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Ontario First Nations Technical Services Corporation

Carbon Cap-and-Trade: Impacts to First Nations

Bill Maloney
Climate Change Specialist, OFNTSC

Who am I…???

- Academic background in Biology and Economics
- Strange combination…?
- The environment and natural resources are the base of any economy

Ontario First Nations Technical Services Corporation

Why are there so many environmental issues?

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Environmental economics brings externalities back into the economy.

A cap and trade model is an example. It works to prevent a market failure.

"Climate change is the biggest market failure we have ever seen" – Nicholas Kern, world bank economist

- Since none of those costs are internalized, the effect is to artificially lower their price.

- That distortion encourages overuse of fossil fuels and discourages investment in clean energy alternatives...

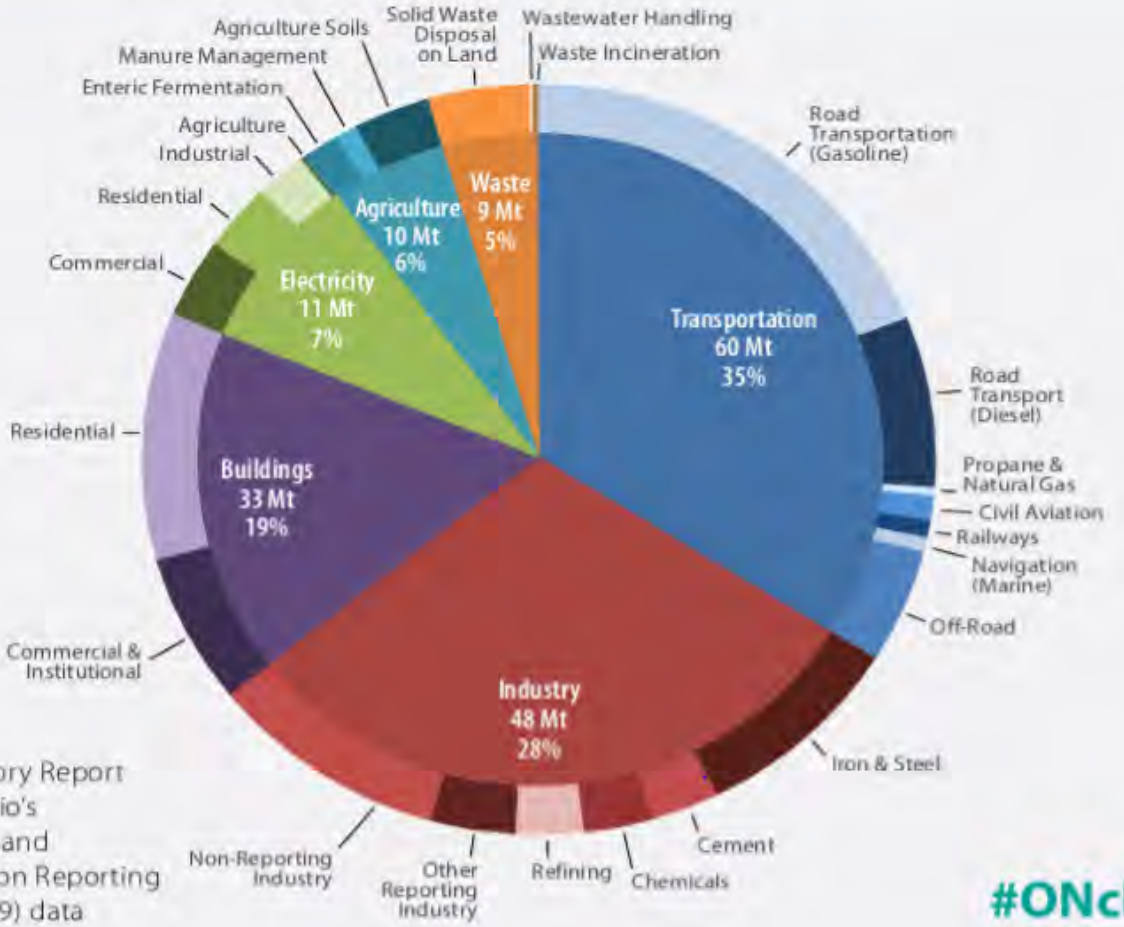
- "The biggest market failure we have in the world is the fact that [carbon emissions], which are potentially threatening our ability even to survive on this planet, has no price," - Roger Ballentine, former chairman of the White House climate change task force

Ontario's greenhouse gas reduction targets

* below 1990 greenhouse gas emission levels

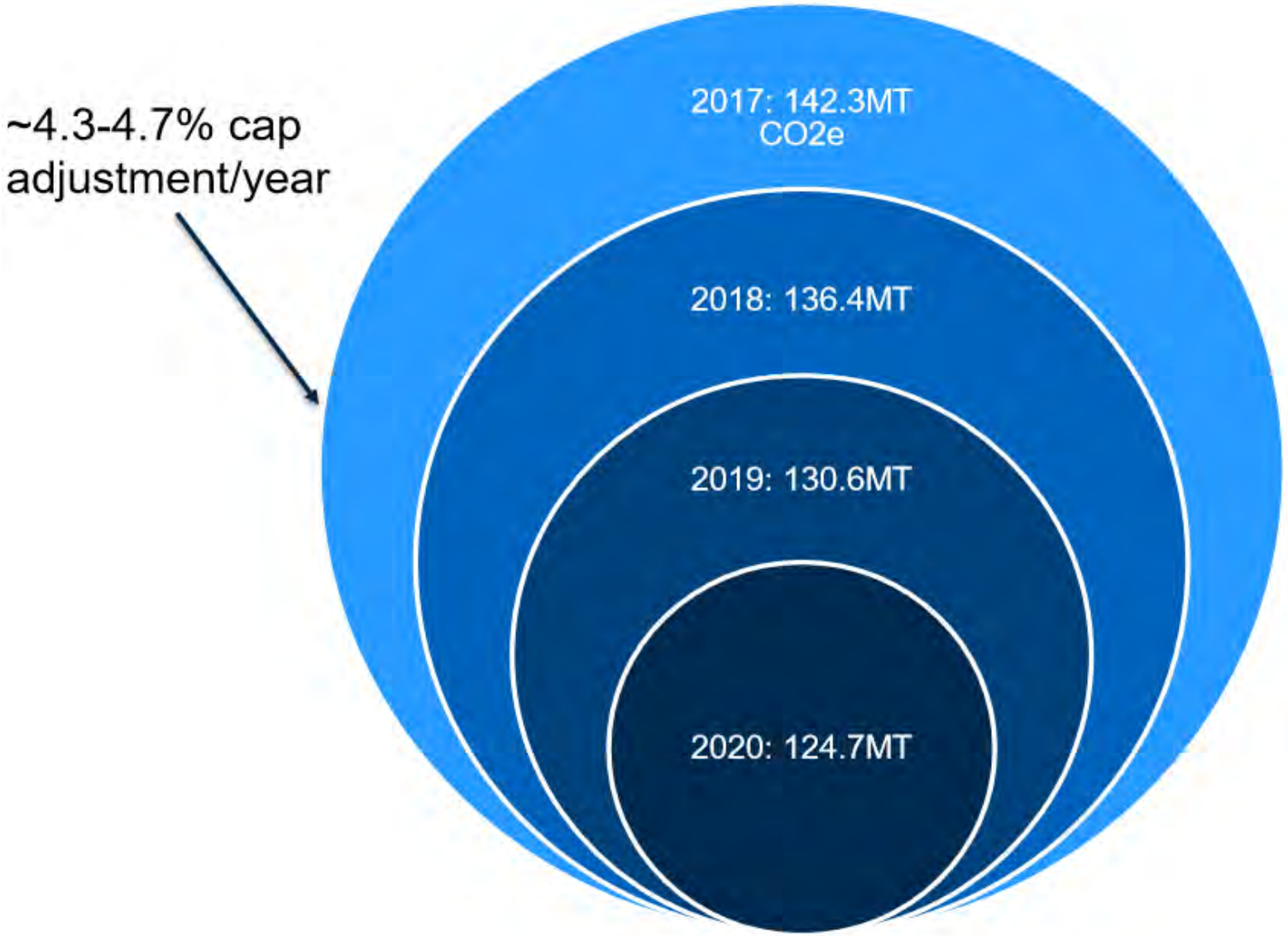
** based on the 2016 National Inventory Report

Ontario's 2013 GHG Emissions by Sector



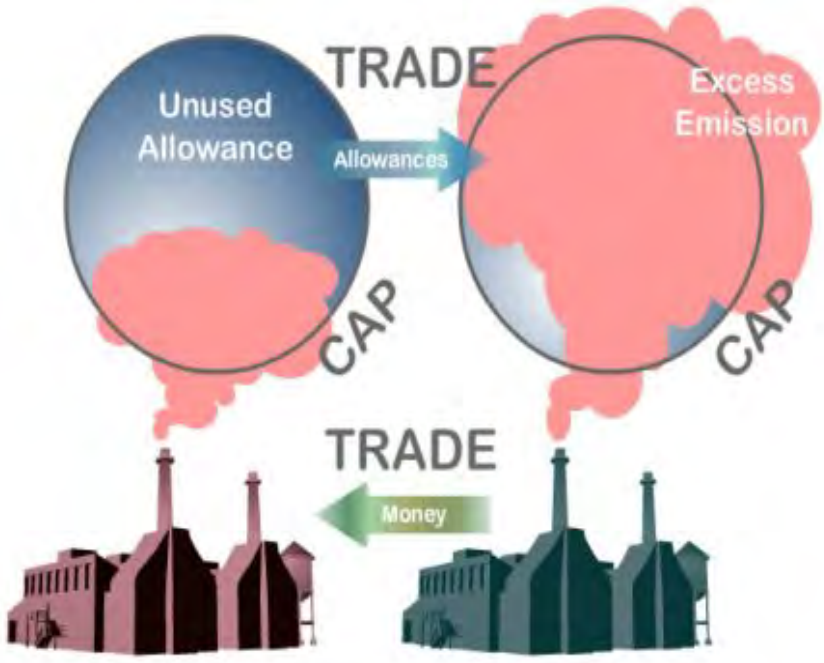
Source: National Inventory Report 2015 (2013 data), Ontario's Long-Term Energy Plan and Greenhouse Gas Emission Reporting regulation (O.Reg 452.09) data

#ONclimate


~4.3-4.7% cap adjustment/year
2017: 142.3MT CO2e
2018: 136.4MT
2019: 130.6MT
2020: 124.7MT

What happens if a company goes above the cap?

- This is where the ‘trade’ comes in
- If you go above, you must buy more allowances
- If you go below, you can sell allowances



What does this mean?

Two things happen:

1) Disincentive to produce emissions (cost to emit greenhouse gasses). As cap decreases, cost to emit will most likely increase.

2) Incentive to reduce GHG emissions (new technology, renewable energy, etc) as you can sell excess allowances

$$ impacts of cap and trade

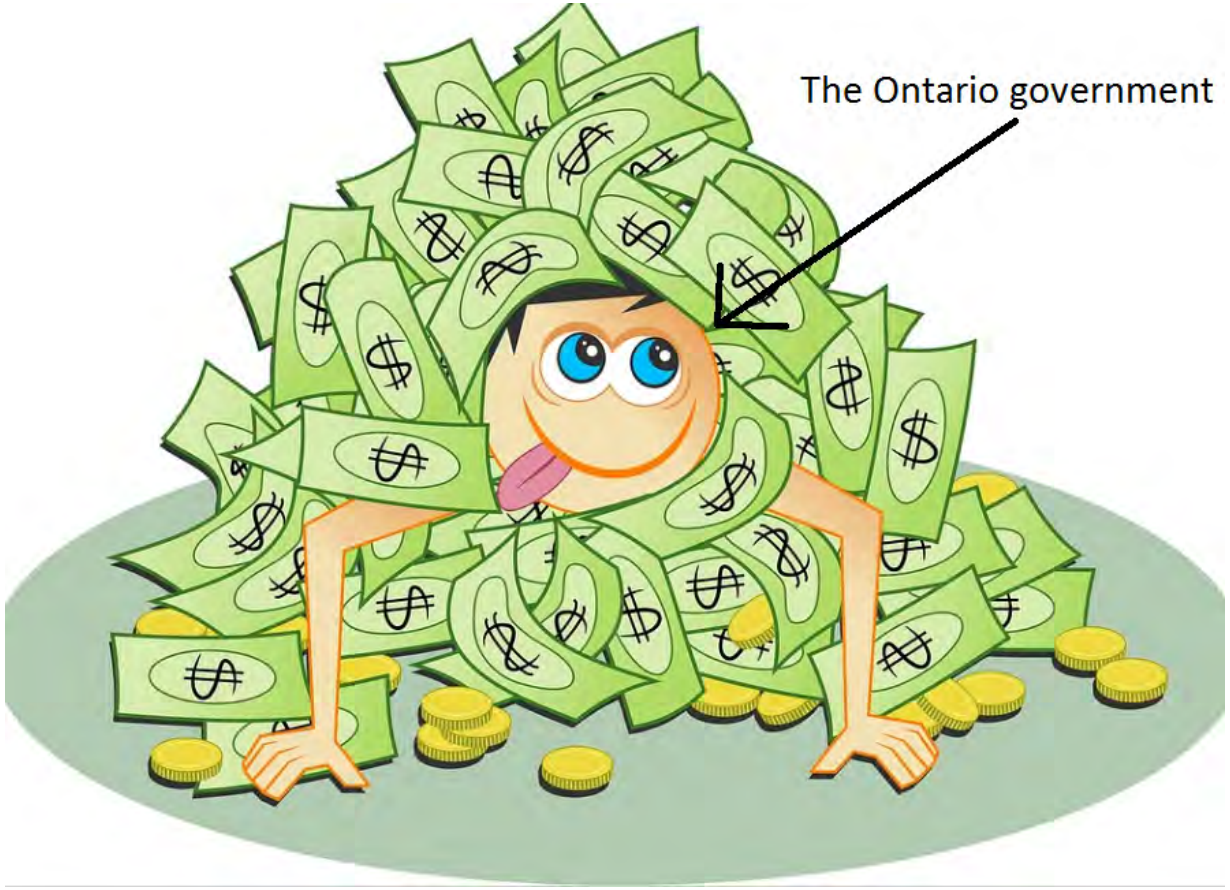
- 3.88 cents per litre (cpl) on gas
- 4.95 cpl on diesel
- 4.50 cpl on furnace oil

- Any industry that is forced in the cap, expected prices will rise
- Transportation, oil, iron, steel, cement, pulp and paper, airfare, electricity, etc

2016	Ministry will introduce additional regulations in 2016 on: 1. Offsets; 2. Administrative monetary penalties; and 3. First Nations impact mitigation. ?

- No details on how province will help communities deal with impacts of cap and trade
- Subsidies for diesel, gas, etc?

$1.8-1.9 BILLION PER YEAR




The virtuous cycle
How cap and trade and the climate change action plan work together
1
Cap & Trade
CAP
2
Proceeds
3
Action
Plan
4
Low-Carbon
Ontario
High-Carbon
Ontario

Breakdown of the action plan

- Increase electric cars
- Support cycling
- Energy efficiency homes
- Training for workforce
- Reduce energy in government buildings
- Understand carbon sequestration better
- Maximize carbon sinks
- Support low-carbon technology
- Collaborate with First Nations

First Nation ‘collaborations’ - $85-96 million

- Reduce diesel in remote communities (micro-grids, renewables)
- Connect remotes to grid
- Support energy reduction plans for infrastructure
- Support development of carbon sequestration projects
- Set up a Table to discuss ongoing strategies
- Support training and skills in; renewable energy, energy efficiency
- Have regular symposiums

Other highlights:

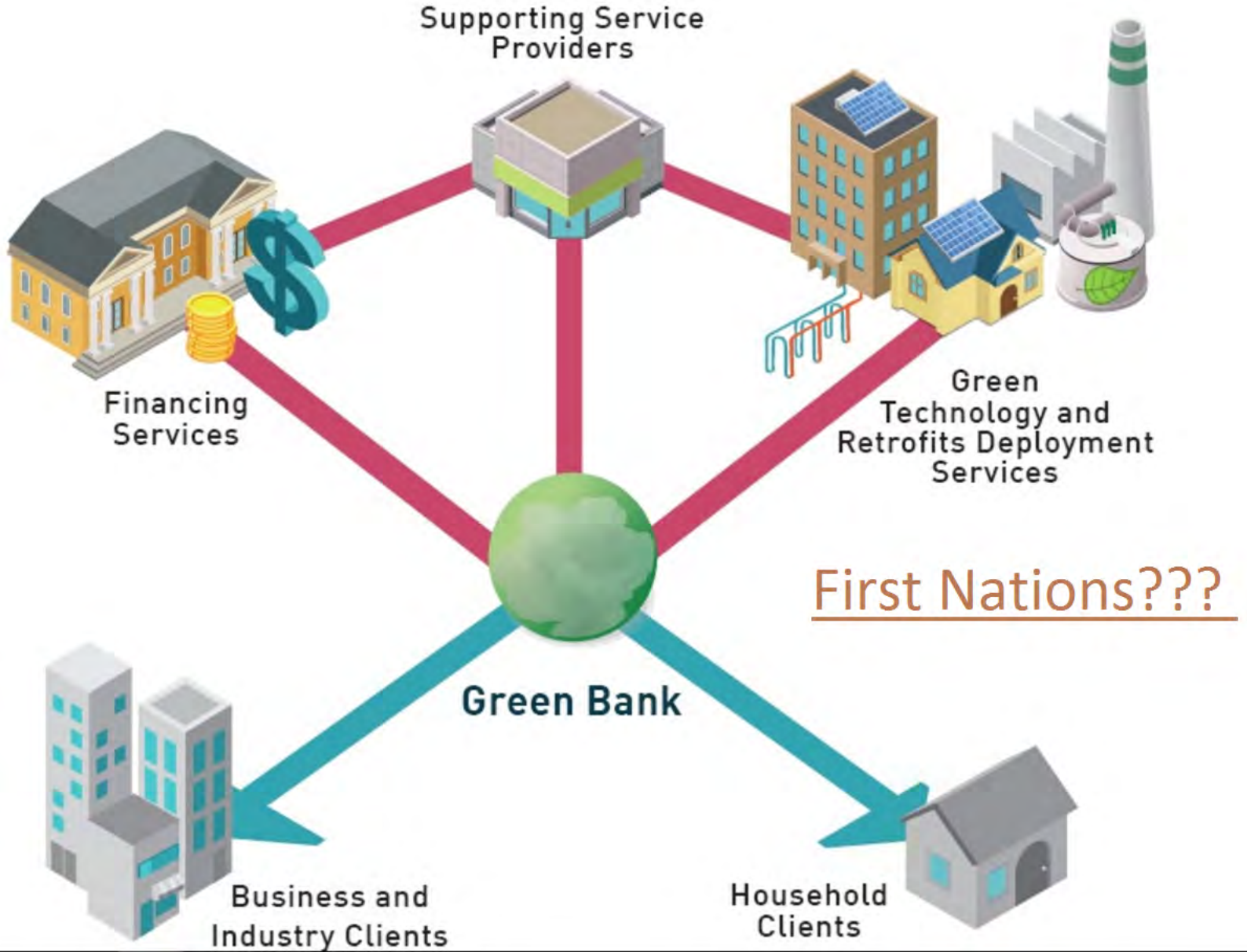
- $2-3 million to look at wetlands and grasslands ability to store and remove carbon – 2018
- Develop a forest carbon policy framework (looking at potential benefits to First Nations) – 2017/2018
- Partner with First Nations to understand flow of carbon
- $1-4 million available for energy efficiency wood stoves for rural and First Nation communities

Is $85-96 million the right amount?

- Is this money being allocated fairly?
- How does this action plan impact First Nations Rights
- Remote First Nations communities are impacted significantly by climate change (winter roads season, increased fires, etc)
- It's 1.15% of overall plan ($96mill of $8.3 billion)

Who gets more money than First Nations' $85-96 million?

- Assisting fuel distributers: $100-155 million
- Support cycling and walking: $150-225 million
- Increase use of low-carbon trucks and buses: $215-290 million
- Help industry adopt low-carbon tech: $875 million - $1.1 billion



First Nations???

Carbon offsets

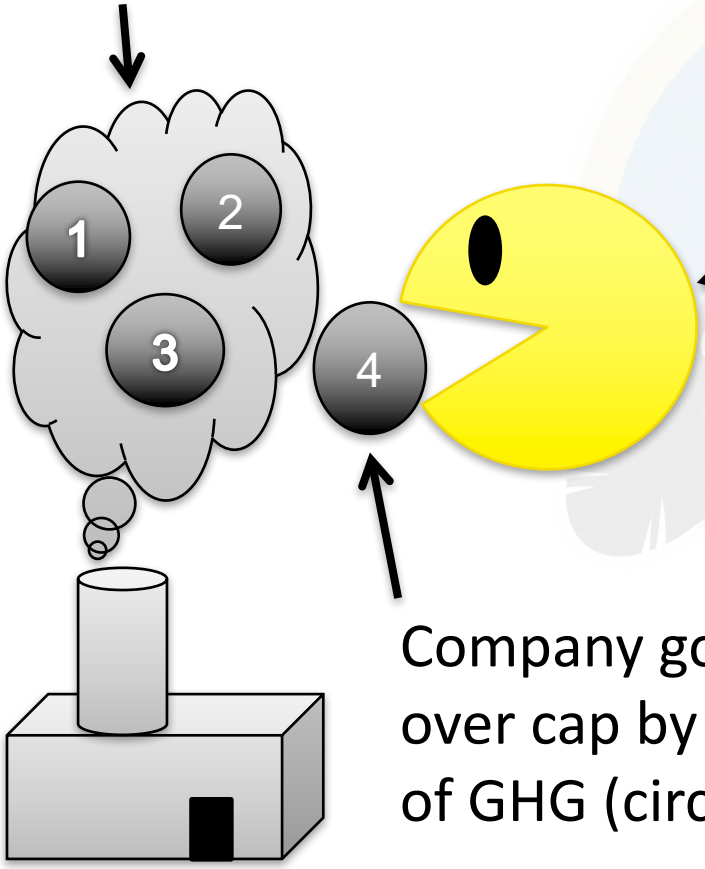
- What are they?
- How do they work?
- What are the impacts?
- What are the potential benefits?

What is a carbon offset

- An activity that reduces carbon emissions or increases carbon absorption – can be considered to be a carbon offset.
- If someone emits carbon, but then does an activity that reduces carbon by the same amount – they 'offset' the carbon and the activity is carbon neutral

Make sense?

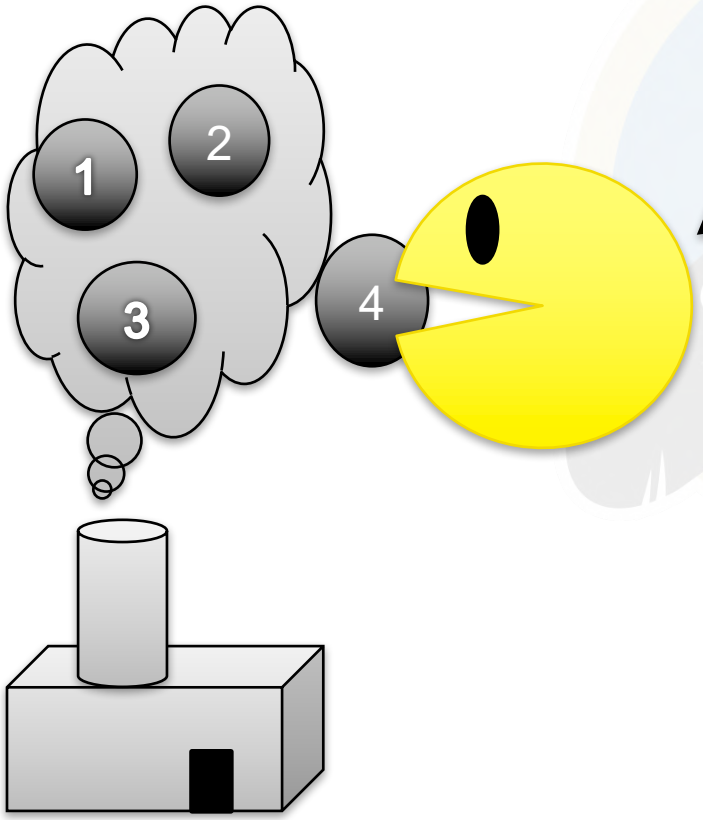
Greenhouse gas emissions (smoke equals the cap)



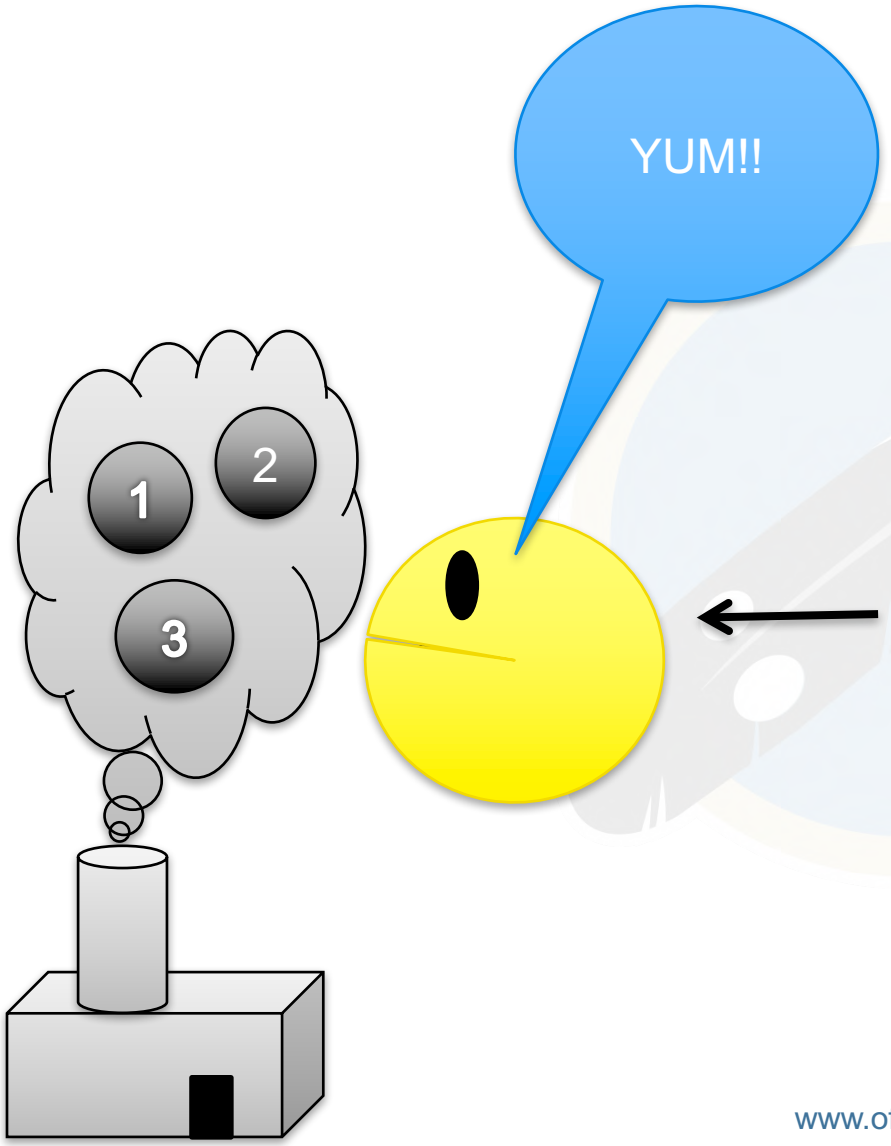
Pacman represents an activity that absorbs greenhouse gases (GHGs) from the atmosphere, like planting a tree

Company goes over cap by 1 unit of GHG (circle 4)

GHG emissions

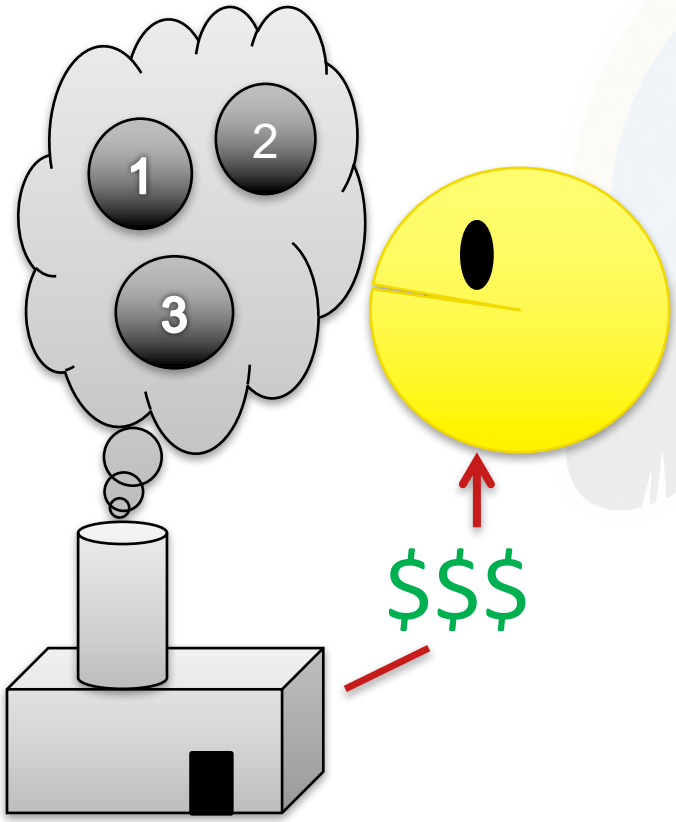


Pacman (aka an offset project) has now been developed

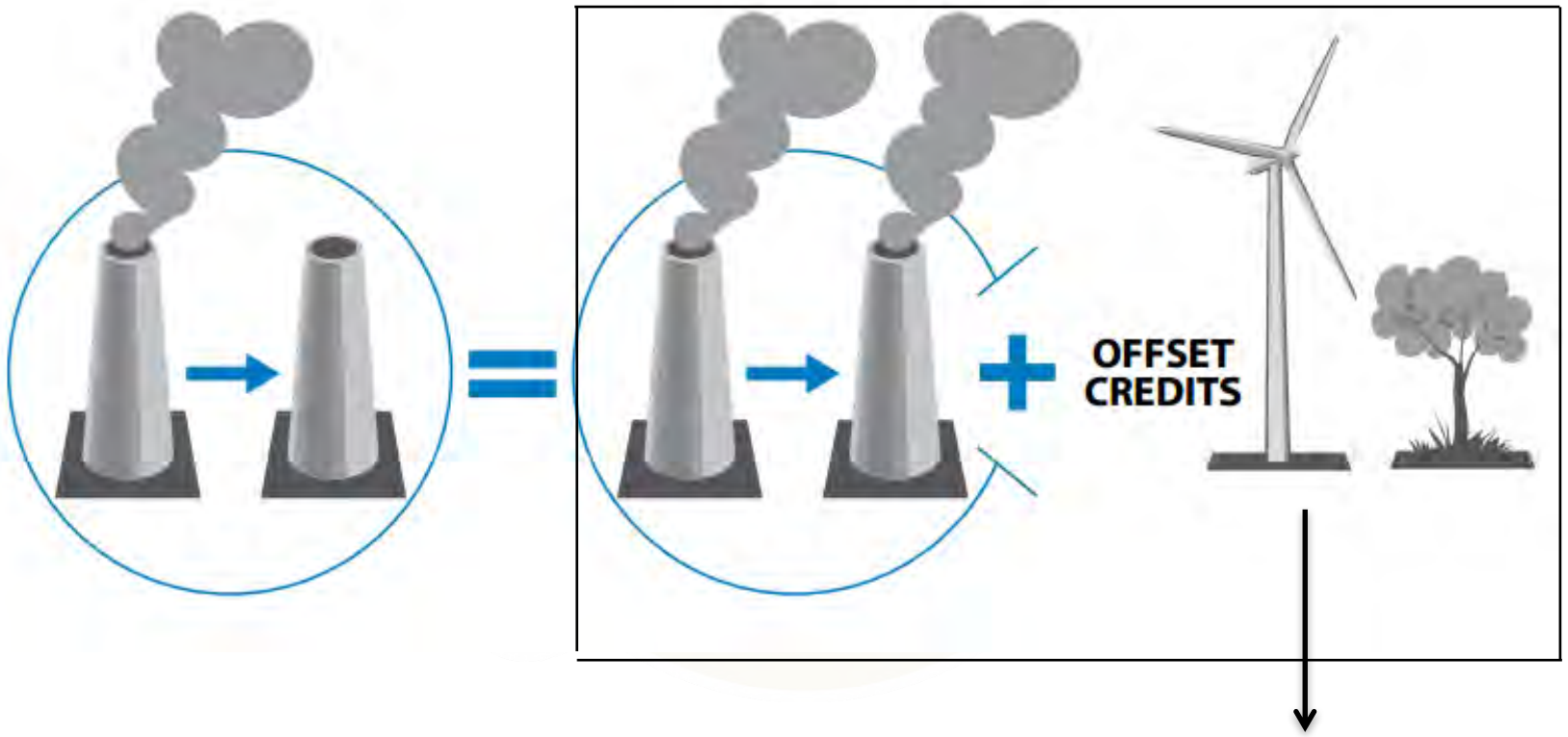


Pacman has absorbed 1 unit of GHG (*1 offset is usually measured as 1 tonne of carbon dioxide equivalence*), which would generate 1 offset.

Company buys the carbon offsets from the proponent of the carbon offset project.



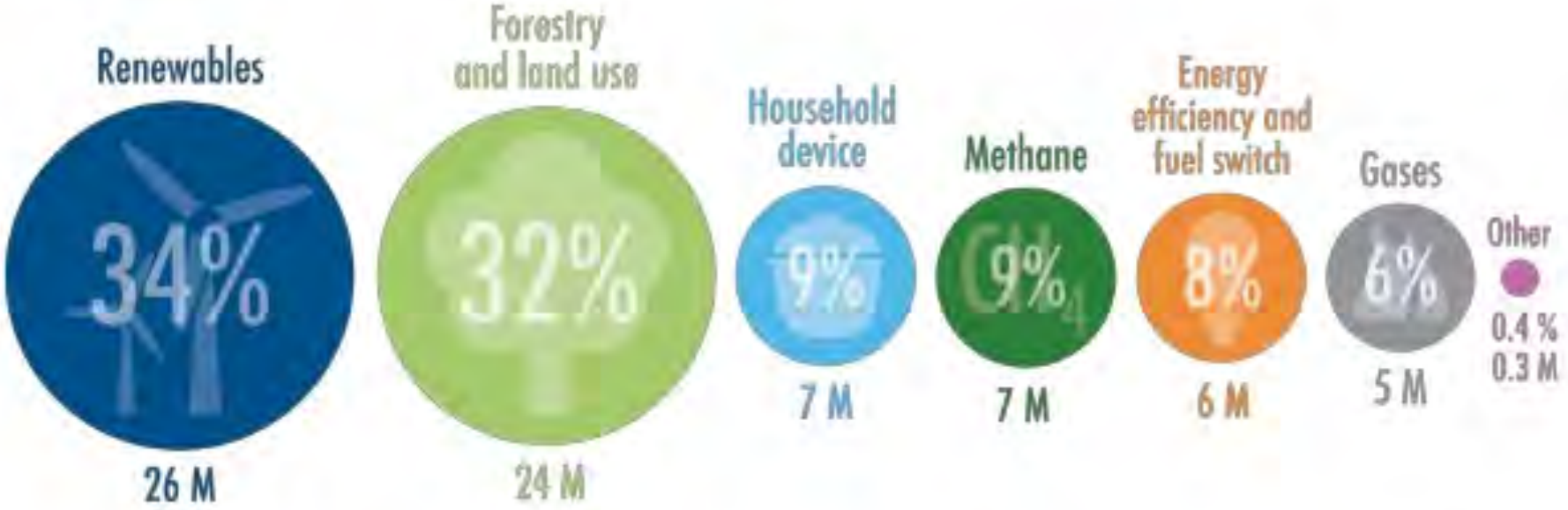
Another way to look at it:



The proponent that developed renewable energy project or forest management can sell their Carbon Offsets

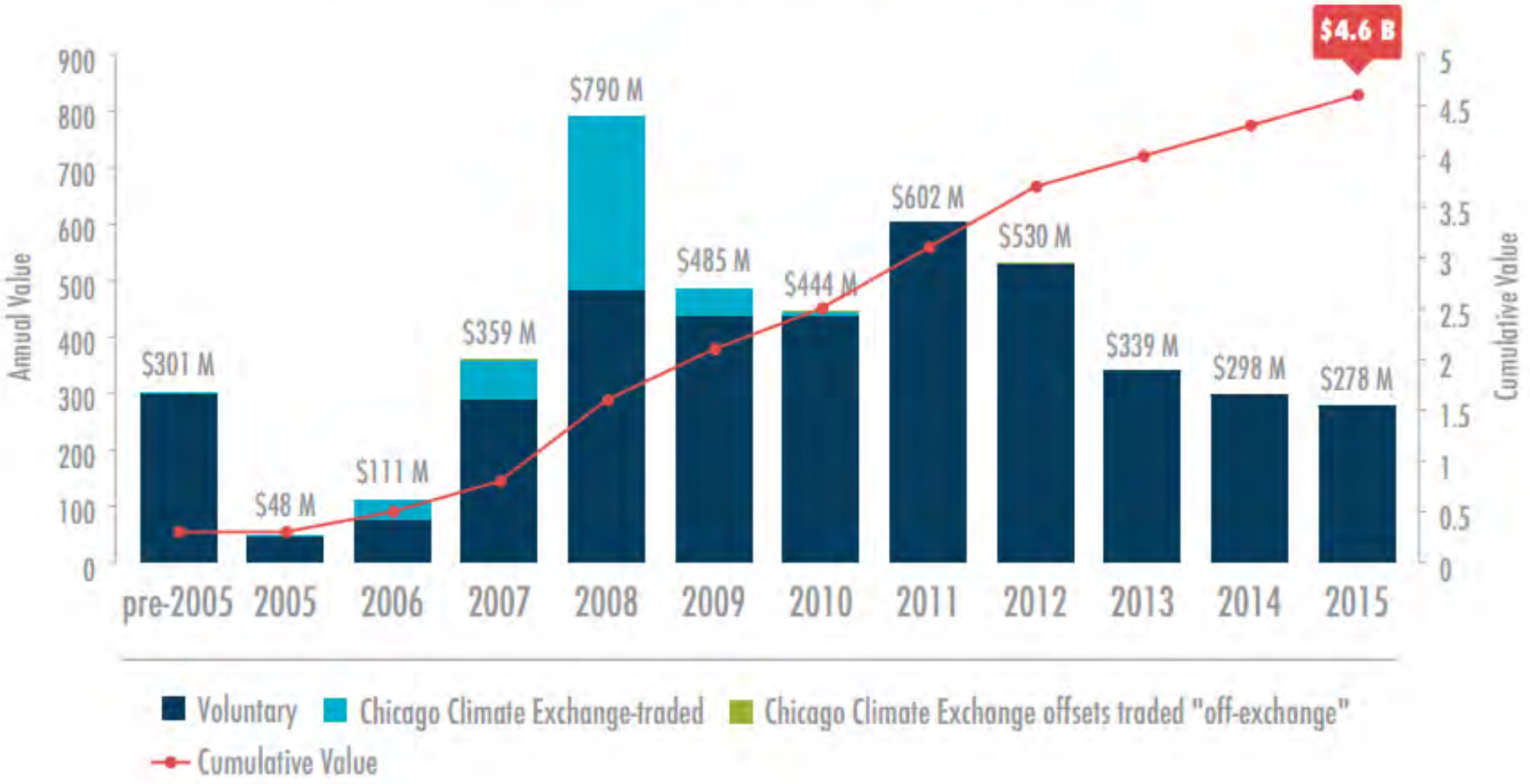
Carbon offset projects are diverse

FIGURE 7: TRANSACTED VOLUME BY PROJECT CATEGORY, OTC 2012
$MtCO_2e$ and % Share



Notes: Findings pertain to the 75.5 $MtCO_2e$ associated with a response to this question, including "N/A" and "Other".
Source: Forest Trends' Ecosystem Marketplace. State of the Voluntary Carbon Markets 2013.

Figure 2: Historical Market-Wide Voluntary Offset Transaction Values



Notes: Based on survey responses representing 992 $MtCO_2e$ transacted over time. The CCX "off-exchange" value is too small to be visible.

Ontario will have offset market:

- Details not announced yet
- Supposed to follow Quebec's rules
- Only 8% of overall emissions can come from offset purchases
- Quebec doesn't allow forestry management or renewable energy offset projects (only landfill gas capture, livestock manure management, and ozone depletion substances)
- *Ontario probably will at some point add forestry – maybe right away?*

What does this all mean?

- There is a large market for carbon
- First Nations have not been a major player
- Potential issues around Rights and ownership over carbon resources
- There is an opportunity to enter markets or at least become ready to (either voluntary or the new Ontario market)

How to enter the offset market

- Complicated
- Expensive
- Generally needs to be a larger project to be worth it
- There are some opportunities

Certification

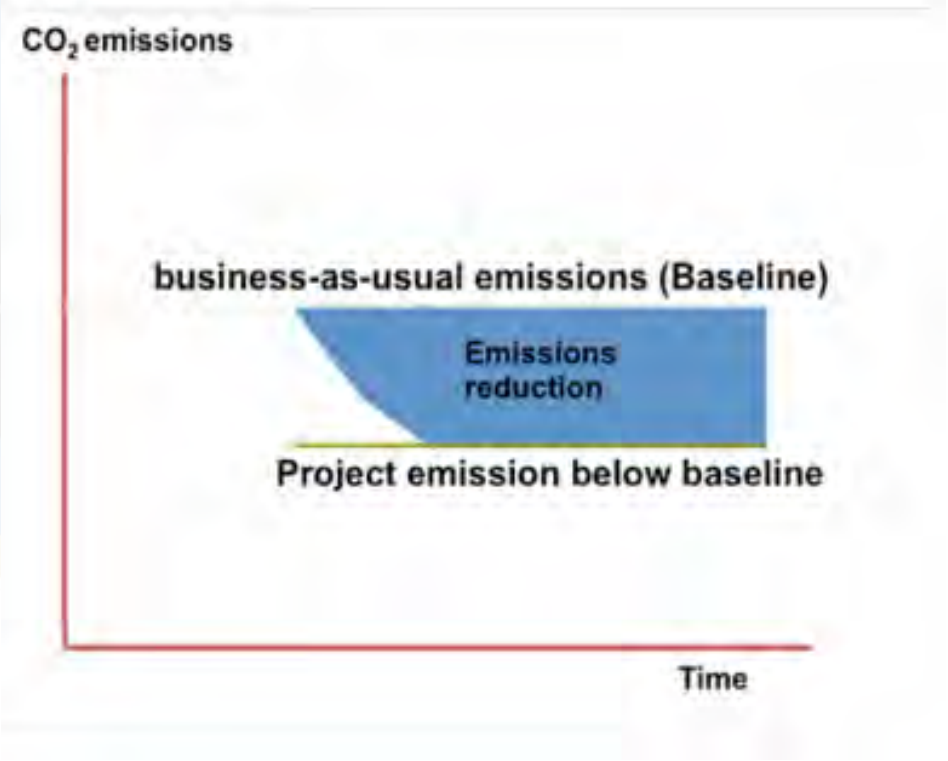
Main certification bodies (for volunteer market):

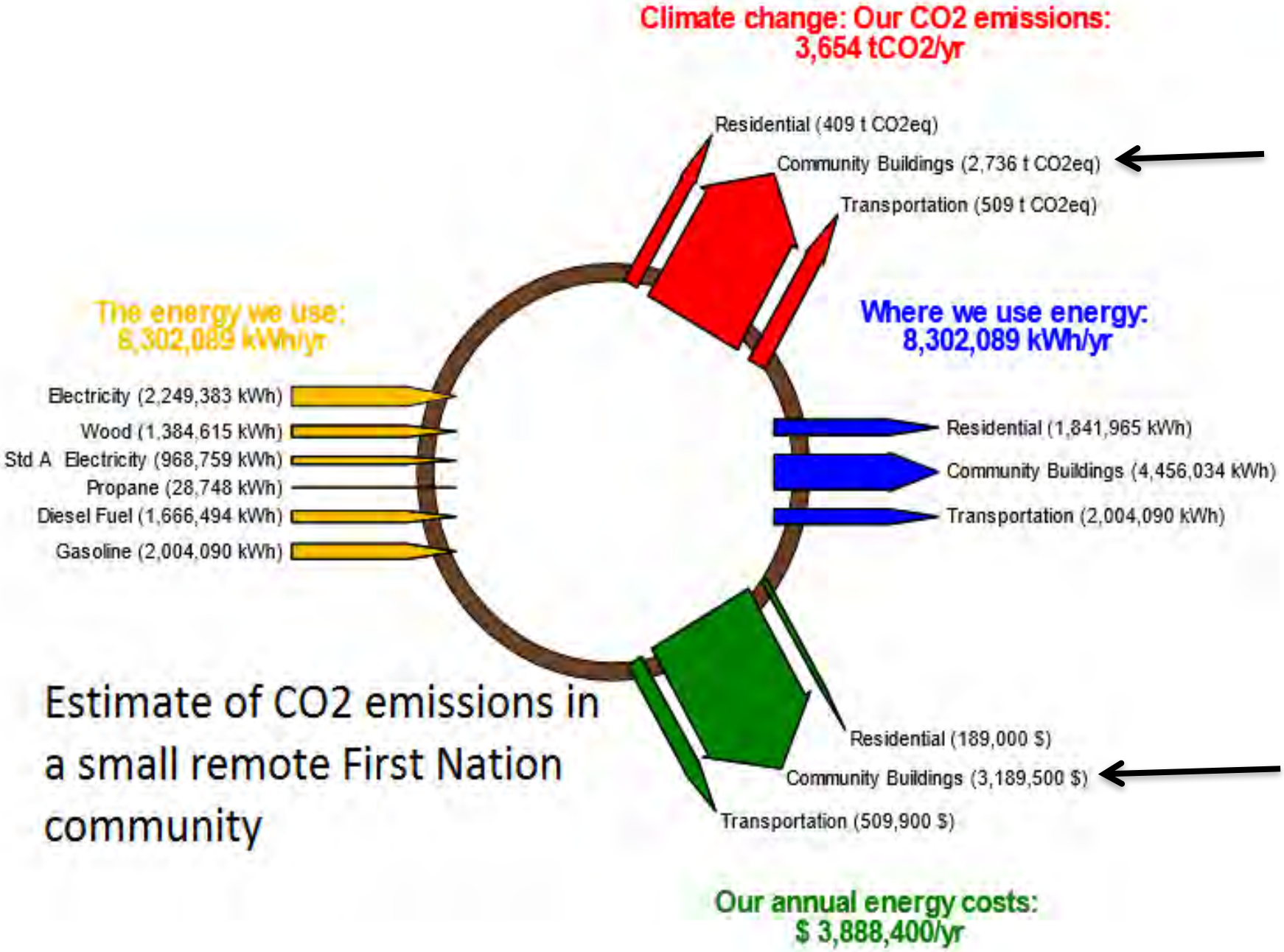
1) Gold Standard
2) Verified Carbon Standard

→ For entering into Ontario's offset market you'll register to that market. Verification process would be similar to voluntary market, although most likely more stringent.

First Step: Does project reduce carbon or decrease emissions?

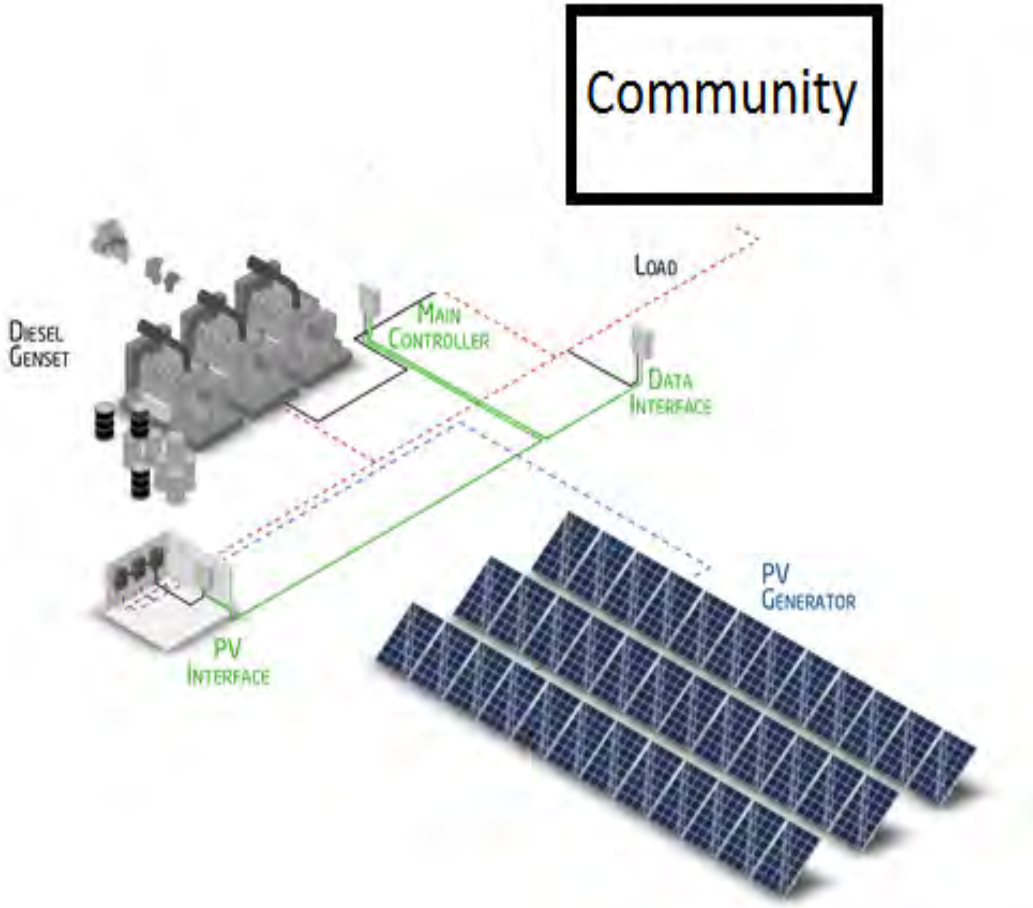
1) Determine current carbon baseline
2) Determine new carbon baseline
3) Subtract 2) from 1) to get amount




Climate change: Our CO2 emissions:
3,654 tCO2/yr
Residential (409 t CO2eq)
Community Buildings (2,736 t CO2eq)
Transportation (509 t CO2eq)
The energy we use:
8,302,089 kWh/yr
Where we use energy:
8,302,089 kWh/yr
Electricity (2,249,383 kWh)
Wood (1,384,615 kWh)
Std A Electricity (968,759 kWh)
Propane (28,748 kWh)
Diesel Fuel (1,666,494 kWh)
Gasoline (2,004,090 kWh)
Residential (1,841,965 kWh)
Community Buildings (4,456,034 kWh)
Transportation (2,004,090 kWh)
Estimate of CO2 emissions in a small remote First Nation community
Residential (189,000 $)
Community Buildings (3,189,500 $)
Transportation (509,900 $)
Our annual energy costs:
$ 3,888,400/yr

Let's say a community develops a micro-grid with solar and offsets 50% of their diesel use

How many offset credits could that generate?



- Total emissions were: 3,145 t CO2
- 50% = 1,572.50 t CO2

= potentially 1,572 carbon offset credits

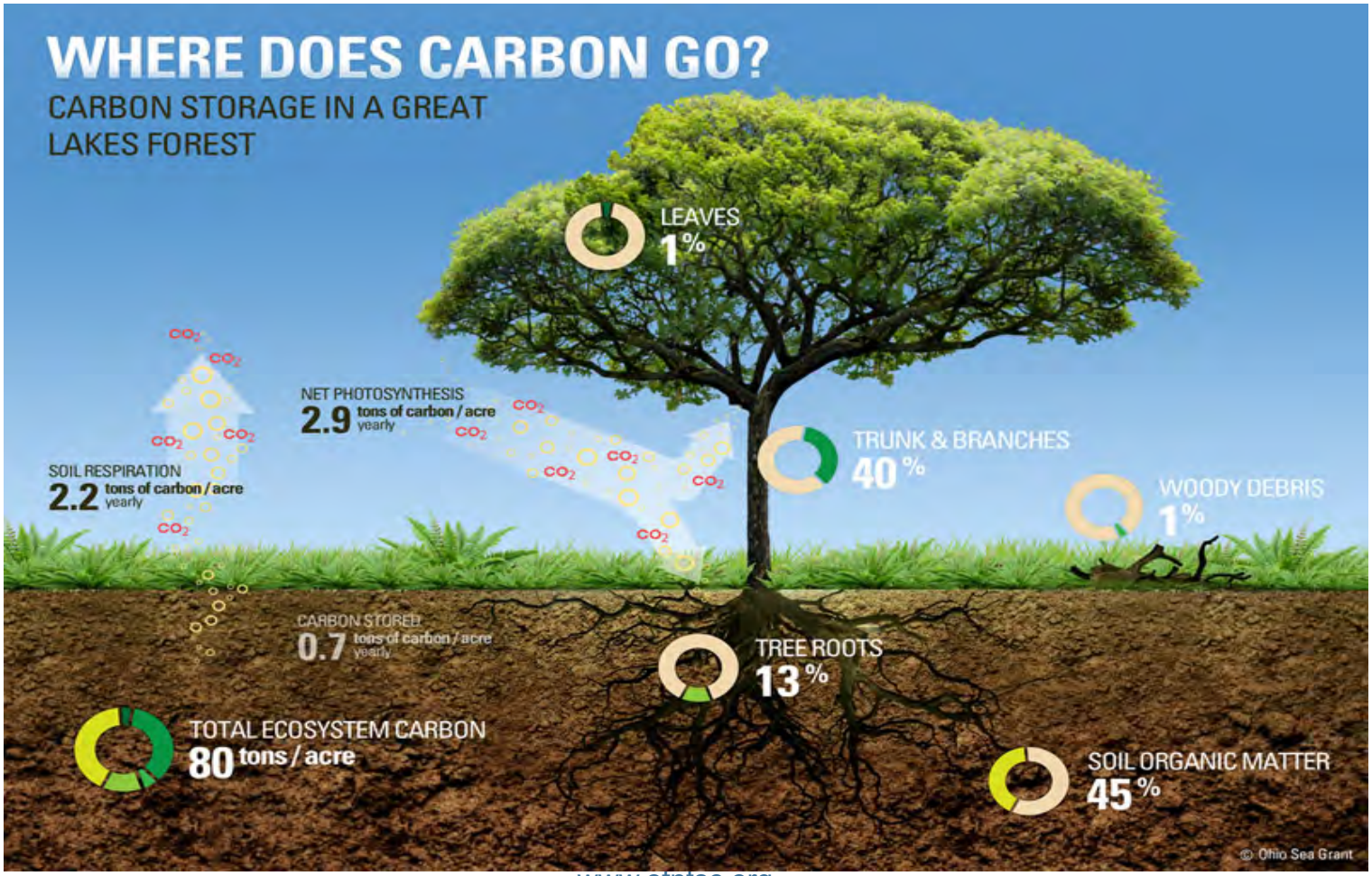
Also is a savings on diesel fuel by roughly: $1,689,250

Price of carbon	Total Potential Carbon Credit Value (1,572 tonnes)
2016 ($18.88 per tonne)	$29,688
2050 ($52-$154 per tonne projection)	$84,888 - $242,0888
2016 ($18.88 per tonne)	Let's say a group of 10 communities went in together: $296,880

Does the renewable project meet protocols?

- Permanence: Must ensure the project isn't reversible
- Additionality: Would this project happen regardless?
- Leakage: Does implementing project cause emissions to increase elsewhere?
- Measurement and monitoring: Is all carbon measured accurately and is there a monitoring plan in place
- Verifiable: Needs to be verified by a 3rd party

Can forests generate carbon offsets?



Complicated

- Challenging to determine exactly how much carbon is being sequestered
- Does it pass the additionality test?
- Monitoring can be challenging
- Permanence issues (forest fires, weather events, disease, insects)

You can't just set aside a forest or wetland and do nothing, it has to be monitored, managed, measured and reported on annually.

Also it needs to be additional: The new management practice of the forest needs to increase it's carbon

Or, it has to be protected from an imminent event: Forest fire or clearcut

Examples

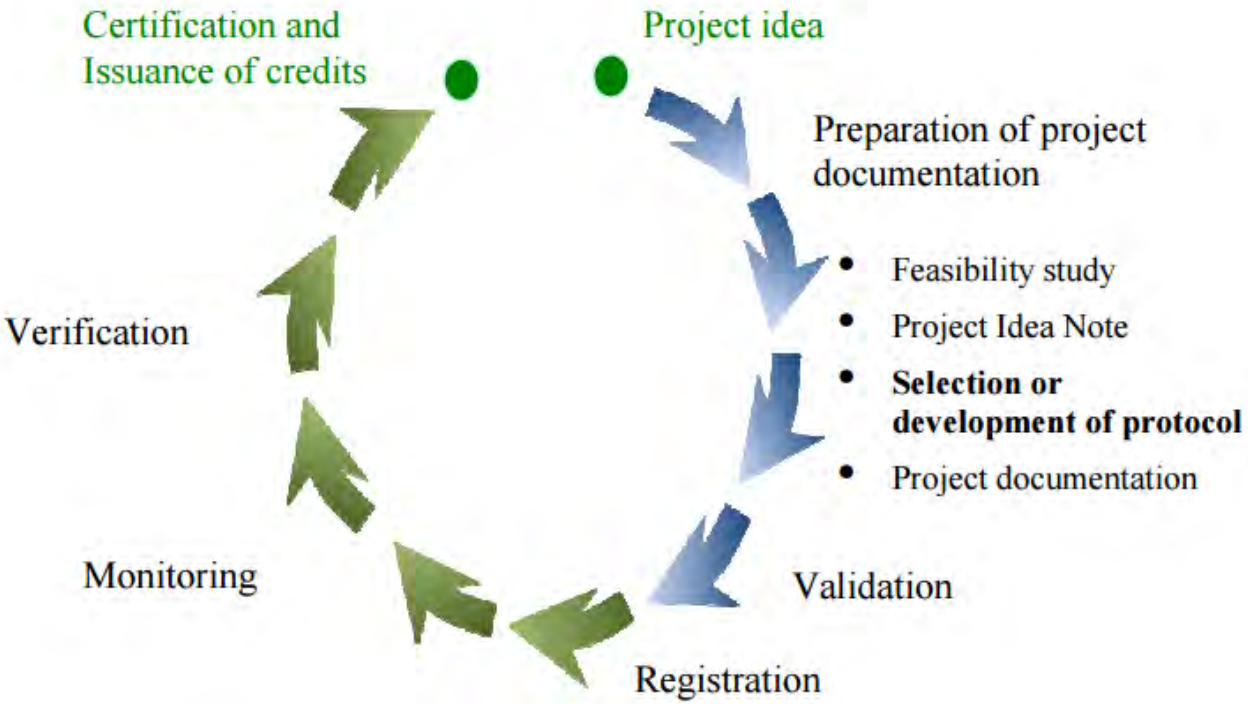
- New forest management practice that reduces fire probability (clearing undergrowth, etc)
- Insect infestation prevention
- Protecting an area that was scheduled to be clear cut
- Growth enhancement strategies

Complications

- A lot of the forest in the Far North would potentially not meet the Additional criteria
- Monitoring, measuring, verifying and reporting would be complicated and expensive

- In areas that forest management zones and areas that are already being forested, there may be more potential.
- Why? Data is already being collected from forest management (reduces monitoring, verifying costs)
- Can potentially alter forest management practices to enhance carbon sequestration

FIGURE 2: OFFSET PROJECT DEVELOPMENT CYCLE



This can all be very expensive:

1) Is it worth it?
2) Who pays for it?
3) Risky: No guarantee the credits will be verified

Approximate up-front costs in US $	
Project preparation	
– Project assessment cost	5,000
– Document preparation cost	40-50,000
– Validation	30-50,000
– Legal cost	3,000-5,000
Registration fees	Calculated per credit
Monitoring costs	
– Verification	10-20,000
– Monitoring	10-20,000 every two years
Issuance fees	
– Levied except in case of Least Developed Countries	2% of issued CERs

Costs

- Development of project documentation
- Measuring carbon baselines and estimating change
- Contract negotiation/writing
- Registration fees
- Project design, validation and verification

Funding

- Many projects: Supported by grand funding or government support. Or, in some cases, private sector looking for offsets
- *Ontario in action plan said it will support development of projects potentially.*

Example: Coast First Nations Great Bear Forest Initiative

- The Great Bear project in BC
- Area: 1.5 million hectares (780,000 hectares of productive forest land); 218,000 of which are now protected.
- Was scheduled to be logged – but they stopped it. Thereby protected existing carbon stocks
- The project started in April 2009, and has a 25 year lifespan.

Figure 1 - Location of the Project Area

How was it stopped?

- First Nations negotiated with the BC government from 2004-2009 which led to a series of legislative initiatives that protects the area
- Carbon finance was necessary in the negotiations for securing FNs support of the legislative commitments

- Additionality: Is met because the project protects and increases carbon stocks by converting forests which were previously designated for logging to protected areas.
- Reduces: emissions caused by harvesting, road building, and increases the carbon stocks as the forest re-grows or continues to grow

- Ownership: The government of BC and the Project Proponents (Nanwakolas council; group of First Nation communities), entered into a Atmospheric Benefit Sharing Agreement which transferred the rights of the carbon credits to First Nations
- The communities worked out a specific revenue sharing agreement amongst themselves

Leakage: Would stopping logging here just increase logging elsewhere? Calculate probability into the numbers.

Permanence: Could a fire wipe or insect infestation wipe out the forest? Create a buffer to protect for that. For example, 30% of the protect forest doesn't qualify for offsets.

Table 4: NET SALEABLE CREDITS SUMMARY

Year	Expected Gross Credits	Leakage Risk Withholding	Permanence Buffer Withholding	South Coast Non-NCS Reduction	NCS/BC Credits
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2013	**527,009**	(252,964)	(27,404)	(143,051)	103,589
Total	**527,009**				**103,589**

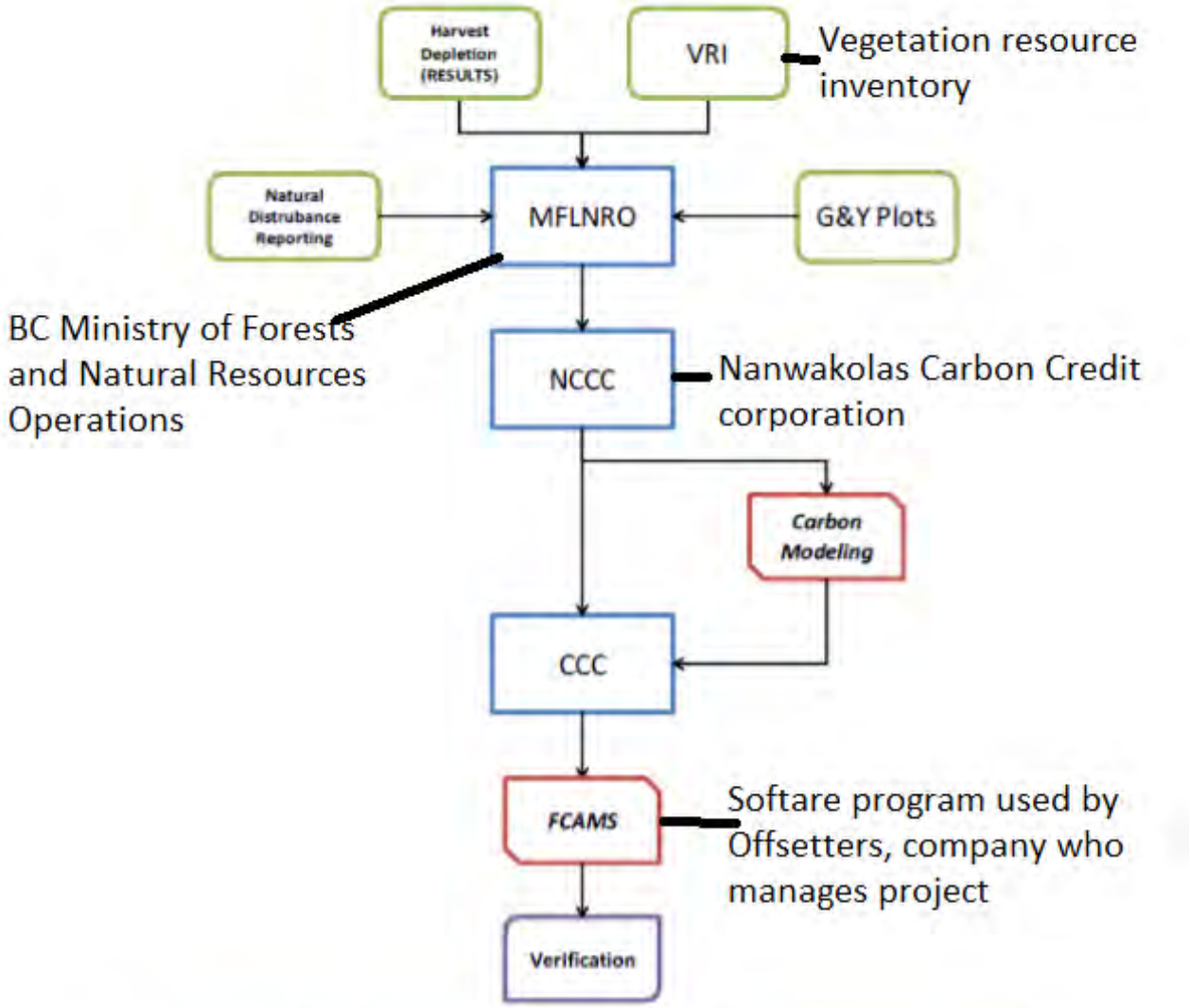


Figure 2: Flow diagram of data monitoring programs/proponents/procedures

Table 11: Responsible Personnel, Qualifications, and Training

Position Description	Organization	Names of Assigned Personnel	Qualifications and Training
Project Overview/Technical Advisor	Nanwakolas/Nanwakolas LP	Wally Eamer	Experience in First Nations and Government negotiations, forest policy. Specific project training will be provided on site as required.
PDD signing Registered Professional Forester	Nanwakolas Council Society	Ted Nash	BC Registered Professional Forester;
Carbon Modeler	Gowlland Technologies Ltd	Andrew Fall	Experience in carbon model, timber supply models. Specific project training will be provided on site as required
Project Manager	Offsetters	Cornelia Rindt	Experience in carbon, project management. Specific project training will be provided on site as required.

Was it worth it?

- Sales from offsets were roughly $35 million between 2012-2015
- The BC province bought most of them through there ‘carbon-neutral’ initiative
- Companies such as Aeroplan, Vancity credit union and Harbour Air also bought some

Could this happen in Ontario?

- Issues with Far North Act and Additionality
- Different forests, more prone to forest fire potentially
- In unmanaged forest zones information and carbon accounting massive undertaking

Maybe Ontario is copying BC?

"Due to their ability to remove carbon from the atmosphere, Ontario's agriculture, forestry, lands, and resource recovery sectors will be able to supply carbon offsets to the cap and trade market, providing made-in-Ontario compliance options for emitters." – Ontario's climate action plan

- May 2016 Globe and Mail article from leaked documents: $174-million to make the government carbon neutral. This will include retrofitting buildings, allowing some bureaucrats to work from home and buying carbon offsets.

→ *although in final action plan it doesn't mention offsets. Changed their minds?*

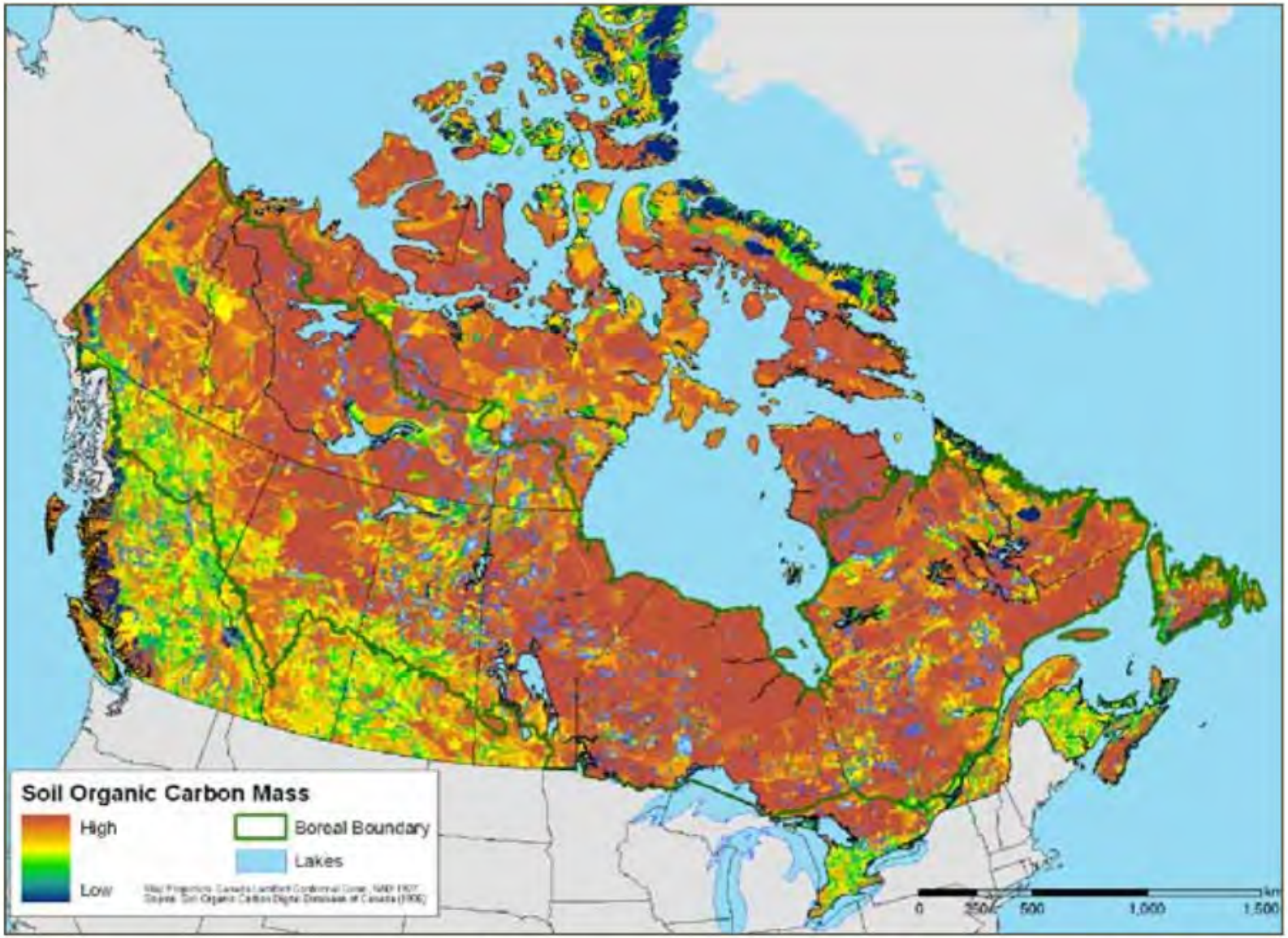


Figure 2. Soil carbon stores of Canada. More carbon is stored in the global boreal forest region than any other of earth's forest biomes. Canada's Boreal Forest region stores approximately 208 billion tonnes of carbon in soil and vegetation, an amount equivalent to 26 years of industrial carbon emissions at 2006 levels.

- Worlds most important carbon storehouse
- Holds almost twice as much per unit as tropical forests
- Estimates of 71.4 billion tonnes of carbon in forest ecosystems and 136.7 billion tonnes in peatland ecosystems in Canada

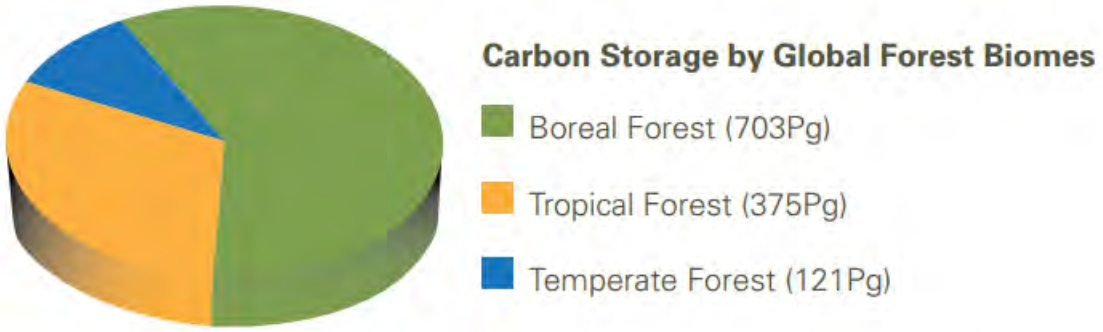


Figure 1: A comparison of carbon storage by global boreal, tropical and temperate forests. One Pg (petagram) is equivalent to one billion tonnes.

Source: Kasischke 2000

Next steps

- Better understanding of carbon stocks and sequestration rates required (baseline information)
- Greater understanding of options to enter the carbon market (voluntary or Ontario's)
- Build hubs (groups of communities) potentially; look into economic opportunities; prepare

Next steps part 2

- Assess revenue allocation of Ontario's action plan
- Determine how money will be spent
- Ensure First Nations Rights to forests are not impacted. And carbon stocks/offsets protected

OFNTCS

- OFNTSC can help provide technical info on cap and trade: Can visit communities, tribal councils, develop info packages, etc
- Can assist in setting up carbon projects, help with carbon accounting
- Provide technical and advisory services on cap and trade and renewable energy.

Contact me:

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