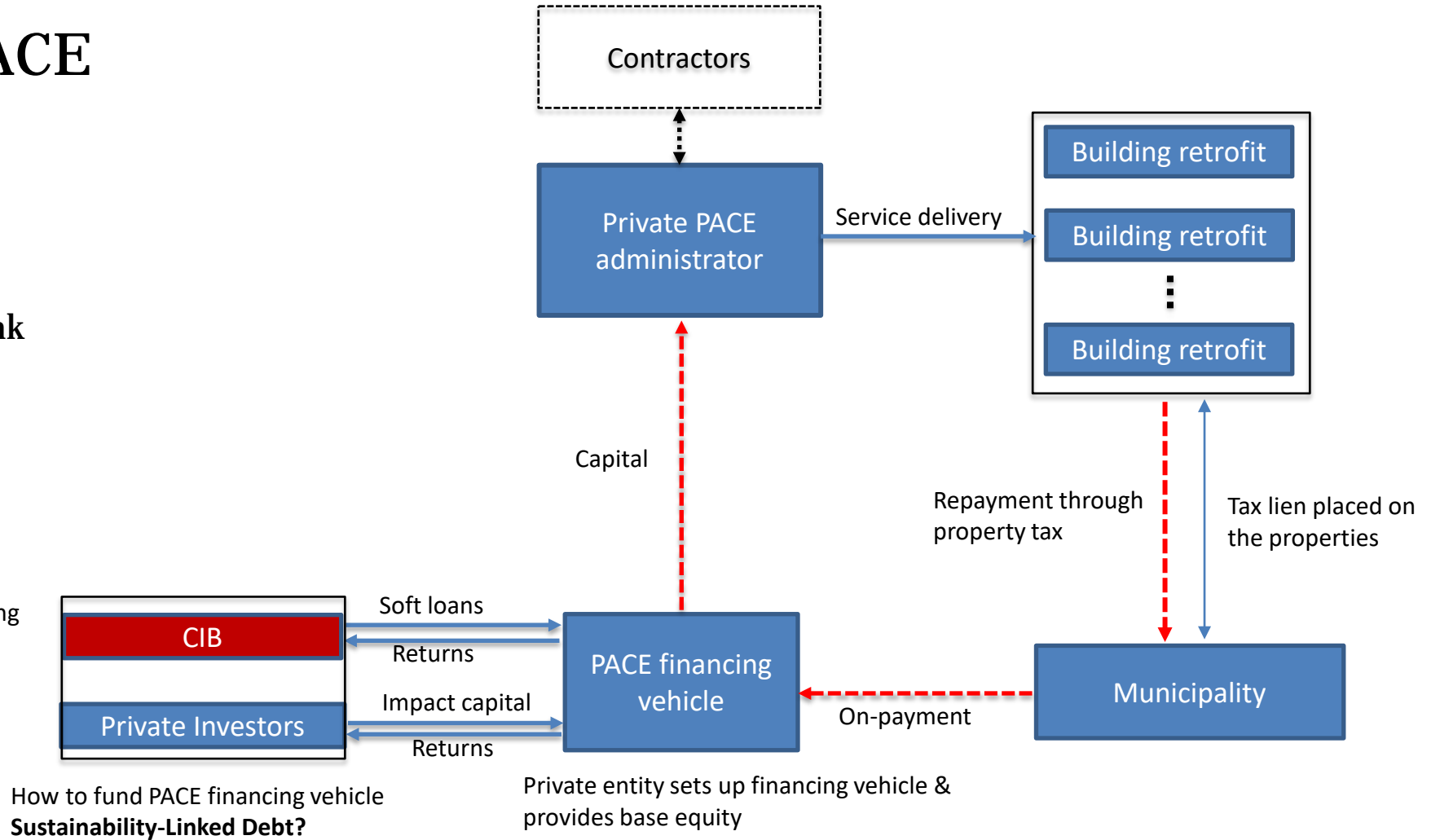


# Designing a PACE program for Canadian cities

## Commercial-PACE

CIB - Canada Infrastructure Bank

CIB financing through their Building Retrofits Initiative



How to fund PACE financing vehicle  
**Sustainability-Linked Debt?**

Private entity sets up financing vehicle & provides base equity

# 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)

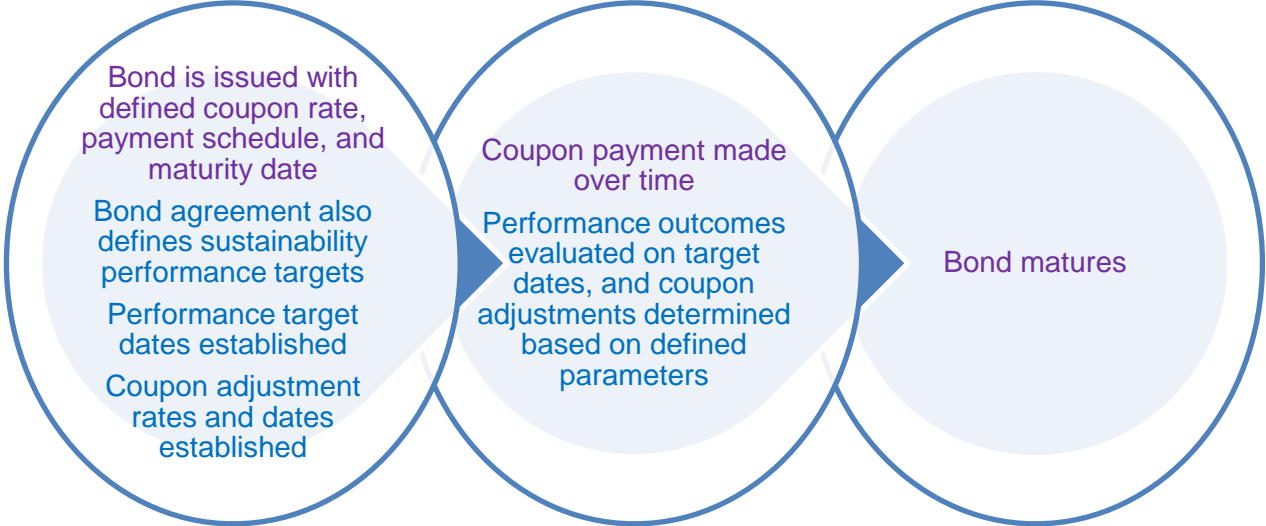
# Sustainability-linked debt

## Traditional bond progression



Key features: Principal; coupon; term

## SLB progression



Key features: Principal; coupon; term; **KPI; SPT; SPT evaluation date; coupon adjustment rate; coupon adjustment date**

# Sustainability-linked bond issuances

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

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

Bank	Pledge	Pledged achieved	Balance
RBC	\$500 billion (2025)	\$282 billion (2022)	\$218 billion
Scotiabank	\$350 billion (2030)	\$96 billion (2022)	\$246 billion
TD Bank	\$100 billion (2030)	\$86 billion (2021)	\$14 billion
BMO	\$300 billion (2025)	\$267 billion (2022)	\$33 billion
CIBC	\$300 billion (2030)	\$77 billion (2021)	\$223 billion
	\$1.550 trillion (2030)	\$808 billion	\$734 billion



# 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

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

# Framework for cities to support building decarbonization

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

# 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