Accelerating Energy Efficiency Investments

Feb 22, 2018

WHAT IS THE ENERGY SPEND IN CANADA?

WHAT IS THE SPEND ON ENERGY EFFICIENCY IN CANADA?

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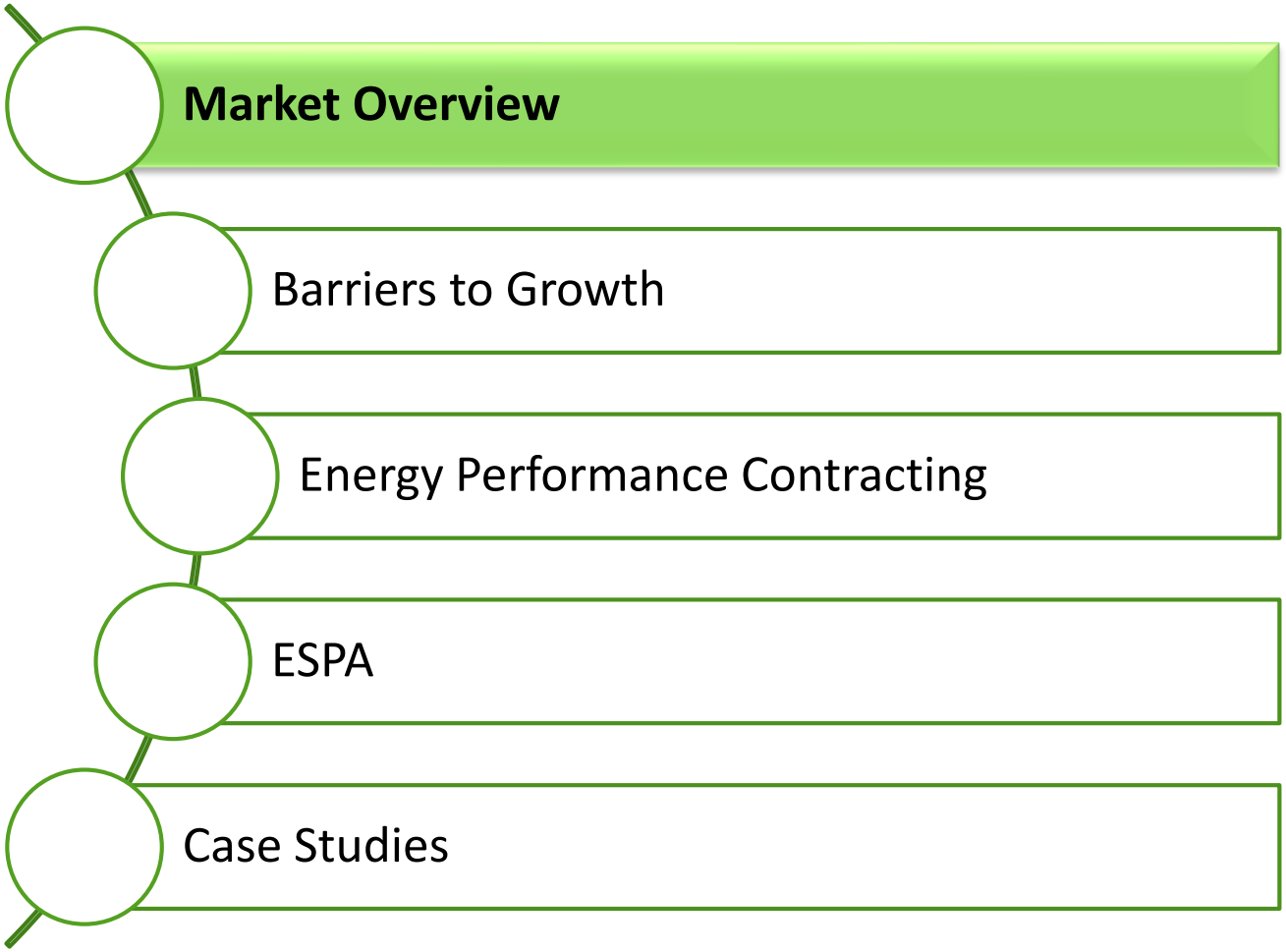

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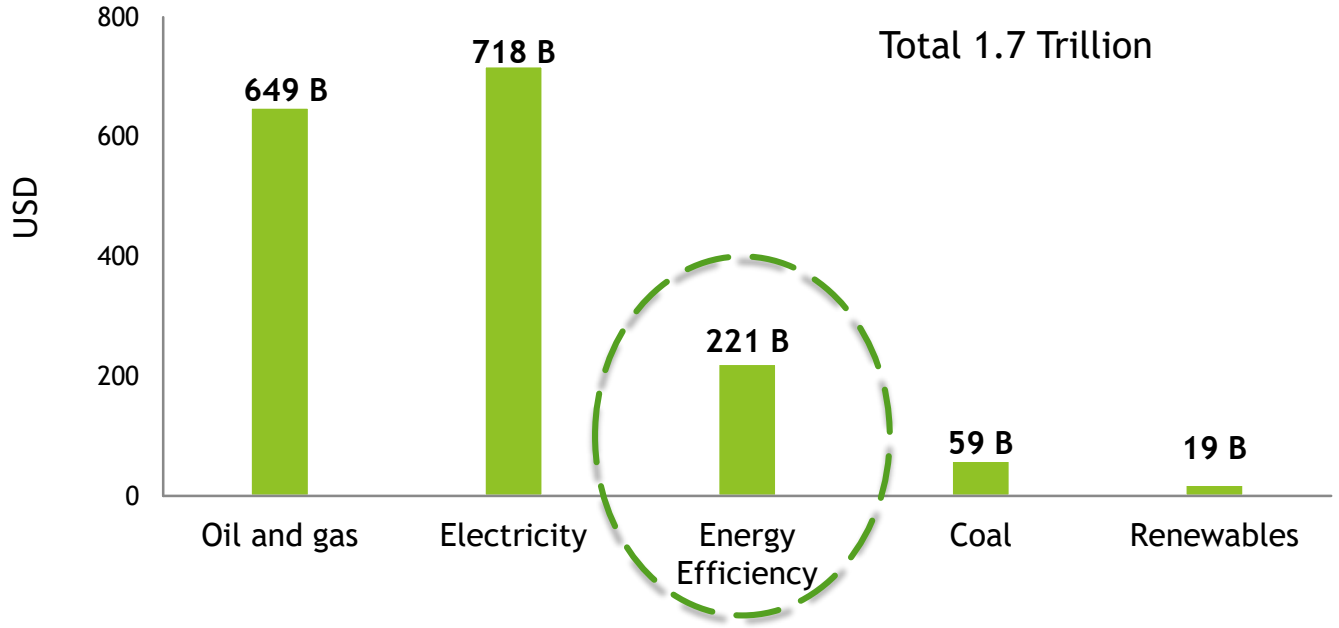
Global Energy Investment



Source: IEA, information as of 2015

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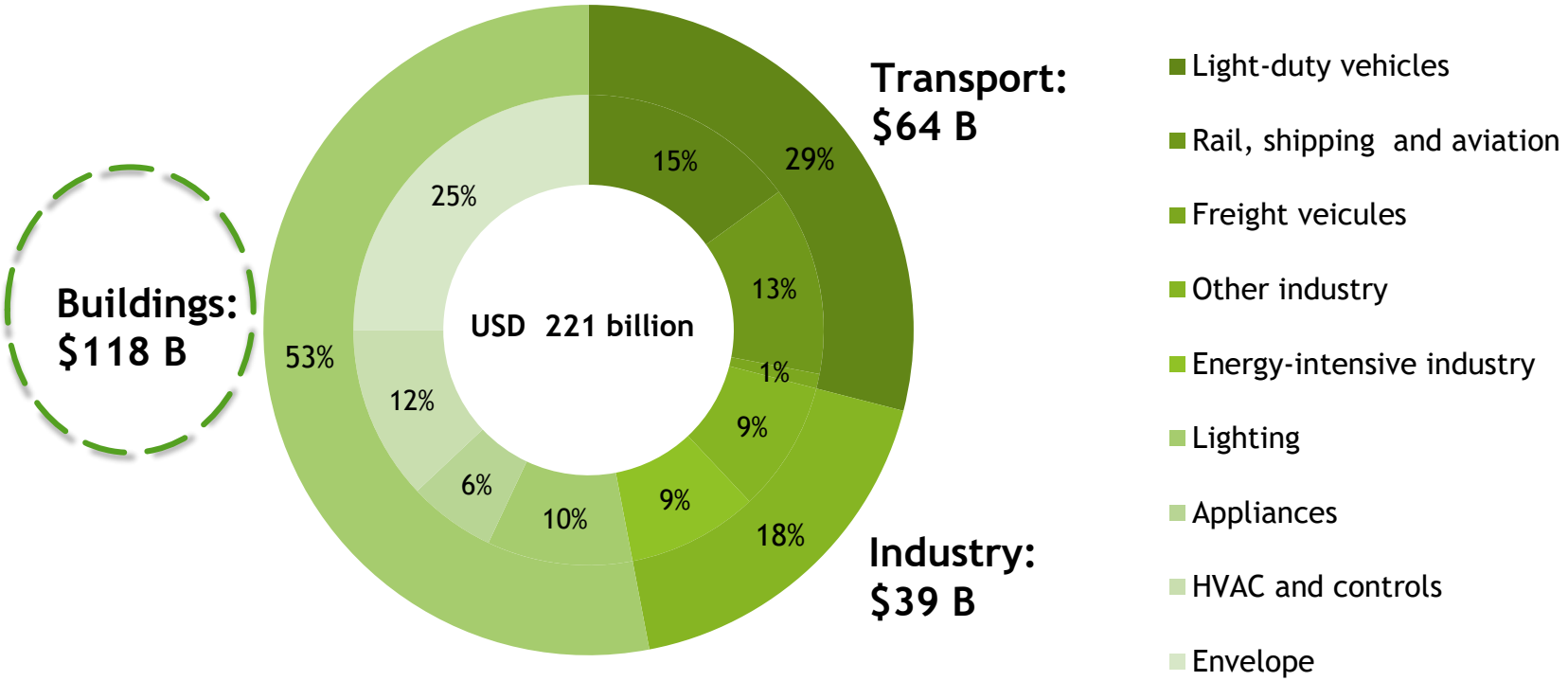
Global EE Investment



Source: IEA, information as of 2015

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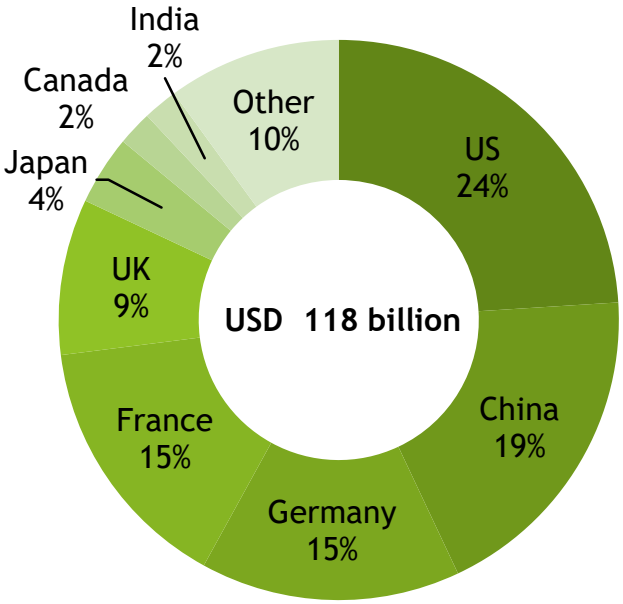
Buildings EE Investment



	% of Global EE Investment	% of Global Energy Consumption
US	24%	16.3%
Germany	15%	2.3%
Canada	2%	2.0%

Source: IEA, Enerdata, EC Research, information as of 2016

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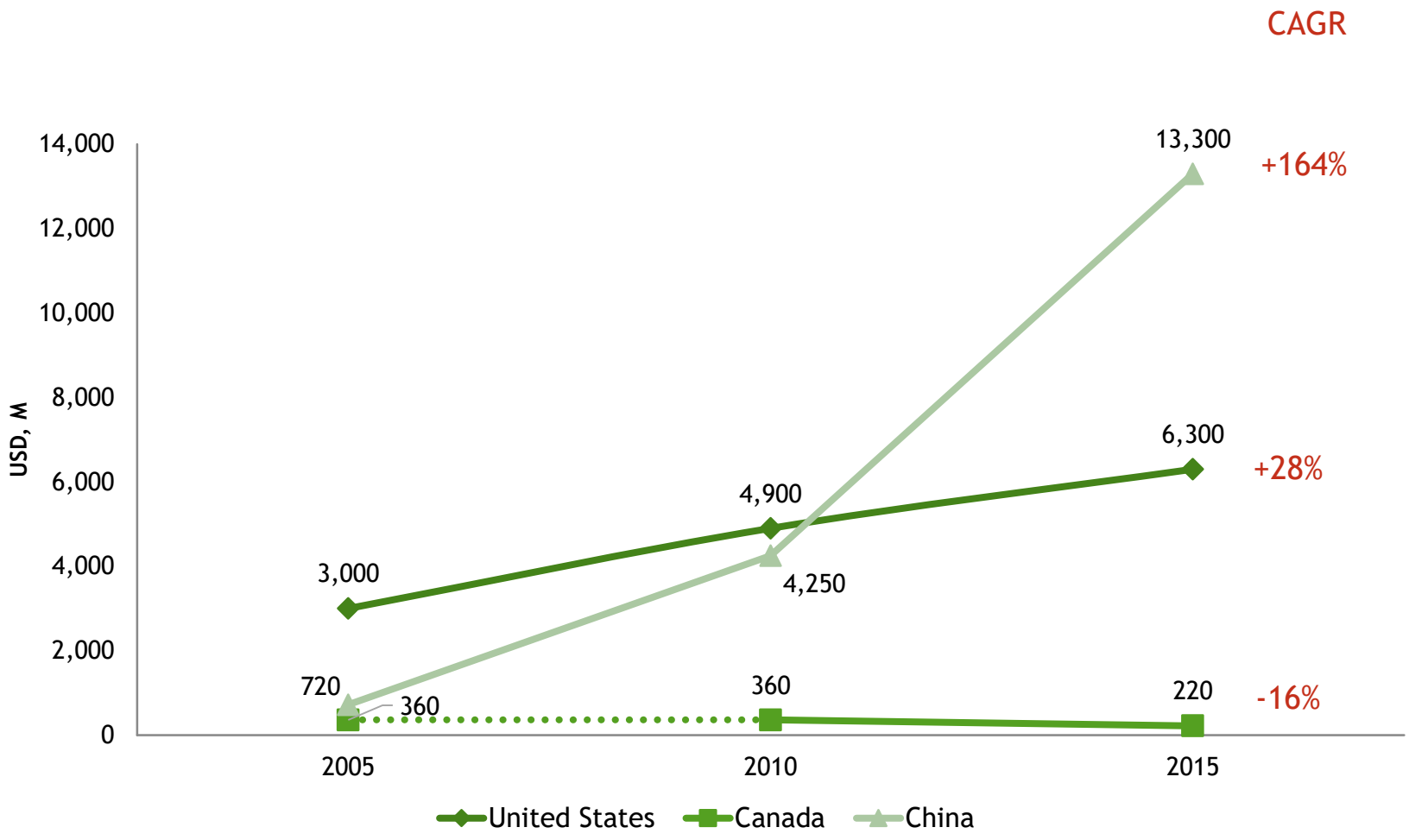
Market Size Comparison



Source – WRI, EMCA. Navigant, ESAC, EC Research, Canada numbers based on market conversations

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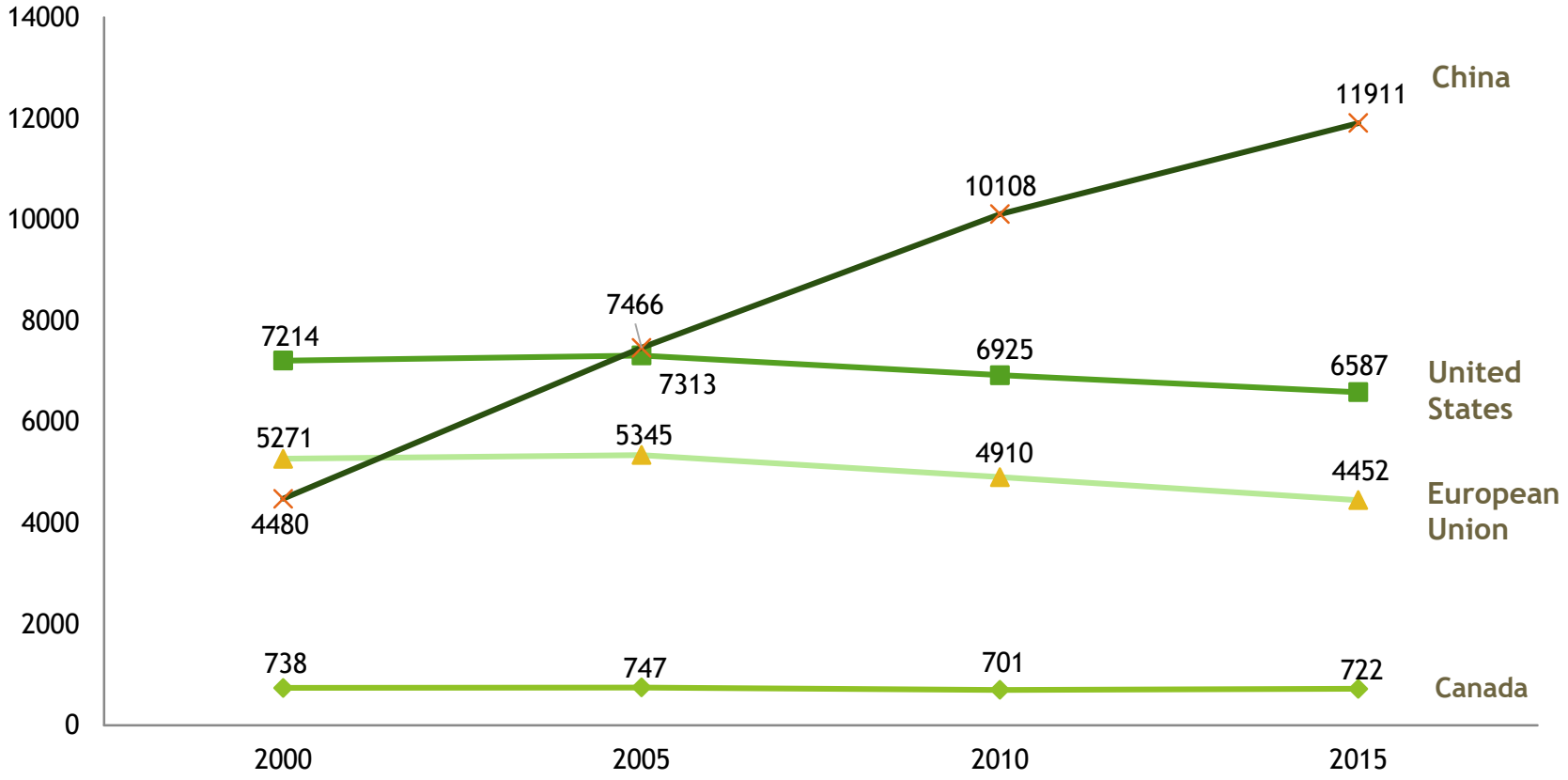
GHG Emission Trends



Source: UNFCCC, IEA, NRCAN, BP and CAIT

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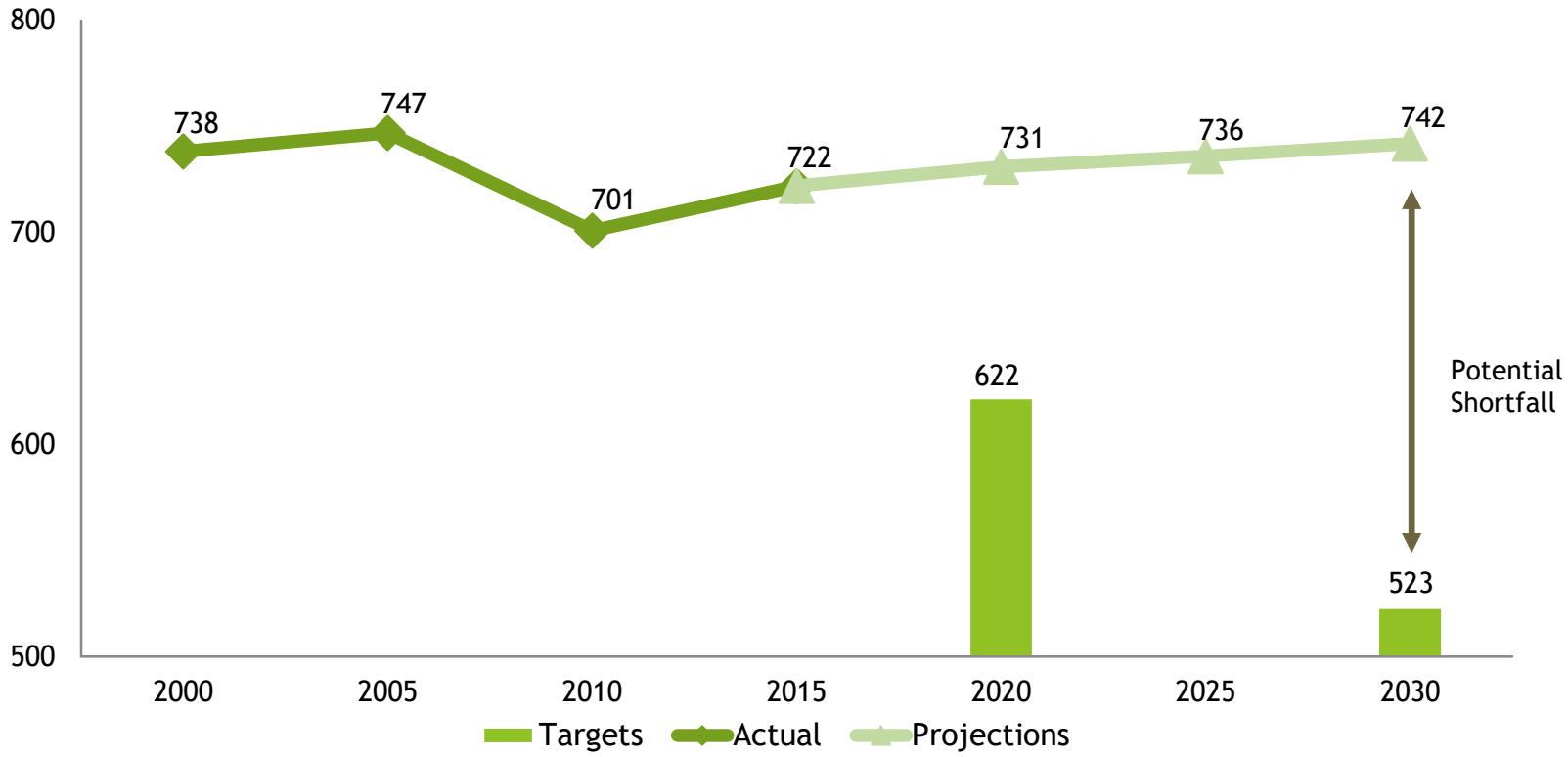
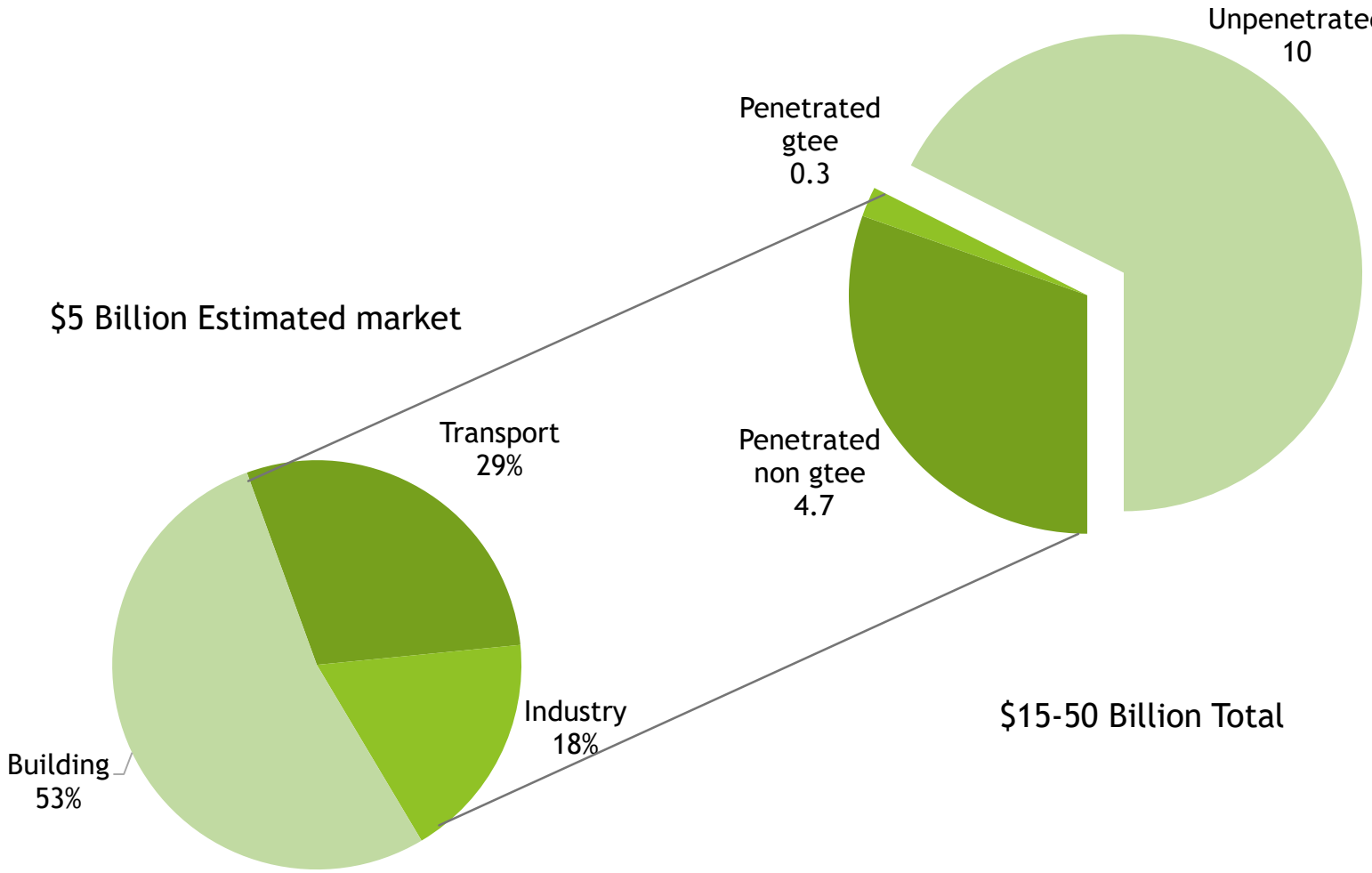
GHG emissions - Canada



IEA estimates that energy efficiency can reduce 49% of GHG emissions needed by 2030

Source: Government of Canada, 2016

Canada EE Market



Source – NRCAN, IEA, ESAC, EC Research. Based on 2013 numbers

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Canada EE – 1990 -2013

Residential Buildings:

- Savings of $12B in energy costs
- Reduction of 27.9 Mt of GHG emissions

Commercial and Institutional Buildings:

- Savings of $5.4B in energy costs
- Reduction of 11 Mt in GHG emissions

Industrial:

- Savings of $3B in energy costs
- Reduction of 10.8 Mt in GHG emissions

Source: NRCan, 2017

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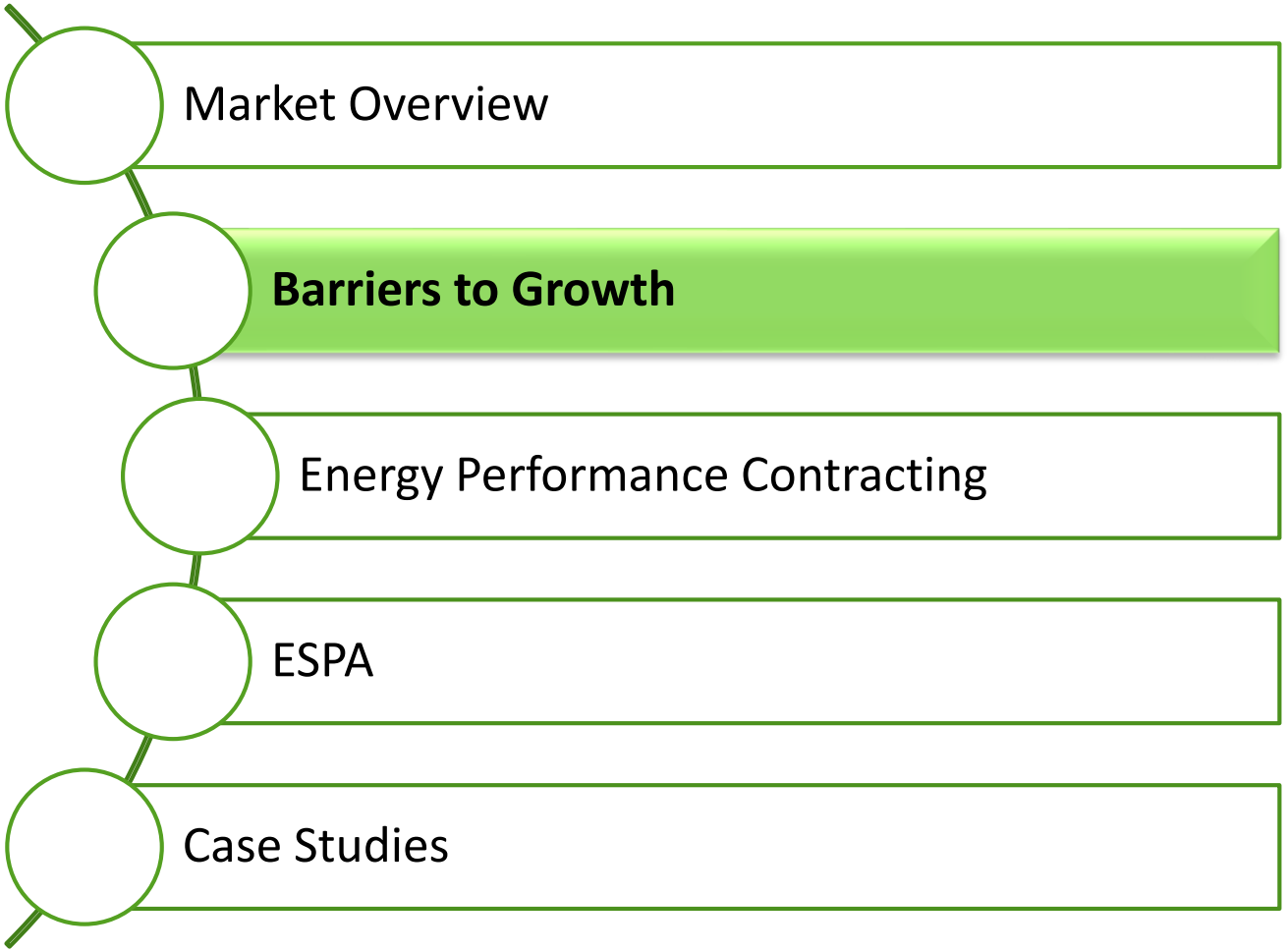

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The Problem

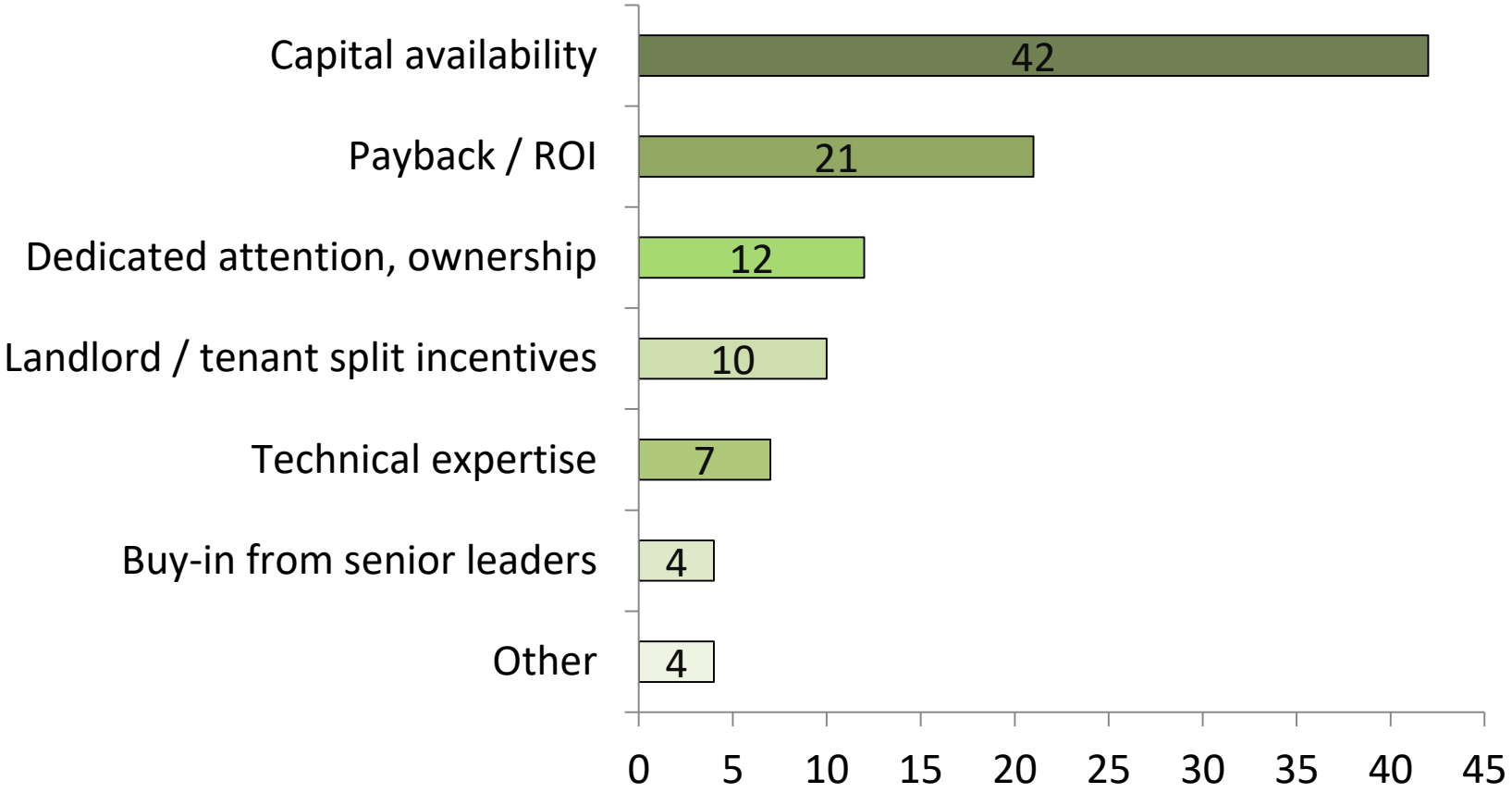
Too little,

too late…..

- Investment in energy efficiency remains small and is often deferred
- Investment, when made, is done in a reactionary and piece-meal way
- Leads to poor results, failed expectations, and missed opportunities for reducing expenses and increasing asset values

…which seems strange since well-managed energy efficiency investments can offer levered returns of over 15 – 20%

Barriers to Growth



Source – Energy Services Assoc of Canada (ESAC), Johnson Controls – IFMA 2009 survey

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Barriers

Top 3 barriers identified by TAF:

- Capital
- Risk
- Inertia

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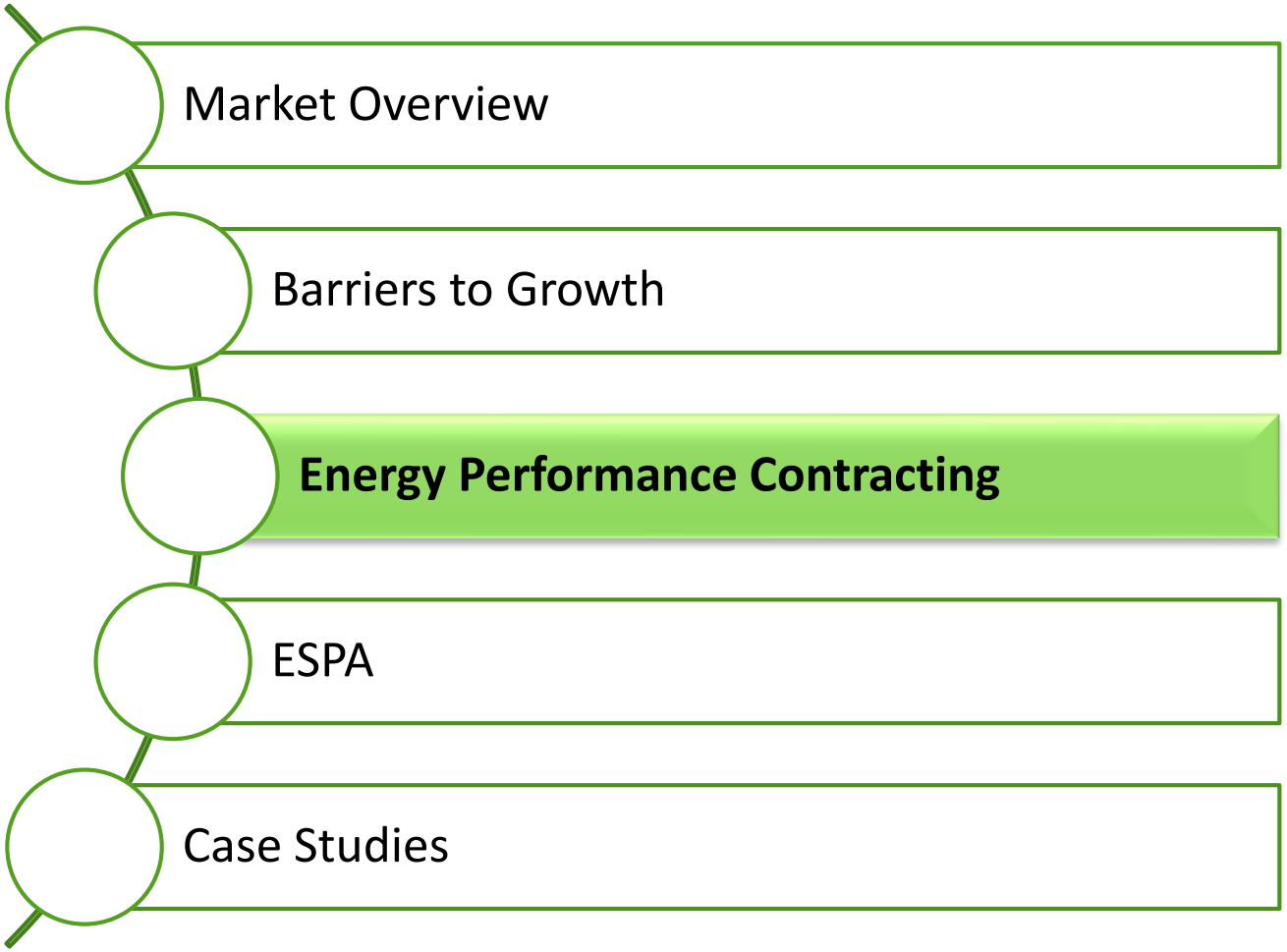

Market Overview
Barriers to Growth
Energy Performance Contracting
ESPA
Case Studies

Solutions

- Ease and simplicity
- Availability of professionals
- Combination of financing and incentives
- Quality assurance and support
- Track record of project success
- De-risk investments

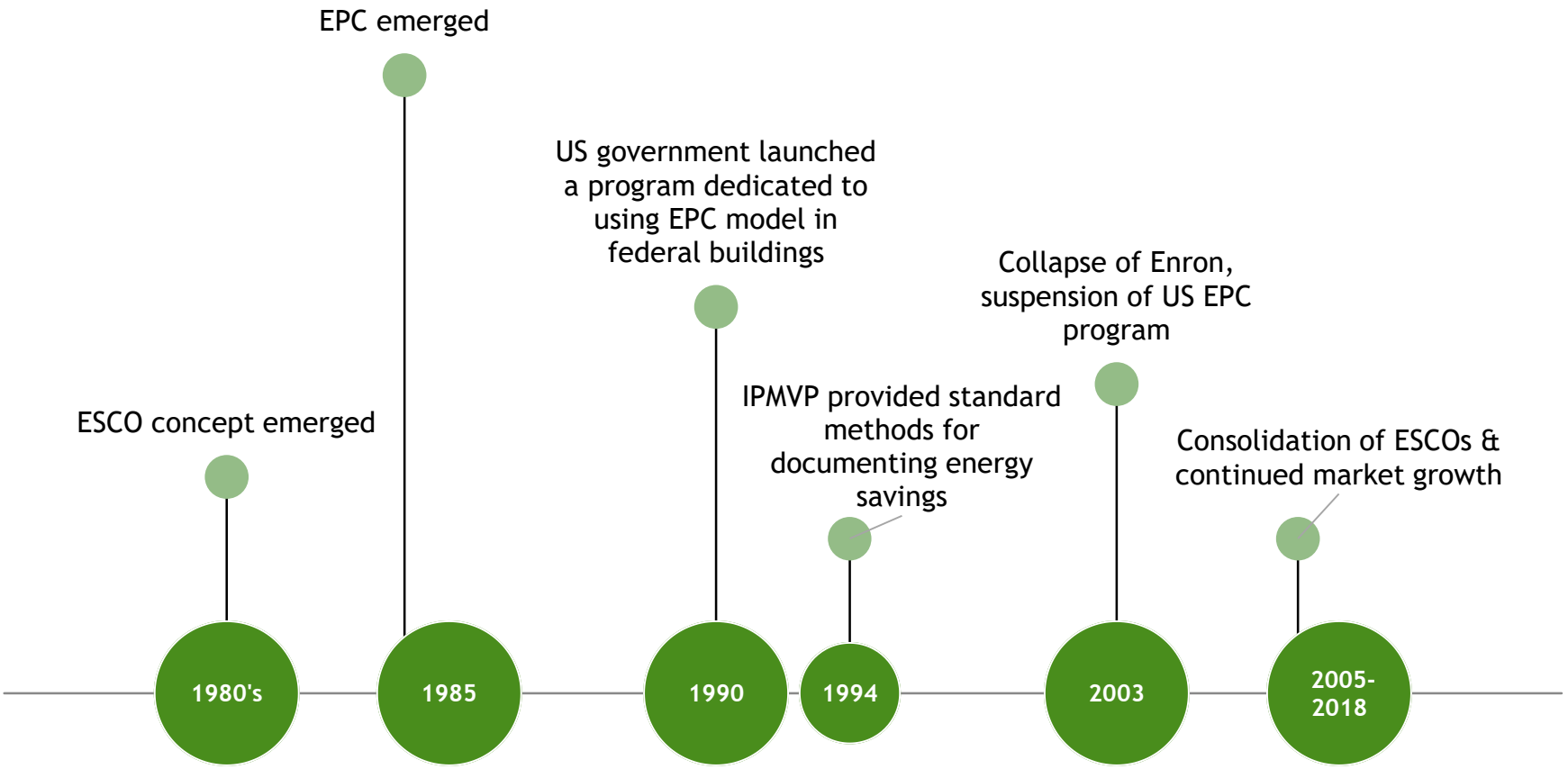
Energy Performance Contracting

Source: Energy & Mines Ministers' Conference, 2016

Energy Performance Contracting (EPC)

- Comprehensive energy building upgrades
- Guarantee energy savings will finance the cost of the project
- Typically offered by Energy Service Companies (ESCO)
- Long-term project financing arranged on clients behalf

EPC – Historical Context



Source: ICF International

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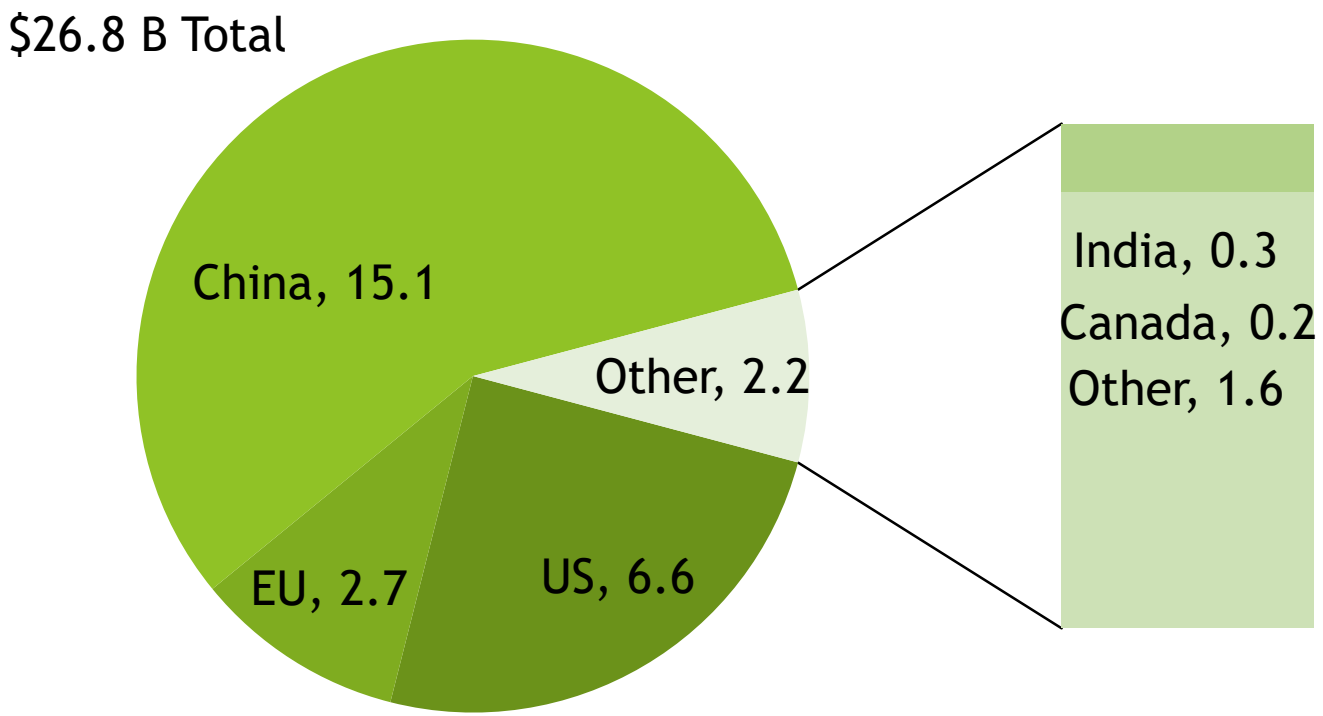
ESCO Revenues



Source: IEA, ESAC, Our estimates 2017

Market Segments

United States

	%
Institutional	92%
Residential	
Commercial	8%
Industrial	

Canada

	%
Institutional	90%
Residential	
Commercial	10%
Industrial	

Source: US DOE, ESAC, Our estimates 2017

Emissions by Segments - Canada

GHG Emissions

	%
Institutional	9%
Commercial	
Residential	50%
Industrial	

Investments

	%
Institutional	>90%
Commercial	
Residential	<10%
Industrial	

Source: NRCan, EC Estimates

EPC Historical Context

- Energy Service Companies (ESCOs) offer Energy Performance Contracting (EPC) solutions. There are 2 models that ESCOs follow

Risks Taken/Type	Shared Savings Model	Guaranteed Savings Model
Financial Risk	Yes	No
Performance Risk	Yes	Yes
Technical Risk	Yes	Yes

- In Canada, ESCOs normally don't deploy capital (guaranteed savings model)
- Over 98% of market is with only 8 ESCOs - Siemens, Honeywell, MCW, Ameresco, Trane, Johnson Controls, Ainsworth, Direct Energy

Source: EC Research, ESAC

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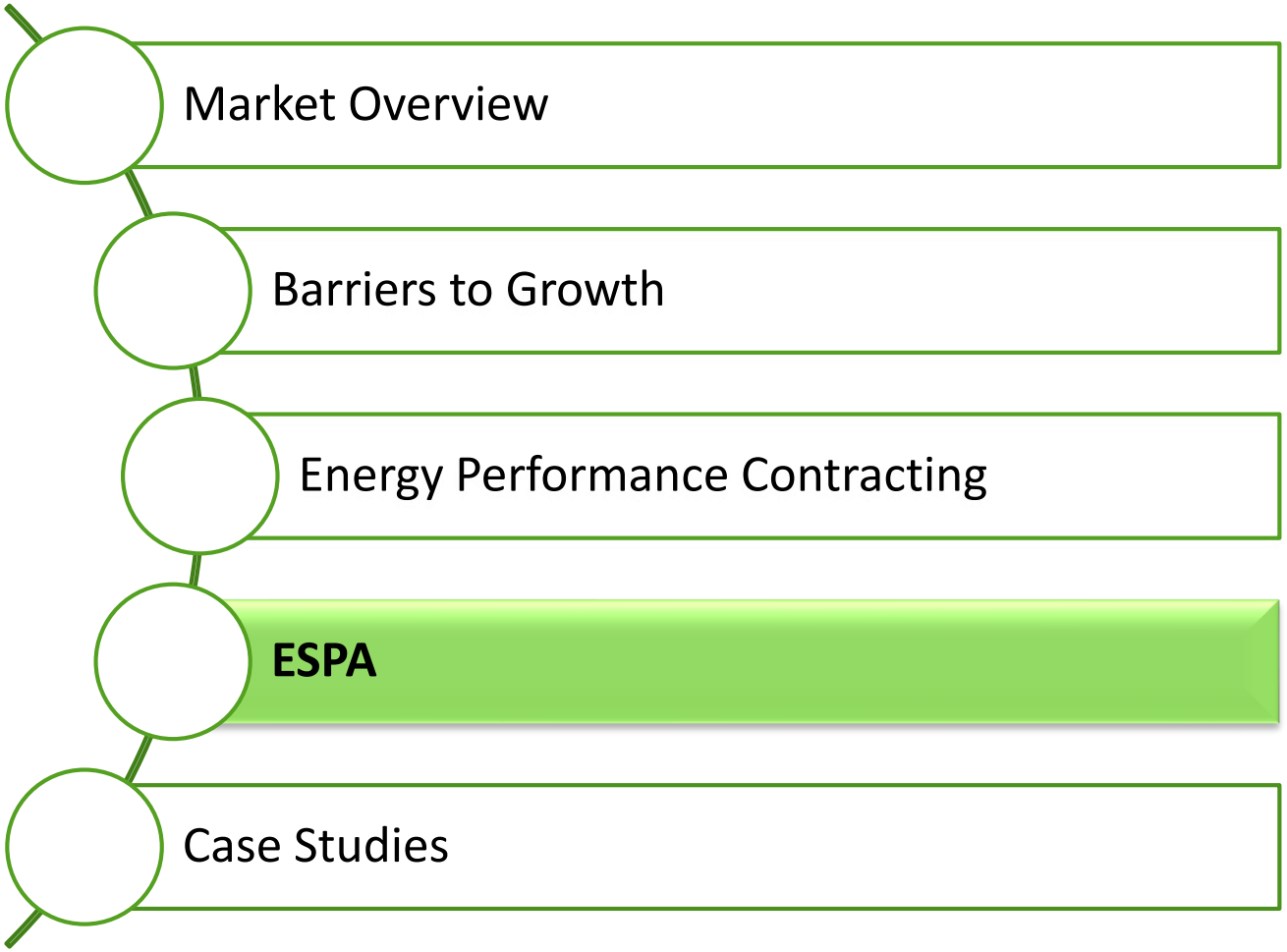

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TAF - EC

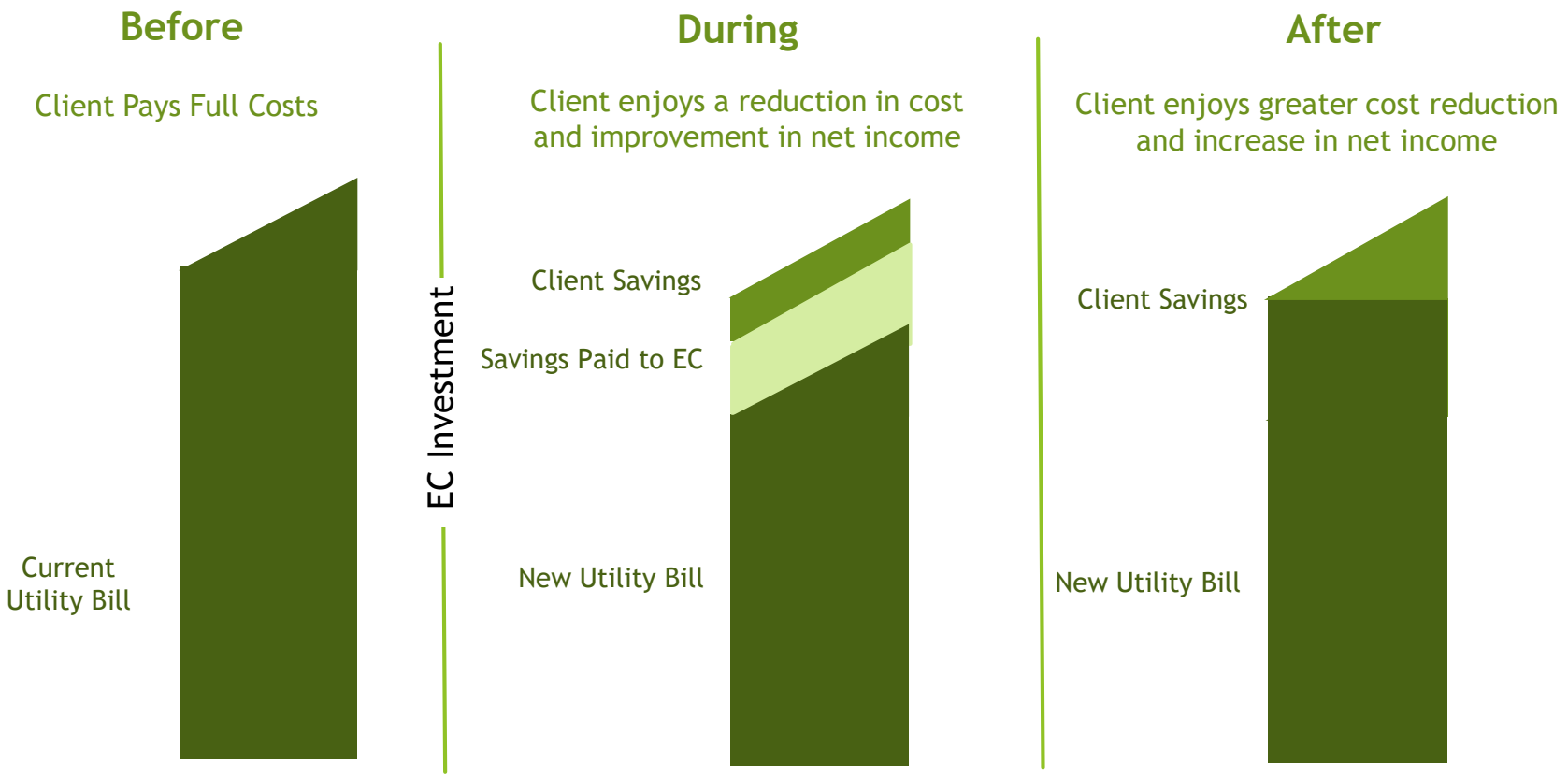
The Atmospheric Fund

- Agency of the City of Toronto
- Invests in GHG reduction initiatives
- Pilot-tested investment model
- Created ESPA

Efficiency Capital

- Incubated by TAF
- Social for-profit enterprise
- Pan-Canadian focus
- Sole-licensee of ESPA

Energy Savings Performance Agreement



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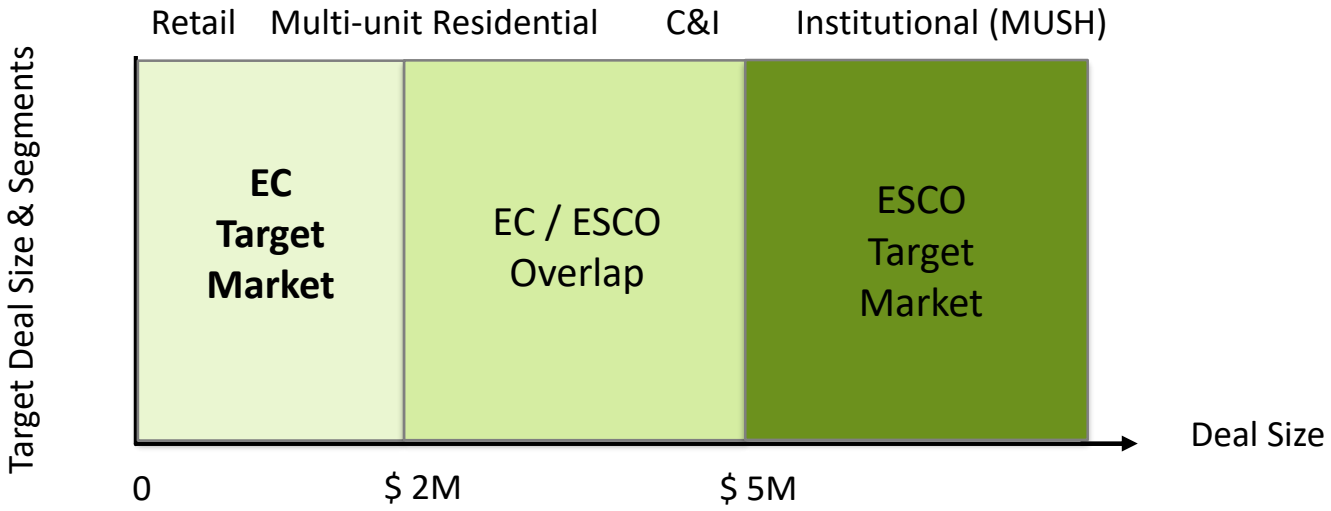
ESPA – Key Characteristics

- One-stop solution
- No upfront capital by client
- Not affiliated to any products or service providers
- Savings are guaranteed and insured
- Off balance sheet solution
- Works with local talent / businesses

Market Positioning

- EC is different from other players in the market – “one-of-a-kind”
- EC invests its own money and re-payment is contingent on performance

Risks Taken	ESCO	Lender	EC
Financial Risk	X	✓	✓
Performance Risk	✓	X	✓
Technical Risk	✓	X	✓



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Business Model

Developers

- Client acquisition
- Project implementation

Investors

- Takes equity risk
- Partners with other financial players

Asset Managers

- Client management over the long term
- Optimization of assets

Capturing the Entire Value Chain

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Validation – Success To Date

- ✓ **11** clients
- ✓ **40** buildings
- ✓ **$11** million invested
- ✓ **100%** success

Earned Media

"**Building Energy Efficiency** - A closer look at how performance contracting has allowed buildings to undergo extensive upgrades without upfront investment.**" ReNew Canada, The Infrastructure Magazine**. Mar/Apr 2017

"**Financing options for energy-efficient capital projects"**. RHB Magazine. Jan 2017

"**Savings Pay for Cutting Edge Upgrades"**. CM Magazine. Fall 2016

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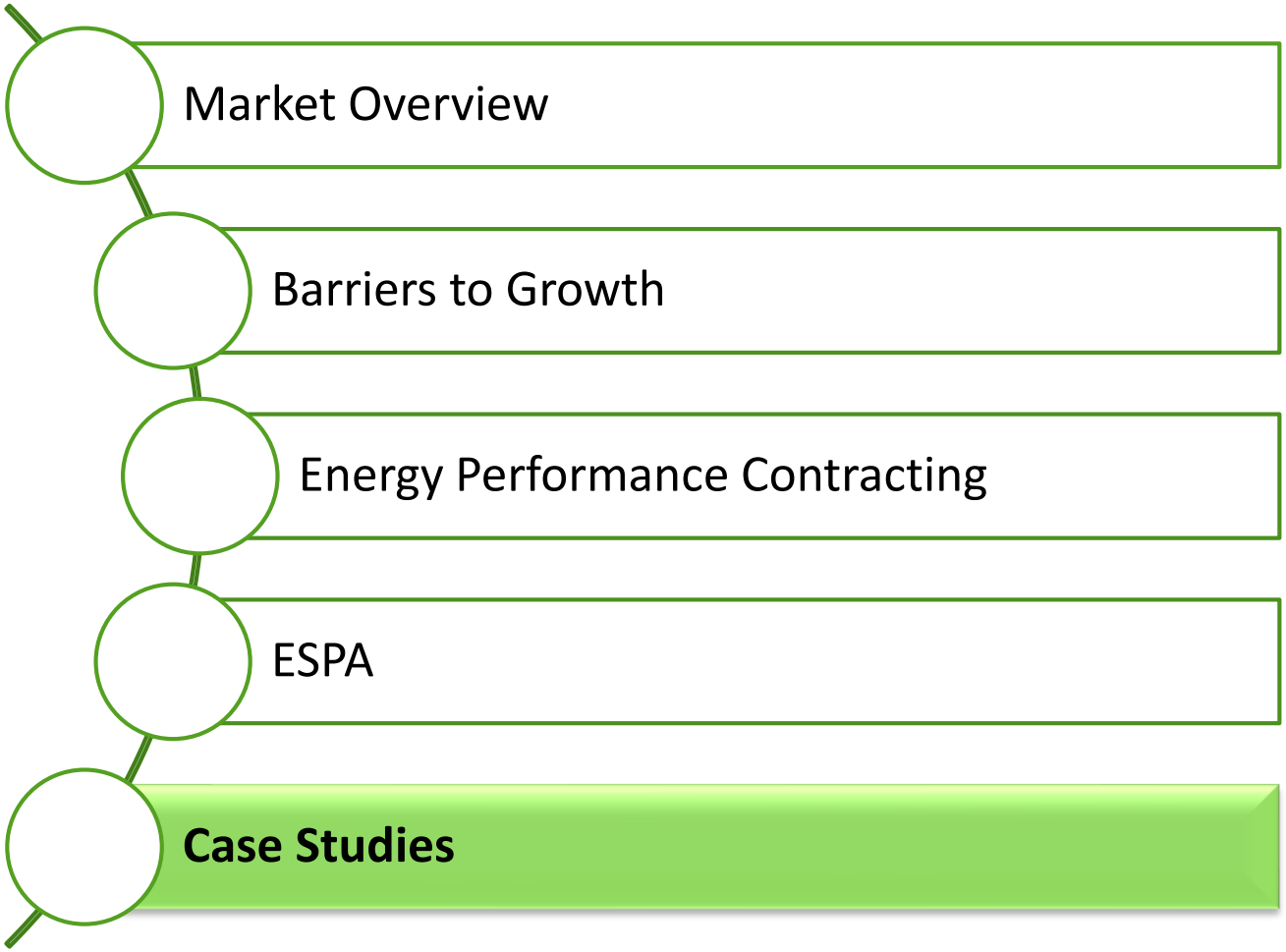

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Robert Cooke Co-op

- Deep retrofit of thirteen-story residential tower

PROJECT COST	SHARED SAVINGS	CO2 REDUCED
$740,000	**90 : 10**	**209 TONNES**

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YMCA of Greater Toronto

- Harmonizers installed at six YMCA locations

PROJECT COST	SHARED SAVINGS	CO2 REDUCED
$365,000	**90 : 10**	**62 TONNES**

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Apartment Building Example

- 3 Buildings built in 1965, 16 stories each – total of 663 units
- Energy Conservation Measures (ECMs):

  - Building automation system
  - Ventilation – carbon monoxide detectors and VFDs on exhaust fans
  - VFDs on AHUs and domestic cold water booster pump motors,
  - Lighting retrofit of CFLs to LED
  - Water measures - high efficiency toilets and low-flow showerheads fridges and stoves,
  - Tenant training and engagement

- Total capital required = $ 1,182,000 + HST
- Annual energy savings = $206,000

Apartment Building Example Cont'd

Building owner has three options:

1. Owner uses his/her own capital
2. Borrows the capital
3. EC invests through ESPA platform

Key questions rarely asked:

1. Best use of owner's capital? (i.e. prefer to invest capital in other projects or revenue-generating activity?)
2. Owner's tax rate?

Apartment Building Example Cont'd

CAPEX	$ 1,181,600
CAPEX w/ HST	$ 1,335,208
Annual Energy Savings	$ 206,150
Audit Cost to Client	$ 12,500
Energy Inflation	2.0%

Tax Rate (Fed+Prov)	26.5%
NPV Discount Rate	10.0%
Returns from Preserved Capital	2.0%
Depreciation rate	4.0%
ESPA Payment (% of Savings)	90%

	Use Your Own Capital	Borrow	EC's ESPA
Investment by Owner	$1,347,708	$250,820	$14,500
Net Present Value of All Savings	$44,724	$493,374	$512,957
Internal Rate of Return (mIRR)	6%	15%	39%

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Questions?