



# Toronto Atmospheric Fund

Incubating, de-risking, and advancing low-carbon urban solutions

What's the best financing solution for you?

September 16, 2016



Tim Stoate, Toronto Atmospheric Fund

1. Energy efficiency – a cash generator
2. Maximize NPV
3. Use all financing types available
4. How TAF can help



- A “Green Bank” for 25 years
- Invests in urban solutions to reduce greenhouse gas emissions and air pollution



- Partially owned by TAF
- Sole licensee of TAF's ESPA
- Responsible for all administrative & customer-relations duties for TAF and ECC retrofit transactions



## URBAN CLIMATE INNOVATION

**70%**

**of global GHGs  
come from  
cities. Cities are  
taking action.**

# impact investing

for triple bottom-line ROI,  
to de-risk & accelerate  
solutions, to mobilize  
financial capital

# grants

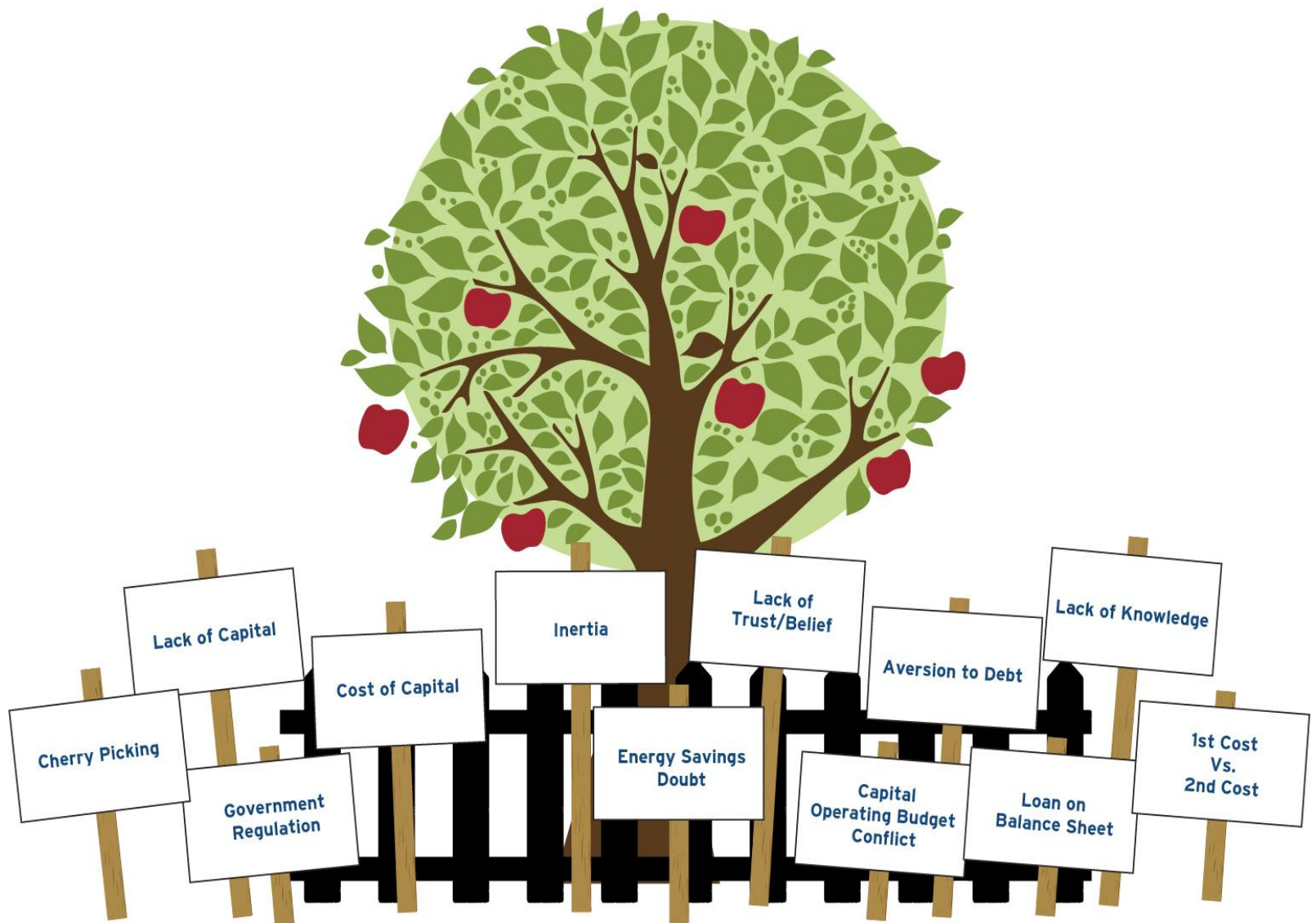
to non-profits reducing  
GHGs and air pollution

# policy

research & development  
to advance low-carbon  
programs and policies



# ENERGY RETROFIT BARRIERS: LOW HANGING FRUIT?



## STOP THE OUTFLOW

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Energy spending – just like eating hollow calories

### **Solution:**

- Invest in energy savings & divert those expenses to purchase assets
- NPV positive investments

### **But:**

- Each building/organization has its own DNA and own economy



# TURN ENERGY WASTE INTO ROI AND CAPITAL ASSETS

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## GOALS

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- Renew Maximum Number of Measures**
- Optimize Building Efficiency**
- Maximize Net Present Value**
- Cash Flow Positive to Building**
- Improve Comfort**
- Reduce Impact of Rising Costs**
- Protect reserves**
- Protect Bldg. & Reduce Repairs**
- Match Financing to Asset Life**
- Maintain, Maintain, Maintain**
- Monitor and Evaluate**



# EVALUATE THE BUILDING

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- Walk through – Ashrae level II – Ashrae level III
- Building condition assessment
- Passive Measures: Envelope - windows, insulation, cladding, solar wall
- Active Measures: VFD – toilets, lights, heating, chillers, combined heat and power, air source or ground source heat pumps
- Renewables: PV
- Storage: batteries

# EVALUATE THE BUSINESS CASE

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**A good energy project should make sound financial sense for your building.**

**Key financial measures to consider:**

- **NPV**  
The present value of the cash generated by the investment above and beyond the original capital invested.
- **Life Cycle Cost Analysis**  
In depth 20 year analysis
- **Payback**  
The number of years it will take to earn back the capital invested in your upgrade – **Note: be careful with payback, it's comparative**



# EVALUATE FINANCING APPROACHES

Financing Options	Description	Example Application
Best options	<ul style="list-style-type: none"> <li>✓ Fit the DNA and building's economy</li> <li>✓ Flexible – cash flow and NPV positive</li> </ul>	Co-op – ESPA – plus. Foundation, plus government
Energy Savings Performance Agreement (ESPA)	<ul style="list-style-type: none"> <li>✓ Non-debt, off balance sheet</li> <li>✓ Pay back with energy savings</li> <li>✓ Risk with TAF</li> <li>✓ Assets purchased from savings</li> <li>✓ Specialized insurance policy – covers projected savings, de-risks deal</li> <li>✓ Risk mitigation via approved engineers, ongoing M&amp;V, alignment of all stakeholders</li> <li>✓ NPV-positive for owner</li> </ul>	<p>Multiple interior/exterior energy-using elements</p> <p>Blended measure – no greater than 10 years including financing and performance guarantee costs.</p>
Better Building Partnership (BBP) – Sustainable Energy Plan Financing Program	<ul style="list-style-type: none"> <li>✓ Low interest loan (up to 20 yr)</li> <li>✓ Risk with Property</li> <li>✓ Deadline to apply – July 2016 for 2017</li> <li>✓ Additional funding subject to City budget</li> </ul>	<p>Small (e.g. lighting)</p> <p>Active and Large (e.g. windows) energy efficiency measures</p>

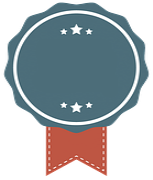
# FINANCING TYPES



Financing Options	Description	Example Application
“PACE” or “LIC”	Tax based financing	Long term assets
Stacked Financing	Blended financing solutions for immediate simultaneous implementation of multiple short/med./long-term payback measures Stack ESPA or Loan on top of 20 year Money	Multiple solutions not all covered under ESPA/Loan/Lease/LIC . Short: <ul style="list-style-type: none"><li>• Building mechanical retrofits</li></ul> Medium/Long: <ul style="list-style-type: none"><li>• windows</li><li>• geothermal heating</li></ul>
Step Financing	Provides ability to finance multi-measure project over phased implementation timeline. Stepdown in payment over time as short/med./long-term measures are paid-off.	
Other	TAF can explore alternative financing solutions – including all government and foundation money	TAF can buy back installed assets, or use a portion of the savings generated to finance.  TAF can use building’s own money and pay favourable rate.

# SUMMARIZING BENEFITS OF ESPA

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## **Insured Savings**

Engineer buys A-rated policy and pays deductible.



## **Excellent Engineers**

Pre-qualified by insurer (track-record, balance sheet).



## **Quality Equipment, Regular Monitoring & Maintenance**

Extended warranties & ongoing management underpins performance.



## **No Construction Risk**

Engineer responsible for all facets of project design and implementation.

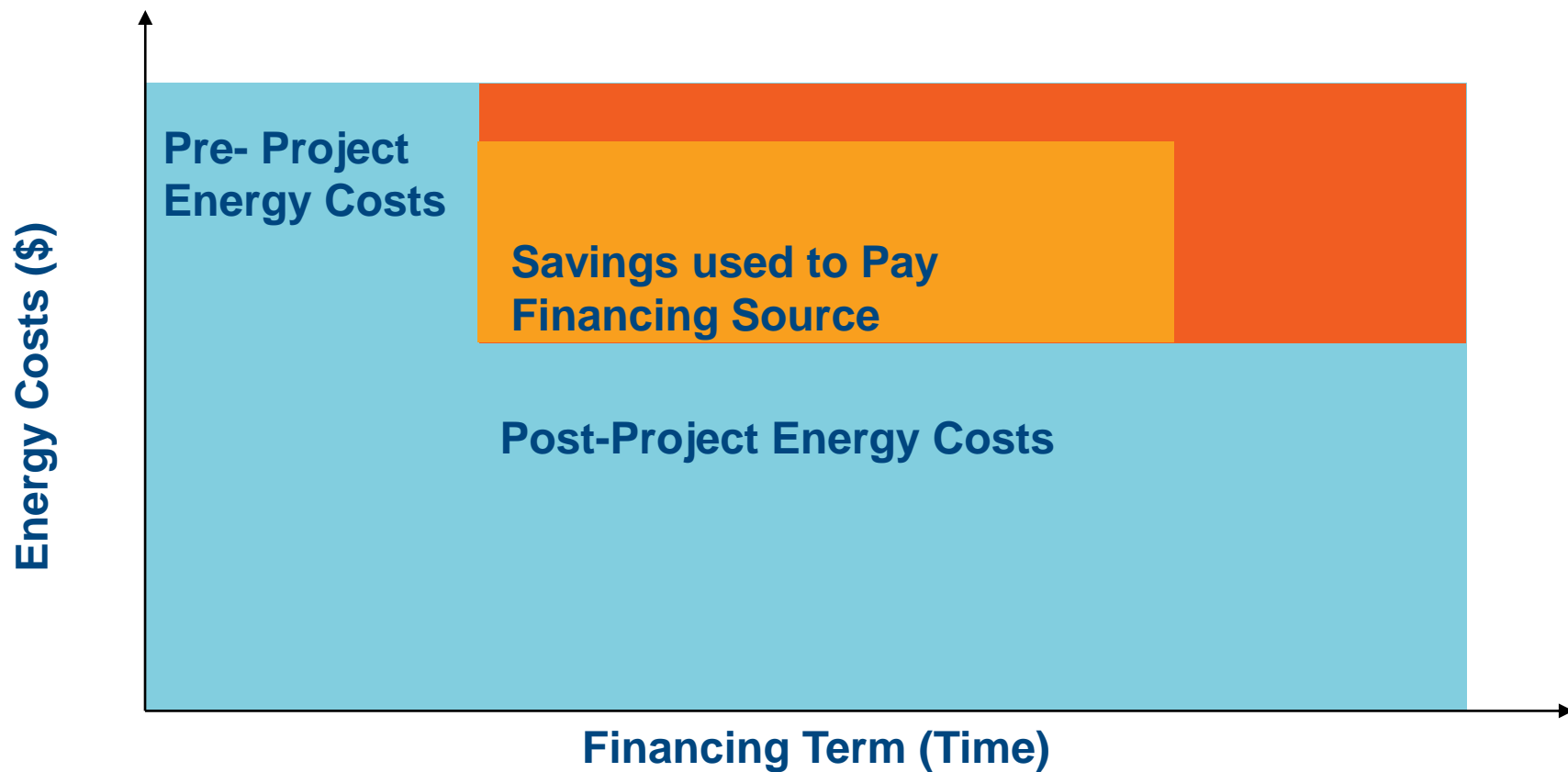


## **No Financial/Operational Risk**

Repayment only for actual savings.



# ENERGY RETROFIT: PAYMENT AND RETURN FROM SAVINGS



# BASE CASE: PRACTICAL, OFF-THE-SHELF TECHNOLOGIES

Measure	Cost (\$)	Payback (years)	Annual Savings
Training & Education	5,000	0.8	6,250
Lighting Retrofit	48,096	1.7	29,030
CW Booster Pumps (VFD)	18,800	2.9	6,483
<b>Sub Total</b>	<b>71,896</b>	<b>1.72</b>	<b>41,763</b>
Toilets/Showerheads and Aerators	150,000	3.12	48,120
Pool Heating	31,000	3.8	8,158
CO Monitoring	27,000	3.9	6,923
Pool Covers	3,500	4.5	778
Space heating system	180,000	4.6	39,130
Chilled Water Temp Reset	5,000	5	1,000
High-efficiency Hot Water	120,000	6.5	18,462
Cooling Tower & Chiller (VFD)	111,000	7.5	14,800
High-efficiency Boilers	500,000	11.10	45,028
Building Automation System	60,000	15.79	3,800
<b>Sub Total</b>	<b>1,187,500</b>	<b>6.38</b>	<b>186,199</b>
<b>TOTAL</b>	<b>1,259,396</b>	<b>5.52</b>	<b>227,961</b>

Cherry-picking:  
short-term return,  
but missed value.

Deep retrofit:  
maximizes bill  
savings, total  
return and  
building  
value/cap-rate

# REPOSITION: PRACTICAL, OFF-THE-SHELF TECHNOLOGIES

Measure	Cost (\$)	Payback (years)	Annual Savings
Training & Education	5,000	0.8	6,250
Lighting Retrofit	48,096	1.7	29,030
CW Booster Pumps (VFD)	18,800	2.90	6,483
Toilets/Showerheads and Aerators	150,000	3.12	48,120
<b>Sub Total</b>	<b>221,896</b>	<b>2.47</b>	<b>89,883</b>
Pool Heating	31,000	3.8	8,158
CO Monitoring	27,000	3.9	6,923
Pool Covers	3,500	4.5	778
Space heating system	180,000	4.6	39,130
Chilled Water Temp Reset	5,000	5	1,000
High-efficiency Hot Water	120,000	6.5	18,462
Cooling Tower & Chiller (VFD)	111,000	7.5	14,800
High-efficiency Boilers	500,000	7.8	45,028
Building Automation System	60,000	15.79	3,800
<b>Sub Total</b>	<b>1,037,500</b>	<b>7.51</b>	<b>138,079</b>
<b>TOTAL</b>	<b>1,259,396</b>	<b>5.52</b>	<b>227,961</b>

Cherry-picking:  
short-term return,  
but missed value.

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maximizes bill  
savings, total  
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value/cap-rate

## COMPARE THE PROJECT'S NPVS

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	Base Case	Reposition
Subtotal	71,896	221,896
NPV	266,794	510,842
Total	1,259,396	1,259,396
NPV	638,413	638,413
Net Positive Difference	371,619	127,571
Discount Rate	6%	6%
Inflation	1.035	1.035

## STACKED FINANCING



Measure	Cost (\$)	Payback (years)	Annual Savings
Mechanical Total	998,396	4.38	227,961
Envelope			
Windows	500,000	20.00	25,000
Cladding	1,200,000	24.00	50,000
Additional Insulation	120,000	12.00	10,000
<b>Total</b>	<b>1,820,000</b>	<b>21.41</b>	<b>85,000</b>

## STACKED FINANCING -

	Amount	Savings	Payment			
ESPA	1,498,396	227,961	205,165			
Loan 20 Years	913,626	85,000	85,000			
Building Investment	406,374		22,796			
<b>Total</b>	<b>2,818,396</b>	<b>312,961</b>	<b>312,961</b>			
	<b>Year</b>	<b>1</b>	<b>2</b>	<b>15</b>	<b>16</b>	<b>20</b>
Outflow		22,796	23,594	369,000		-
<b>IRR to Building</b>		<b>85,000</b>	<b>87,975</b>	<b>137,589</b>	<b>142,405</b>	<b>163,413</b>
	-406,374	85,000	85,000	85,000	85,000	85,000
		-	2,975	52,589	57,405	78,413
	-406,374	22,796	26,569	421,589	57,405	78,413
<b>IRR to Building</b>	<b>17%</b>					
<b>NPV</b>	<b>\$859,247</b>					

# ESPA FINANCING

Annual Savings	Year 1	2	10	11	15
<b>Total</b>	227,961	235,940	310,688	321,562	369,000
TAF 90%	205,165	212,346	279,619		
-1,259,396	205,165	212,346	279,619		
<b>13%</b>					
<b>Building IRR 15 Years</b>				321,562	332,100
- 15,000	<b>22,796</b>	<b>23,594</b>	<b>31,069</b>	<b>321,562</b>	<b>332,100</b>
156%					
<b>Building NPV 15 years</b>					
<b>\$886,085</b>					
<b>Building NPV 10 Years</b>					
<b>\$168,501</b>					



## DID WE MEET OUR GOALS?

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- ✓ Renew Maximum Number of Assets
- ✓ Optimize Building Efficiency
- ✓ Maximize Net Present Value
- ✓ Cash Flow Positive to Building
- ✓ Improve Comfort
- ✓ Reduce Impact of Rising Costs
- ✓ Protect reserves
- ✓ Protect Asset & Reduce Repairs
- ✓ Match Financing to Asset Life
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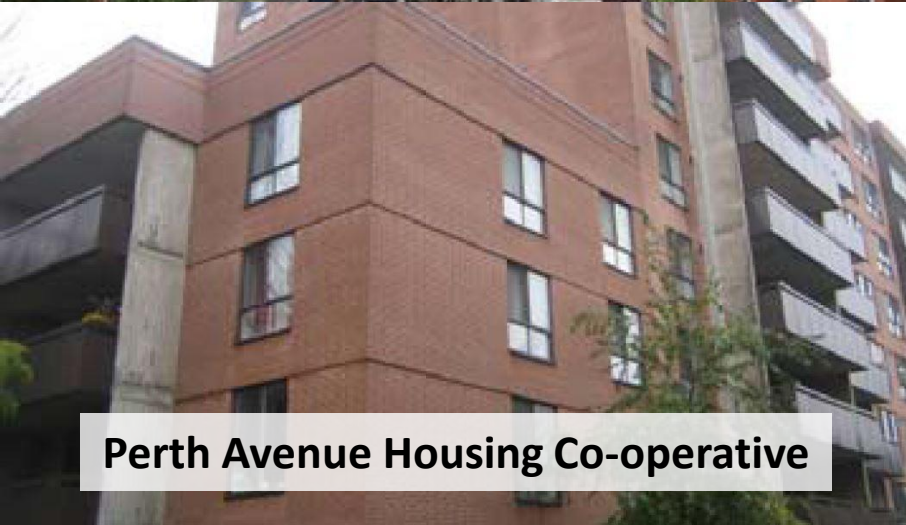


### Monitor & Evaluate

- Actual vs. Expected

### Maintain

- Audit the maintenance



1. Not every retrofit fits within an ESPA
2. In some cases additional capital is required to execute an ESPA and a building may not have the necessary resources.
3. TAF will assist with sourcing and closing supplemental financing from other available sources.
4. Charge is based on estimated size plus a performance based fee
5. Consultative to turnkey



## HOW TAF CAN HELP

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- Advise
- Partner
- Invest
- Co-invest
- Find & Arrange other Capital



## TURNING CHALLENGES INTO OPPORTUNITIES

**\$123K**

~ Down the drain  
from leaky toilets

**45%**

Fresh air supply below Code  
(ASHRAE 62.1)

STAY CONNECTED!



**TAF.ca**

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