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Chapter 5

Spending From the Greenhouse Gas Reduction Account

Abstract

How is the provincial government using the billions of dollars that are flowing into the Greenhouse Gas Reduction Account (GGRA) from cap and trade auctions?

According to the *Climate Change Mitigation and Low-carbon Economy Act, 2016* (*"Climate Act"*), GGRA funds must be used to reduce, or support the reduction of, greenhouse gas emissions. Most initiatives funded to date are intended to reduce emissions from fossil fuel use, i.e., emissions that are already covered by the cap on allowances. Such initiatives can support reductions by reducing the cost of complying with the cap for some sectors of the economy, but are not likely to reduce Ontario's overall emissions beyond those achieved by the cap. Some initiatives, such as energy efficiency upgrades to reduce fossil fuel consumption in hospitals, schools and low-income housing, have a high potential for also producing social and economic benefits.

Government understanding and management of GGRA initiatives was modest at first, but is starting to improve. By next year, the ECO expects to see a coherent plan for tying GGRA funding decisions to the emissions-reduction targets in the *Climate Act* and to the reduction responsibilities of each ministry.

Ontario's next emissions milestone is 2020, right around the corner, but it will take time to reshape the energy foundation of Ontario's economy. It will also take much more than the relatively small amount of GGRA funding, which is dwarfed by the impacts of broader government economic and regulatory policy. For now, the GGRA's most important benefit is the change it has triggered, both within and outside government, in understanding Ontario's emissions and the opportunities to reduce them.

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5.0 Introduction to the Greenhouse Gas Reduction Account

Section 71 of the *Climate Change Mitigation and Low-carbon Economy Act, 2016* (the "*Climate Act*") requires the government to place all proceeds from its emission allowance auctions into a Greenhouse Gas Reduction Account (GGRA), a notional account within the Consolidated Revenue Fund.

5.0.1 How GGRA Funds Must Be Spent

The *Climate Act* permits GGRA funds to be used only for initiatives that are "**reasonably likely to reduce, or support the reduction of, greenhouse gas emissions**" and certain related administrative costs.

The ECO has observed some public scepticism and concern about how the government will use the large amount of new money that the cap and trade system has begun to raise.

In our 2016 Greenhouse Gas Progress Report, *Facing Climate Change*, we emphasized the need for transparency and accountability on how the government uses these funds.[1] We recommended that evaluation criteria be established to make clear how and why funds are allocated. As well, we emphasized that any emissions reductions attributed to GGRA spending must be *additional* to those produced through existing programs.

Now that cap and trade proceeds are flowing in, the ECO has begun to review how the government is allocating the money.

NOW THAT CAP AND TRADE PROCEEDS ARE FLOWING IN, THE ECO HAS BEGUN TO REVIEW HOW THE GOVERNMENT IS ALLOCATING THE MONEY

Documentation and Transparency

In *Facing Climate Change*, the ECO proposed that:

> *detailed records of the analysis that justifies each GGRA expenditure… should be included in a separate appendix which can be readily severed from any confidential Cabinet documents, so that officers of the Legislature can effectively review their sufficiency, prudence and completeness.*[2]

The government agreed to provide the ECO with access to documents on GGRA expenditures, by way of an Order in Council (contained in Appendix C, which is available online only at eco.on.ca). The ECO then began the process of seeking the necessary information from ministries and received the first tranche of documentation late in our report preparation process. We plan to do a more thorough analysis in future years.

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5.1 The GGRA Funding Process to Date

5.1.1 2015 Down Payment: The Green Investment Fund

In late 2015, the province announced what it called a $325 million *down payment* on climate action named the Green Investment Fund (GIF). Funds for the nine projects were all transferred to third party organizations, mostly to be spent over several years (see Section 5.2.1).

When these GIF initiatives were announced, the *Climate Act* had not yet passed, the *Climate Change Action Plan* (CCAP) was just being developed, the cap and trade program had not started, and our report *Facing Climate Change* had not been released.

At the time, the province was still proposing to use GGRA proceeds to subsidize electricity rates, a proposal that it subsequently and properly abandoned (see Section 5.5.1). In other words, government understanding of the proper uses of the GGRA was incomplete. As well, the government had no clear methodology for quantifying greenhouse gas (GHG) reductions from GGRA initiatives, and no overall plan for selecting the best projects.

All ministries involved had a very steep learning curve, and the Ministry of the Environment and Climate Change (MOECC) had limited in-house staff to assist. Projects were selected through an informal process that focused on finding partners with existing energy-related projects that could quickly receive funds.

Because the GGRA did not yet exist, the funding for GIF projects came from general revenues with the expectation that the province would reimburse itself from the GGRA once auction proceeds were received. Our review of the GIF initiatives is in Section 5.2.1.

IN 2017, THE MOECC DEVELOPED A MORE FORMAL PROCESS FOR ALLOCATING GGRA FUNDS

5.1.2 A More Formal Process in 2017

In early 2017, the MOECC developed a more formal process for allocating GGRA funds, including an internal GGRA evaluation framework. The structure and governance of the GGRA is built on the government-wide annual Program Review, Renewal and Transformation budget processes that the province uses for its overall fiscal decision making.

Individual ministries seeking GGRA monies put forward projects that have been evaluated by an inter-ministerial committee, with help from external experts. The committee makes quantitative and qualitative recommendations to the Minister of the Environment and Climate Change. Each proposed initiative is documented on a scorecard with evaluation criteria and an intake form, intended to show whether the initiative will:

- Produce GHG reductions;
- Align with the *Climate Change Action Plan*;
- Reduce Ontario emissions from its annual baseline; and
- Support Ontario's transition to a low-carbon economy.

The Minister of the Environment and Climate Change in turn performs a review and evaluation for Cabinet of each individual initiative, as required by section 71(3) of the *Climate Act*. Before the government spends GGRA money on an initiative, the Minister must evaluate it. In

addition to each initiative's potential GHG reductions, the Minister must consider:

- Its relationship to achieving Ontario's GHG-reduction targets;[3]
- Its relationship to other GHG-reduction initiatives;
- Its relationship to the *Climate Change Action Plan*; and
- Whether it is also likely to assist low-income households and vulnerable communities with their transition to a low-carbon economy.

The Minister may also consider other matters that he/she considers appropriate. Following the Minister's review, the MOECC puts together an Annual Greenhouse Gas Investment Plan for Cabinet, which provides an evaluation of all proposed GHG-reduction initiatives.

5.1.3 A Methodology to Predict Emission Reductions

A credible evaluation of GGRA initiatives must be based on a coherent method to estimate the GHG reductions that can fairly be expected from an initiative, including methods for data collection and analysis.

By June 2017, the MOECC developed a guidance document, the *Ontario Public Service Guidance Document for Quantifying Projected and Actual Greenhouse Gas Emission Reductions*. The document is to help ministries estimate GHG reductions for GGRA projects. The ECO made substantive comments on a draft of this guidance document, particularly on baselines, evaluation criteria for research, and trade-offs between accuracy and simplicity. The final guidance document addressed some of our concerns and the ECO expects the document to be used consistently moving forward.

Our review of 2017 GGRA initiatives is in Section 5.2.2.

THE GOVERNMENT HAS ALLOCATED $1.37 BILLION OF GGRA FUNDS

5.2 How Have the GGRA Funds Been Allocated So Far?

As described in Chapter 2, Ontario's first four carbon auctions occurred in March, June, September and November of 2017; subsequent auctions (as part of the Western Climate Initiative) will occur quarterly. All proceeds from the 2017 auctions, a total of $1.9 billion, were received in the province's 2017/2018 fiscal year. As of November 2017, the government had announced 18 approved GGRA initiatives at a cost of $1.05 billion (two additional initiatives with funding of $17 million have been approved but not yet publicly announced). When added to the $319 million[4] spent through the GIF in 2016, the government has allocated $1.37 billion of GGRA funds to GHG-reduction initiatives.

Allocated vs. Spent – A Note on Terminology

Throughout this chapter, we discuss what has been *allocated* from the GGRA, not what has been *spent*. While funds have been allocated to many initiatives, and many transfer payment agreements signed, the ECO has no evidence that any money has been actually transferred out of the GGRA. The ECO understands that ministry recipients must spend from their general budgets and then request reimbursement from the GGRA. As of November 2017, we had no evidence that any ministry had yet requested a reimbursement.

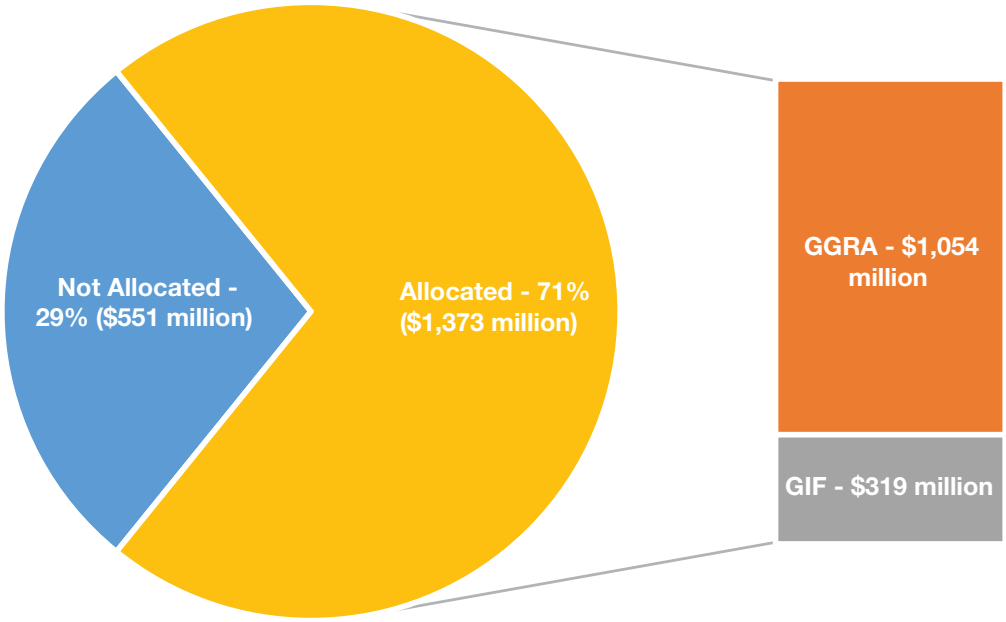

Figure 5.1. Summary of Ontario 2017 cap and trade proceeds and allocations to the GIF and GGRA (as of November 2017).

Source: Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

Therefore, of the $1.9 billion raised by cap and trade in 2017, approximately 71% has been allocated to various initiatives.[5] This leaves $551 million (29% of the 2017 cap and trade revenues) that has not yet been allocated (Figure 5.1), minus an undisclosed amount to support the program's administrative costs.

The allocations from the GGRA and GIF break down by sector as follows (Figure 5.2):

- Homes and Businesses $968.0 million
- Government and Partnerships $110.1 million
- Transit and Active Transportation $103.5 million
- Research and Development $99.8 million
- Electric Vehicles $90.40 million
- Agriculture, Land and Forests $1.1 million

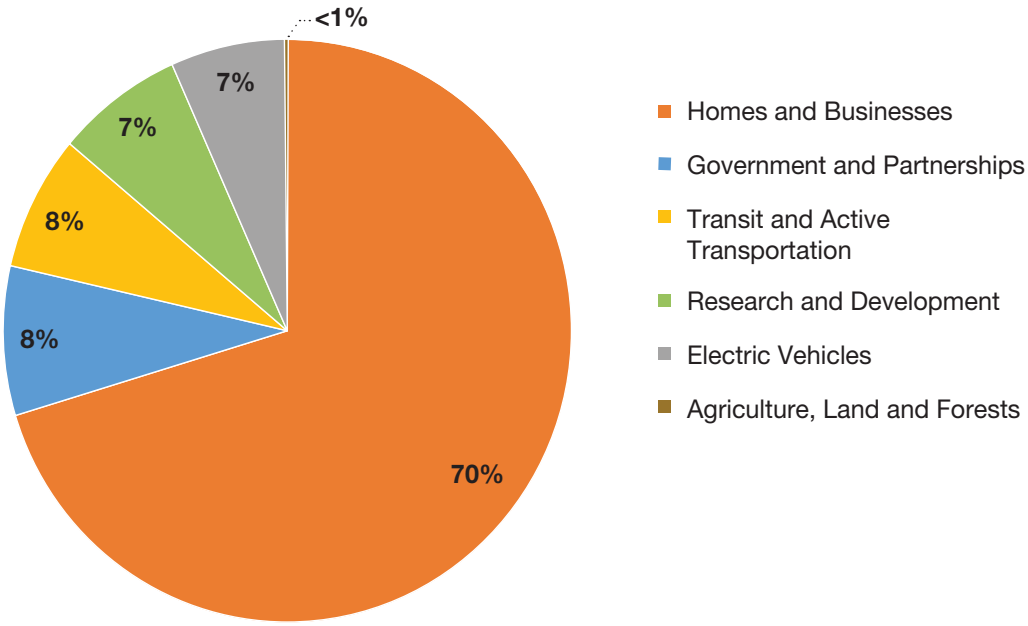

Figure 5.2. Funding allocations from GIF and GGRA to key investment areas (as of November 2017).

Source: Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

5.2.1 2015/2016 Green Investment Fund Initiatives

In November 2015, the province announced its intention to establish a *Green Investment Fund* with a *down payment* of $325 million with the goal of "reducing GHG emissions while strengthening the economy."[6] Although the GIF pre-dated the CCAP, it was intended to align with its eventual goals and action areas. The following nine initiatives were approved in January 2016 and announced shortly afterwards. Ministries funded these initiatives from their own budgets and the government plans to reimburse them with GGRA funds.

Table 5.1. Green Investment Fund Initiatives (Listed in order of amount).

Ministry	Initiative	Detail	Funding
Ministry of Energy	Home Energy Audits and Energy Efficiency Retrofit Program	Energy conservation initiatives for 37,000 additional homes, delivered by Union Gas and Enbridge	$100 million
Ministry of Housing	Social Housing Apartment Retrofit Program	Energy efficiency retrofits in social housing high-rise buildings	$82 million
Ministry of Economic Development and Growth	TargetGHG	Clean tech research and development and demonstration projects for large industrial emitters	$74 million
Ministry of Economic Development and Growth	SMART Green	Grants for equipment upgrades for small/ medium manufacturers that are not part of the cap and trade program	$25 million
Ministry of Transportation	Electric Vehicle Chargers Ontario	Public charging network for electric vehicles	$20 million
Ministry of Housing	Social Housing Electricity Efficiency Program	Electrical energy savings for low-density social housing units	$10 million
Ministry of Energy	Smart Grid Fund	Renewable energy micro-grid systems in two remote First Nations communities to reduce the use of diesel	$4 million[7]
Ministry of Indigenous Relations and Reconciliation	Support for Indigenous Communities	Building First Nations' technical capacity for climate change mitigation	$3 million[8]
Ministry of the Environment and Climate Change	Sustainability CoLab	Funding to help small businesses reduce emissions	$1 million
Total			**$319 million**

Source: Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

5.2.2 2017/2018 Greenhouse Gas Reduction Account Initiatives

By 2017, the government had finalized its Climate Change Strategy and Action Plan, passed the *Climate Act*, and the cap and trade program was up and running. The 18 initiatives announced as of November 2017 total $1.05 billion, and cover several important themes identified in the CCAP:

- Reducing emissions from key sectors (e.g., homes, businesses, industry, transportation, government, agriculture and forestry);
- Supporting alternative technologies and transportation modes (e.g., electric vehicles, active transportation);
- Funding clean tech research and development; and
- Partnering with Indigenous communities, municipalities and other key stakeholders.

Table 5.2. Fiscal Year 2017/2018 GGRA Initiatives – Announced to November 2017 (Listed in order of amount).

Ministry	Initiative	Detail	Funding
Ministry of the Environment and Climate Change	Green Ontario Fund ('GreenON')	Funding to create entity responsible for enhancing the uptake of low-carbon technologies in new and existing buildings	$377 million
Ministry of Education	School Retrofit Program	Funding to retrofit buildings across 72 school boards	$200 million
Ministry of the Environment and Climate Change	Municipal GHG Challenge Fund	Funding to support emissions-reductions projects for municipalities that have community energy plans/climate action plans	$100 million
Ministry of Transportation	Ontario Municipal Commuter Cycling Program	Funding to enhance commuter cycling corridors	$93 million
Ministry of Housing	Social Housing Apartment Improvement Program	Funding to extend program that was previously supported by Green Investment Fund	$85 million
Ministry of Health and Long-Term Care	Hospital Energy Efficiency Program	Funding for 180 energy efficiency projects, mainly focused on heating, ventilation and air conditioning systems, waste anaesthetic gases, and lighting	$64 million
Ministry of Transportation	Electric Vehicle Purchase Incentive Program	Funding for revised program to support adoption of electric vehicles	$47 million

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Ministry	Initiative	Detail	Funding
Ministry of Research, Innovation and Science	Low-Carbon Innovation Fund	Funding to provide support for clean technology innovation	$25.8 million
Ministry of Advanced Education and Skills Development	Low-Carbon Building Skills	Funding to increase capacity of unions and colleges to train workers in low-carbon building skills	$24 million
Ministry of Transportation	Electric Vehicle Chargers Ontario	Funding to extend program that was previously supported by Green Investment Fund	$20 million
Ministry of Transportation	Electric School Bus Pilot Program	Funding for tests in five communities across Ontario	$8 million
Ministry of the Environment and Climate Change	Climate Change Partnerships	Funding for external organizations to support behavioural change	$3.05 million
Ministry of Transportation	Commuter Bike Parking Program	Funding for bicycle parking at key commuter locations	$2.5 million
Ministry of Transportation	Electric Vehicle Charging Infrastructure	Funding to implement electric vehicle charging infrastructure at GO Transit rail stations and other government facilities	$2.27 million
Ministry of Transportation	Electric Vehicle Discovery Centre	Funding for facility that educates consumers about electric vehicles	$1 million
Ministry of Natural Resources and Forestry	Land Use Carbon Inventory	Funding to develop an inventory to quantify and assess emissions and sequestration from agriculture, forestry and other land uses	$0.75 million
Ministry of Natural Resources and Forestry	50 Million Trees	Funding to increase tree planting target in urban areas from 1 million to 2 million	$0.38 million
Ministry of the Environment and Climate Change	Electric and Hydrogen Vehicle Advancement Partnership	Funding for research and development into electric and hydrogen vehicle technologies	$0.09 million
TOTAL			**$1.05 billion**

Source: Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

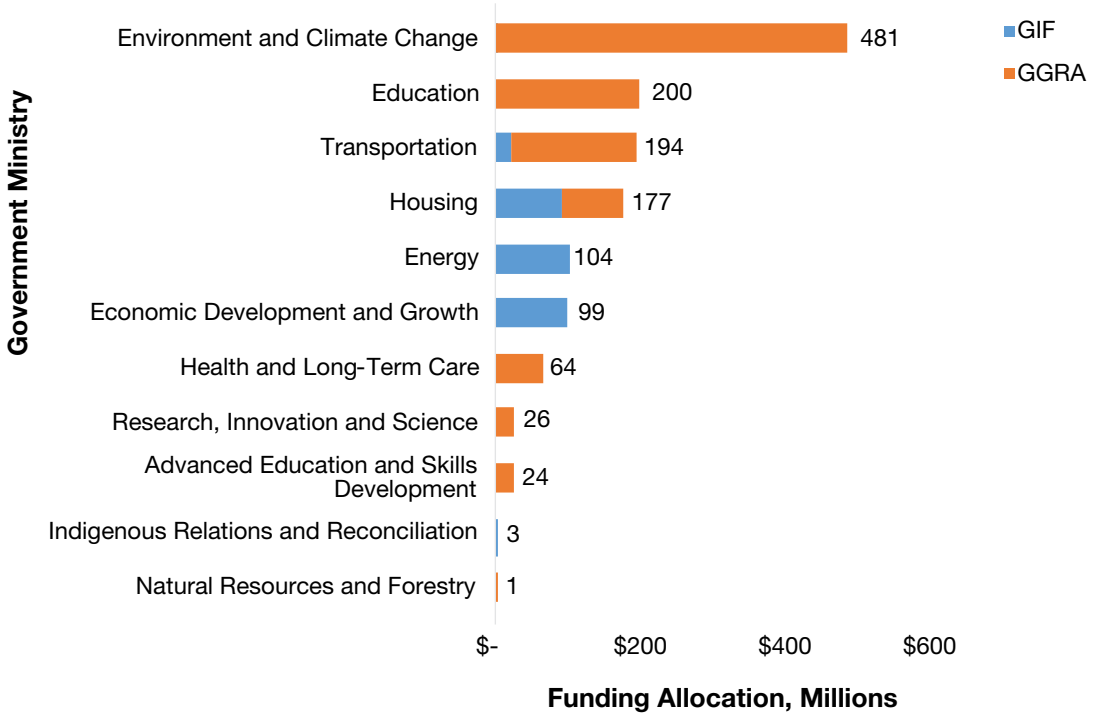

Figure 5.3. Total GIF and GGRA allocations by government ministry (as of November 2017).

Source: Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

DO PROJECTS THAT REDUCE FOSSIL FUEL USE BY AN INDIVIDUAL OR BUSINESS REDUCE ONTARIO'S TOTAL CAPPED GHG EMISSIONS?

THE ANSWER IS USUALLY NO

5.3 Do These Initiatives Reduce Ontario's Total Capped GHGs?

The government frequently claims that its GGRA initiatives "reduce greenhouse gas emissions."[9] To date, most GGRA funds have been used for projects to reduce fossil fuel consumption in Ontario, such as electric vehicle incentives and building efficiency improvements. This raises an important and poorly understood question.

Since the cap on GHG allowances covers essentially all fossil fuel use in Ontario,[10]

Do projects that reduce fossil fuel use by an individual or business reduce Ontario's GHG emissions?

The answer is usually *no*. A project that reduces fossil fuel use by an individual or business reduces the emissions of that particular individual or business. However, the project is not likely to reduce Ontario's GHG emissions as a whole.

Why? The purpose of a legal cap is to keep Ontario's emissions lower than they would otherwise be. *If the cap has that effect*, the GHG emissions covered by the cap will be limited by, and therefore equal to, the supply of allowances (i.e., the number of allowances issued by the government).[11]

Supply of allowances = GHGs emitted by capped sectors, mostly from fossil fuels[12]

No GGRA initiative can change the supply of allowances, which is set by section 54 of O. Reg. 144/16, made under the *Climate Act*.

GGRA initiatives to reduce fossil fuel use can only reduce the demand for allowances by some individuals and organizations. This should lower the price of allowances at auction and/or in the secondary market, and may make more allowances available for other emitters to purchase. But as long as Ontario's capped emissions equal (i.e., use up) the supply of allowances, reducing some of the demand for allowances through GGRA initiatives will not reduce total GHGs (Figure 5.4).[13]

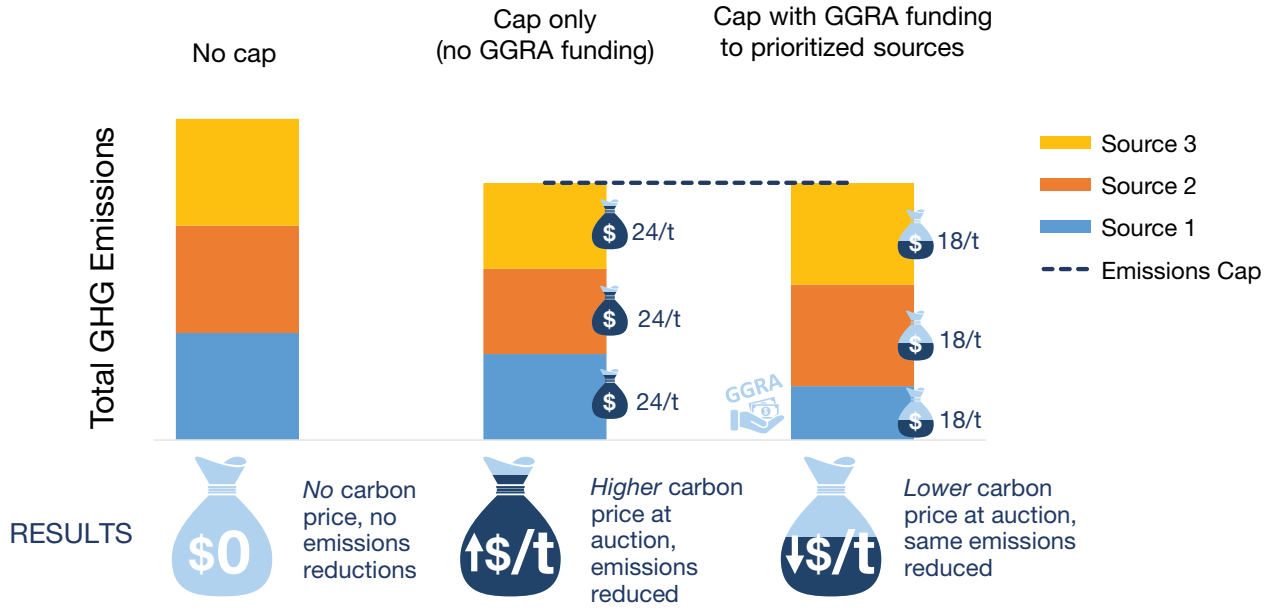

Figure 5.4. Results of GGRA spending on Ontario's total emissions. Without a cap (left), there is no price on carbon and no emissions reductions. With a binding cap *but no* GGRA funding (middle), each of the three sources of emissions must purchase allowances or reduce GHG emissions to meet the cap. With a binding cap *and* GGRA funding for Source 1 to reduce its fossil fuel use (right), Source 1 will require fewer allowances. This reduces demand, and the price, for allowances. Sources 2 and 3 may choose to buy these cheaper allowances, instead of reducing their emissions. As a result, overall emissions may remain the same.[14]

Such GGRA initiatives still meet the minimum requirements of the *Climate Act*, because they support the emissions reductions that the cap requires, by making those emissions reductions cheaper, easier and politically more acceptable.[15] GGRA initiatives can also reduce energy costs for particular individuals, organizations or sectors, which may have valuable social, economic and/or environmental effects.

If the government wants GGRA funds to produce additional emissions reductions, beyond those required by the cap on the supply of allowances, it should fund initiatives to reduce the 18% of Ontario emissions that are not covered by the cap: non-fossil fuel emissions, primarily methane and nitrous oxide, from agriculture and waste. Anaesthetics are another source of uncapped emissions that could also be a promising target – see Appendix D (which is available online only at eco.on.ca).

Could warmer winters, GGRA initiatives, federal Clean Fuel regulations and other measures drive the demand for allowances down so far that total emissions no longer equal the supply of allowances? (If so, the price of allowances would likely be at the floor and an allowance auction may not sell out.) This is certainly possible; see Chapter 3. If and when Ontario's cap is too loose to limit GHG emissions, then GGRA initiatives to reduce fossil fuel use could achieve net GHG reductions.

IF THE GOVERNMENT WANTS GGRA FUNDS TO PRODUCE ADDITIONAL EMISSIONS REDUCTIONS, IT SHOULD FUND INITIATIVES TO REDUCE THE 18% OF ONTARIO EMISSIONS THAT ARE NOT COVERED BY THE CAP

5.4 Plan vs. Action: Which Parts of the *Climate Change Action Plan* Have Been Funded?

A five-year *Climate Change Action Plan* (CCAP), released in June 2016, includes numerous initiatives the government intended to fund from the GGRA.[16] Which parts have been funded?

5.4.1 Funding of *Climate Change Action Plan* Initiatives

The CCAP presents funding estimates over the timeframe of the plan, rather than on an annual basis. The only indication of how much is to be spent each year comes from the provincial budget. In 2017/2018, the government forecast that cap and trade would bring in $1.8 billion, which it would allocate among seven areas (Table 5.3). After four out of the five 2017/2018 auctions, total cap and trade proceeds were $1.9 billion, slightly higher than forecast. The final auction of the fiscal year will take place in February 2018 (this is also the first auction for which Ontario will be part of the Western Climate Initiative). As of November 2017, the province had allocated $1.37 billion of GGRA funds, including the $319 million of the GIF.

Table 5.3. Proposed Annual Allocation and Actual GGRA Allocations in 2017/2018 Fiscal Year.

CCAP Investment Area	Proposed Annual GGRA Allocation (in millions)	2017/2018 GGRA Allocation (in millions)
Homes and Businesses	$800	$750
Electric Vehicles	$90	$70.4
Government and Partnerships	$55	$103.1
Transit and Active Transportation	$420	$103.5
Research and Development	$20	$25.8
Agriculture, Land and Forests	$5	$1.1
Other *	$410	$319
	$1,800	**$1,373**

* includes Green Investment Fund and "related spending to reduce GHG emissions," likely including government administrative costs

Source: Ontario Ministry of Finance, 2017 *Ontario Budget: A Stronger, Healthier Ontario* (2017); Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases. 2017/2018 Allocation shown is to November 2017.

These allocations are roughly in line with the plan laid out in the budget, but with some variances (Figure 5.5). For example, the province allocated 56% of its GGRA funds towards homes and businesses, compared to a planned allocation of 45%. This reflects big ticket items such as the Green Ontario Fund or 'GreenON' ($377 million in 2017/2018), school retrofits ($200 million) and social housing programs ($85 million). By contrast, just 8% of GGRA funds have been allocated to transit and active transportation ($103.5 million), significantly lower than the proposed 23% of spending.

The CCAP includes 47 action items requiring GGRA funding. In addition to the announced initiatives, 18 others had a start date in 2017 but had not received GGRA funding by November 2017 (Table 5.4). Ten other unfunded items are slated to start in future years.

THE CCAP INCLUDES 47 ACTION ITEMS REQUIRING GGRA FUNDING. IN ADDITION TO THE ANNOUNCED INITIATIVES, 18 OTHERS HAD A START DATE IN 2017 BUT HAD NOT RECEIVED GGRA FUNDING BY NOVEMBER 2017

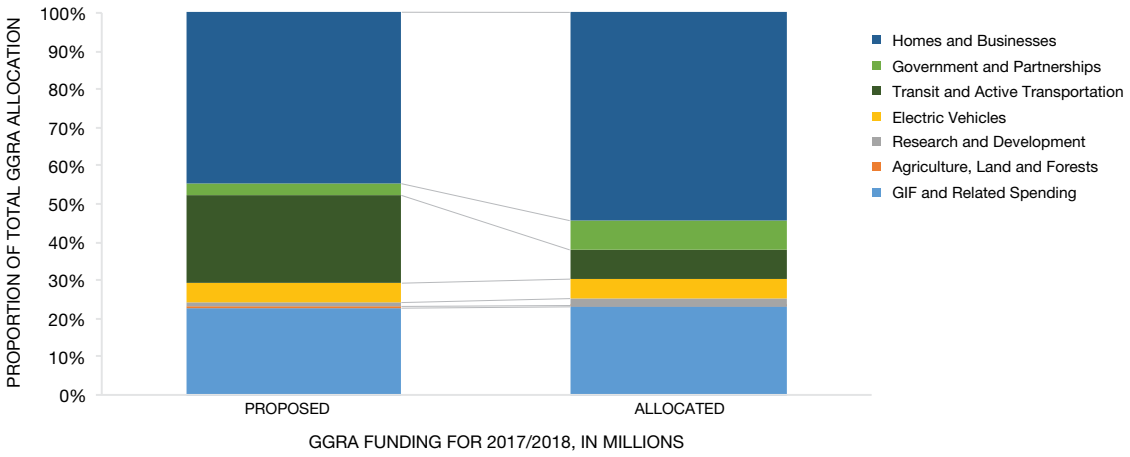

Figure 5.5. Proposed allocations to GGRA, as per 2017/2018 Ontario budget (left), and actual GGRA allocations as of November 2017, as tracked by the ECO (right).

Source: Ontario Ministry of Finance, *2017 Ontario Budget: A Stronger, Healthier Ontario* (2017); Ministry of the Environment and Climate Change, *Annual Greenhouse Gas Investment Plan* (2017); Government of Ontario press releases.

Table 5.4. Key CCAP Items for 2017 That Have Not Received GGRA Funding, as of November 2017.

Action Area	Action Plan Item	Start Date	Intended GGRA Funding (in millions)	Comment
Transportation	Pilot Methane from Food Waste and Agriculture as a Fuel Source	2017	$15-20	Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) released a Discussion Paper in May 2017 for a *Proposed Agrifood Renewable Natural Gas for Transportation Demonstration Program*
	Free Overnight Electric Vehicle Charging	2016-17	$15	Four-year program for residential and multi-unit residential customers
	Improve Competitiveness of Short-Line Railways	2017	$15-20	No update since CCAP
	Accelerate Regional Express Rail (RER) Deployment	Ongoing	$355-675	In June 2017 Ontario announced it was committing $13.5 billion to implement RER, as part of a $21.3 billion investment in the GO Train network. This includes $1.9 billion in federal infrastructure funding
	EV Partner and Dealership Program	2017	$10-20	No update since CCAP

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Action Area	Action Plan Item	Start Date	Intended GGRA Funding (in millions)	Comment
Buildings and Homes	Incentives for Apartment Building Retrofits	2017	$300-400	These incentives will likely be provided by the Green Ontario Fund ('GreenON')
	Showcase Low-Carbon Technologies in Heritage Properties	2017	$40-80	No update since CCAP
	Keep Electricity Rates Affordable	2017	$1,000-1,320	In 2016, the ECO reported that "subsidizing electricity rates should not be considered an acceptable use of GGRA funds." The Ministry of Energy responded that "the decision regarding the final approach for [cap and trade] proceeds recycling has not been determined," and the action item "reflects a preliminary approach at the time of the release of the CCAP."[17] Since then, the MOECC has confirmed to the ECO that no GGRA funding was committed to this initiative.
	Establish Low-Carbon Content for Natural Gas	2017	$60-100	No update since CCAP
Land-use Planning	Support Community Energy Plans for municipalities and First Nation communities	2017	$20-25	No update since CCAP

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Action Area	Action Plan Item	Start Date	Intended GGRA Funding (in millions)	Comment
Industry and Business	Reduce Agri-Food Emissions and Retrofit Agricultural Facilities	2017	$50-115	No update since CCAP
Research and Development	Global Centre for Low-Carbon Mobility	2017	$100-140	No update since CCAP
Government	Showcase Ontario's Clean Tech Expertise	2017	$75	No update since CCAP
	Ontario Public Service (OPS) Carbon Challenge	2017	$0.25-1	No update since CCAP
	Climate change training for OPS employees	2017	$0.25-1	*OPS Guidance Document for Quantifying Projected and Actual GHG Emissions Reductions* published in June 2017 to assist OPS employees in preparing climate change programs
Agriculture, Forests and Lands	Implement Waste-Free Ontario Strategy	2017	$20-30	MOECC launched the *Waste-Free Ontario Strategy* in March 2017
	Long-Term Soil Health and Conservation Strategy	2017	$30	OMAFRA released a draft *Soil Health and Conservation Strategy* for comment in November 2017. The final strategy is expected in Spring 2018
	Wetlands Conservation Strategy	Ongoing	$0.5-1	Strategy finalized and released on July 20, 2017, along with $1.9 million for wetland restoration. The ECO has not received any indication these funds are from the GGRA

THE PRIMARY GOAL OF THE ECO'S ANALYSIS THIS YEAR IS TO CONFIRM THAT GGRA FUNDS ARE BEING USED IN ACCORDANCE WITH THE *CLIMATE ACT*

5.5 Step 1: Do GGRA Initiatives Meet the Minimum Test?

The primary goal of the ECO's analysis this year is to confirm that GGRA funds are being used in accordance with the *Climate Act*. The *Climate Act* sets only minimal criteria for permitted uses of the GGRA funds (and none for prioritizing among initiatives).[18] The minimum requirement is that the expenditure must be,

> *… reasonably likely to reduce, or support the reduction of, greenhouse gas emissions.*

As a first step, the ECO therefore asked: has the province shown that each GIF/GGRA expenditure is reasonably likely to reduce GHG emissions or *support* the reduction of such emissions? In our view, most of the initiatives passed this minimal screen, i.e., should support GHG reductions by reducing the cost of complying with the cap for some sectors of the economy. However, some uses of the cap and trade revenues did not meet even this minimum requirement.

5.5.1 Green Investment Fund: Two Doubtful Projects

It is the ECO's opinion that there were two uses of the Green Investment Fund that did not follow the requirements of the *Climate Act*: first, to support climate change adaptation, rather than mitigation; and second, to reduce electricity consumption, without satisfactory evidence that this would reduce Ontario's GHG emissions.

Mitigation focuses on reducing the extent of climate change by reducing GHG emissions. *Adaptation* focuses on reducing the harm caused by the effects of climate change. Adaptation is necessary and important, but the *Climate Act* requires that all GGRA funds be spent on mitigation.

TWO USES OF THE GREEN INVESTMENT FUND DID NOT FOLLOW THE REQUIREMENTS OF THE CLIMATE ACT

In 2016, the Ministry of Indigenous Relations and Reconciliation (MIRR) gave $5 million of GIF funds to help First Nations communities build technical capacity for climate change adaptation and mitigation. The government announced that this $5 million would be reimbursed from the GGRA. The government subsequently recognized that at least some elements of this initiative did not meet the legislative requirements for GGRA funding, as they focused on *adaptation* and not *mitigation*. The government eventually announced that only $3 million (60%) of the $5 million grant would be reimbursed from the GGRA. The MIRR did not provide the ECO with any methodology or evidence to show that 60% (or any) of this initiative would reduce GHGs, to justify allocating even $3 million from the GGRA.

First Nations communities are suffering significant climate change impacts (due, for example, to the reduction in northern ice roads). They need government support to adapt. However, it is equally clear that the *Climate Act* requires cap and trade proceeds to be used for GHG reductions, not for adaptation.[19] The ECO understands that the MIRR is now aware that GGRA funds cannot be used for adaptation.

Under its Social Housing Electricity Efficiency Program (SHEEP), the Ministry of Housing gave $10 million of GIF funds to social housing providers to reduce electricity consumption in low-rise public housing connected to the electricity grid. Because of Ontario's low-carbon electricity grid, reducing total electricity consumption is not an effective way to reduce GHG emissions.

Ontario's grid-based electrical system has low GHG emissions because most generation sources are low-carbon (i.e., hydro, nuclear).[20] Less than 10% of Ontario's electricity is generated from fossil fuels, i.e., releases GHGs. As a result, most of the time, electricity

MOST OF THE TIME, ELECTRICITY CONSERVATION DOES NOT REDUCE GREENHOUSE GASES

conservation does not reduce GHGs. Only when there is high electricity demand (e.g., on hot summer weekdays, and on the hottest and coldest nights), is a significant portion of electricity generated by natural gas plants, which do release GHGs. As a result, many typical electricity conservation efforts, such as replacing inefficient lights with LEDs, do little to reduce current GHG emissions.[21]

Electricity conservation efforts that are focused on reducing usage during times of peak demand (such as air conditioning) can be more effective at reducing GHGs.[22] As we indicated in our commentary on the draft *Ontario Public Service Guidance Document*:

> *A good example of the difficulties when balancing simplicity with accuracy is found in the draft* Guidance Document's *recommendation to estimate electricity emissions based on the average mix of electric power generation in Ontario…. Because the Ontario electrical system has no GHG emissions about two thirds of the time, [and emissions] vary significantly depending on the time of year and time of day, this methodological choice will distort the predicted reductions:*
>
> - *All electricity conservation initiatives will show very low GHG emissions-reduction potential, including those that would displace natural gas fueled generation.*

- *Any type of fuel switching to electricity from fossil fuel will show very high GHG emissions-reduction potential, which will be overstated for electrical usage when gas-fired generation is at the margin.*

- *The… potential for GHG emissions reductions from switching the timing of electricity use (e.g., load shifting, overnight electric vehicle charging) will be ignored.*

The ministry's final guidance document indicates that the MOECC will work with stakeholders to develop appropriate GHG emission factors.[23] The ECO strongly supports developing these emissions factors and adding it to the document and internal framework as soon as possible. This is an important criteria for evaluating and prioritizing projects for GGRA funding.

SHEEP funds were not focused on peak demand reductions, and could be used to replace lighting with LEDs. Most lighting is used primarily at night, when natural-gas fired electricity generation is rare, i.e., when electricity conservation is not likely to reduce GHGs. Even if electricity conservation in social housing produced some small GHG reductions, it would be difficult to attribute these reductions to SHEEP itself, as opposed to the strong electricity conservation initiatives offered by local electric utilities, and/or the price pressure to reduce electricity use.

SHEEP was also a high-cost means of pursuing GHG reductions. The ministry estimated the potential GHG reduction of SHEEP at 9,700 tonnes, an estimate the ECO does not consider reliable because it was based on average, not actual, time of use emissions. Even if this were achieved, at a cost of $10 million, this would mean paying $1,031 for every tonne of reductions.

For comparison, in Ontario's first four auctions, GHG allowances sold for less than $19 per tonne, approximately one fiftieth of the cost.

Accordingly, although SHEEP may be valid social policy, the ECO cannot conclude that it was a proper use of GGRA funding. The Ministry of Housing advised the ECO that it will not seek any further GGRA funds for SHEEP.

The ECO is happy to see that other GGRA initiatives from the Ministry of Housing (e.g., the Social Housing Apartment Improvement Program) have a stronger focus on reducing fossil fuel use. Social housing pilot projects can showcase innovation, support research and development, and reduce the price of Ontario technology for wider market adoption, while also reducing operating costs and increasing comfort for vulnerable communities who are disproportionately impacted by both carbon pricing and climate change.

5.5.2 2017 GGRA Initiatives: No Doubtful Projects

The 18 approved GGRA initiatives described in Section 5.2.2 do meet the minimum test, in that they are likely to support the reduction of GHG emissions. Therefore, in the ECO's view 99% of the GIF/GGRA funds allocated up to November 2017 were allocated to initiatives that met the minimum test.

IN TOTAL, 99% OF FUNDS ALLOCATED MET THE MINIMUM TEST

5.6 Step 2: Making GGRA Initiatives More Effective

The fact that most of the initiatives pass the minimum test is a good start. But Ontarians want more than that. Ontarians want to know that GGRA funds are being used *wisely*, to achieve maximum reductions in Ontario's GHG emissions and to support progress towards a low-carbon economy. This will be a larger focus in the ECO's greenhouse gas progress report next year.

ONTARIANS WANT TO KNOW THAT GGRA FUNDS ARE BEING USED WISELY

In the time available this year, we did not have sufficient documentation or time to examine the effectiveness or cost effectiveness of the individual initiatives. Instead, we looked at the process that the province uses to evaluate and select projects for GGRA funding, and to monitor how these processes perform. The GGRA funding process is better than it was in 2016, but still needs significant improvement. The GGRA funding process should:

1. Consistently quantify expected GHG reductions;
2. Demonstrate that these reductions will be additional beyond existing programs;
3. Calculate and give weight to cost effectiveness;
4. Review interactions with existing programs; and
5. Clearly tie the money spent to the results that must be achieved, including an analysis of impacts across economic sectors and income levels.

Ideally, ministries and sectors should each have an explicit and steadily declining carbon budget, and transparently account for how they achieve it.

THE GGRA FUNDING PROCESS IS BETTER THAN IT WAS IN 2016, BUT STILL NEEDS SIGNIFICANT IMPROVEMENT

5.6.1 Quantifying Projected GHG Reductions

Government ministries now have a standard methodology for calculating projected GHG emissions under various scenarios in the *Ontario Public Service Guidance Document for Quantifying Projected and Actual Greenhouse Gas Reductions* (the OPS Guidance Document, see Section 5.1.3). Since this was launched in June 2017, after most of the 2017 GGRA projects had been planned and approved, it was no surprise that the background documentation for the 18 approved GGRA projects shows a wide range of methods used to estimate emissions reductions, with varying levels of confidence in their accuracy. For example, few ministries used explicit baseline scenarios, identified sources and sinks, or were able to demonstrate that their projects met the *additionality* tests (see Section 5.6.2).

The ECO expects to see the guidance document used consistently across ministries in future years of GGRA funding.

5.6.2 Demonstrating that GHG Reductions Are Additional

The *Ontario Public Service Guidance Document* lays out a clear approach to the concept of additionality, i.e., that emissions reductions to be achieved by a GGRA initiative would not have occurred otherwise. The recommended approach includes calculating a project baseline (the GHG emissions that would have been released under a *no initiative* scenario), and several *additionality tests* (based on program timing, legal and regulatory requirements, and presence of technology and financial barriers). As we pointed out in *Facing Climate Change*, the primary justification for the creation of the GGRA is the claim that GGRA funding is necessary to produce *additional* GHG reductions.

Additionality

There is a difference between project-based additionality and whether GGRA funding as a whole provides additional GHG reductions. *Project-based additionality* means that, assuming all other factors remain constant (including whether the cap is binding), the observed or projected GHG reductions would not have happened without the project. Various assumptions must be made, and therefore an inherent amount of uncertainty is associated with creating such counterfactual scenarios, but they are nevertheless an important screen when allocating GGRA funds. A separate question is how GGRA initiatives interact with the cap on allowances. This interaction is described in Section 5.3.[24]

Few of the projects approved to date appear to have been screened for additionality, according to project documentation seen by the ECO. Only one, the 50 Million Trees program, is likely to drive further GHG reductions than the cap alone is designed to deliver – because it is not directed at reducing the use of fossil fuels that are already controlled by the cap on allowances. The ECO will be conducting a more thorough analysis of additionality claims in a future report.

5.6.3 Cost Effectiveness and Other Impacts

As the ECO pointed out in *Facing Climate Change*, GHG reductions cannot be the only factor used in evaluating potential GGRA initiatives. Cost effectiveness, for example, is needed to ensure that the relatively limited funds are not frittered away on costly, inefficient projects.

Unlike California's cap and trade program, and Canada's federal Low Carbon Economy Fund,[25] Ontario's *Climate Act* does not explicitly include cost effectiveness in its list of mandatory evaluation criteria for GGRA initiatives. In fact, many important factors are missing, such as the permanence of reductions, and initiatives' environmental, economic or health impacts.

The province's internal GGRA evaluation framework gives the following factors limited weight as part of its *qualitative* criteria:

- Cost effectiveness and value for money;
- Estimated innovation, science and technology impacts;
- Estimated behavioural change impacts;
- Estimated co-benefits (but not damage): economic, productivity, infrastructure, energy, environmental, social and First Nations and/or Métis; and
- Estimated leverage/collaboration/partnerships.

This is a good start, but these factors deserve more weight. Cost effectiveness, in particular, should become a quantitative, not merely a qualitative, factor, even though it is difficult to quantify with precision.

The ECO recognizes that too much emphasis on short-term cost effectiveness would unfairly disadvantage initiatives with important but indirect or longer-term effects, including research, development, capacity building and standards development. For example, some initiatives, such as subsidies for the purchase of electric vehicles, may have relatively high per-tonne costs, but should help to contribute to a long-lasting cultural change in the acceptance of electric vehicles. Electrification of transport is an important part of Ontario's long-term fossil fuel reduction strategy. On the other hand, there may be more cost-effective ways of encouraging uptake of electric vehicles. We saw no evidence that the government compared the cost effectiveness of alternate approaches before deciding on the current purchase subsidies.

5.6.4 Overlap Between GGRA Initiatives and Other Programs

Another ongoing issue is how to attribute a specific number of GHG reductions to specific initiatives, which is essential for cost effectiveness evaluations. This is especially problematic for GGRA initiatives that overlap with existing programs, such as utility programs aimed at reducing fossil fuel use in buildings. It is difficult to distinguish the effects of multiple initiatives occurring at the same time aimed at the same emissions from the same emitters.[27]

The ECO has not seen clear recognition of this issue by the province in any of the documentation provided to date, nor any procedures to collect appropriate verification data. We will expect to see this much better documented in future GGRA years.

5.6.5 Tying Money to Results

By next year, the ECO expects to see a coherent plan for tying GGRA funding decisions to the GHG-reduction targets in the *Climate Act* and to the GHG-reduction responsibilities of each ministry. This will allow a much better analysis of the cost effectiveness of GGRA initiatives, and of other implications for Ontario's environment and economy. Ideally, ministries and sectors should each have an explicit and steadily declining carbon budget, and transparently account for how they use GGRA and other government funds to achieve it.

The Future of the GGRA

As the ECO went to press, the Ontario New Democratic Party (NDP) had indicated its support for cap and trade, whereas the Ontario Progressive Conservative (PC) Party had announced a commitment to replace the cap and trade program with a federally administered carbon tax, as part of the two parties' respective 2018 election platforms. We explored the pros and cons of these two approaches to *raising* revenue in our 2016 report.[28] Regardless of the system used, the ECO firmly believes that Ontario must continue to put a price on carbon that rises in a steady and predictable way.

When it comes to *spending* the proceeds from carbon pricing, the NDP proposes to dedicate 25% to support vulnerable communities and individuals, and to protect workers in trade-exposed industries. The PC party proposal is to return the proceeds to individuals and businesses in the form of lower taxes, instead of putting them into the GGRA to support projects that reduce emissions. It is important that the money raised by carbon pricing is used wisely, and the ECO expects to explore this in next year's report.

5

5.7 The Biggest Impact of the GGRA: Changing Government Awareness

As the ECO reported in *Facing Climate Change*, we do not expect GGRA-funded initiatives to do everything that the government claimed in the CCAP by 2020 – the year of the next GHG-reduction target. 2020 is just around the corner. Ontario is large and complex, and it will take time to make the pervasive structural changes to the energy foundation of our economy that a low-carbon province will require. GGRA initiatives and the *Climate Change Action Plan* can best be viewed as the first steps on a long road. The emissions reductions that Ontario requires would have cost much less if we had started a decade or two ago; starting now will cost much less than if we put off action another decade.

Meanwhile, the most important impact of the GGRA is the change it has triggered, both within and outside government, in understanding Ontario's GHG emissions and the opportunities to reduce them. The process of competing for GGRA funds, as well as presentations on climate science by the ECO, has improved key ministries' understanding and awareness of climate issues, an understanding that is starting to affect a broader range of government actions.

THE MOST IMPORTANT IMPACT OF THE GGRA IS THE CHANGE IT HAS TRIGGERED, BOTH WITHIN AND OUTSIDE GOVERNMENT, IN UNDERSTANDING ONTARIO'S GHG EMISSIONS AND THE OPPORTUNITIES TO REDUCE THEM

This all-of-government understanding and awareness is essential because the Ontario government's fiscal, economic and regulatory decisions have a far bigger impact on Ontario's GHGs than the relatively small amount of GGRA funding.[29] The provincial government budget for 2017/2018[30] is more than $141 billion, nearly 100 times more than cap and trade proceeds. The Long-Term Energy Plan, alone, could do more to affect Ontario's climate targets than everything that can be achieved with the GGRA, yet failed to plan to transform our fossil fuel-intensive energy systems to meet the climate targets.[31] See Chapter 7 for a closer look at how Ontario ministries are learning to use a nascent climate lens.

5.8 Conclusion and Recommendations

To date, most GGRA initiatives pass the minimum test, in that they are likely to *support* the reduction of GHG emissions from fossil fuels by reducing the cost of staying below the cap. But the ECO believes Ontarians want to know that carbon pricing proceeds are being used *wisely*, i.e., to achieve maximum reductions in Ontario's GHG emissions and to support progress towards a low-carbon economy. This will be a larger focus in the ECO's next greenhouse gas progress report.

While GGRA funding has the potential to lower the cost of GHG reductions for individuals or businesses, and facilitate the transition to a low-carbon economy, the impact of GGRA initiatives on Ontario's overall emissions depends on interactions with cap and trade, and the total number of allowances bought and sold. If the cap is binding (i.e., no excess allowances), most GGRA initiatives approved to date would not drive further overall reductions because they mainly target emissions from fossil fuels that are covered by the cap.

However, should there be an oversupply of allowances (see Chapter 3), then these GGRA initiatives have the potential to encourage some net reductions in Ontario. The likelihood of oversupply is larger since January 2018, when Ontario joined California and Quebec's linked carbon market.

Regardless, Ontarians deserve to know that carbon pricing revenues are being allocated using a transparent, fair, and rigorous methodology, that ties GGRA funding decisions to the GHG-reduction targets in the *Climate Act* and to the GHG-reduction responsibilities of each ministry. By next year, Ontarians should see metrics to measure impacts of GGRA initiatives, including a clear analysis of the cost effectiveness, and of their other implications for Ontario's environment and economy.

For now, the most important impacts of the GGRA are the changes it has triggered, both within and outside government, in understanding Ontario's GHG emissions and in opportunities to reduce them. In isolation, the relatively small amount of GGRA funding will have a limited impact. If the government reinforces the GGRA funding with a much stronger climate lens on its other economic and regulatory decisions (which have a far bigger impact on Ontario's GHGs), it can accelerate progress toward its low-carbon goals.

Each ministry and sector should have an explicit and steadily declining carbon budget tied to Ontario's climate targets, and should transparently account to the public for how they use GGRA and other government funds to achieve it.

This accounting should, at least for major expenditures, include a comprehensive assessment of the impact of each initiative on the public interest, including GHG reductions, cost effectiveness, impacts on low-income and vulnerable communities, and environmental, economic and health effects.

Endnotes

1. The need for accountability was underscored by the government's announcements that it would use up to $1.3 billion of cap and trade proceeds to subsidize electricity rates, without any evidence that this would reduce GHGs. After the ECO's 2016 climate change report, the government wisely abandoned this idea. See: Environmental Commissioner of Ontario, *Facing Climate Change*, Annual Greenhouse Gas Progression Report – 2016 (Toronto: ECO, November 2016) at 118-121.

2. Ibid, at 97.

3. GHG emissions-reduction targets have been set for 2020, 2030, and 2050. Initiatives that will reduce GHG emissions over any of those time frames are eligible for funding.

4. The allocated funding is $6 million less than the $325 million announced because two GIF projects were underspent: (1) The Ministry of Energy received $8m for its Smart Grid Fund (to support renewable energy projects in First Nations communities), but returned $4 million because two micro-grid projects "met significant financial and technical barriers and were unable to move forward": Ontario Ministry of Energy, information provided to the ECO in response to ECO inquiry (July 24, 2017); (2) the Ministry of Indigenous Relations and Reconciliation received $5 million to "support Indigenous communities", but as some projects related to adaptation and were not eligible for GGRA funding, just 60% ($3 million) was taken from the GGRA: Ontario Ministry of Indigenous Relations and Reconciliation, information provided to the ECO in response to ECO inquiry (July 7, 2017).

5. Amount includes $319 million in funding through the Green Investment Fund (GIF) which will be reimbursed from the GGRA.

6. Ontario Ministry of Finance, "Leading in the Green Economy", in *Building Ontario Up – Progress for Prosperity: Ontario Economic Outlook and Fiscal Review, Background Papers* (Toronto: Queen's Printer for Ontario, 2015).

7. Original allocation for the Smart Grid Fund was $8 million. See endnote 4 for an explanation of the discrepancy.

8. Original allocation to support Indigenous communities was $5 million. See endnote 4 for an explanation of the discrepancy.

9. "How Cap and Trade Works", online: Ministry of the Environment and Climate Change <https://news.ontario.ca/ene/en/2016/11/how-cap-and-trade-works-1.html> [Accessed December 8, 2017]

10. Fossil fuel use accounts for about 82% of Ontario's GHG emissions.

11. Offset credits are additional to this, see Chapter 4.

12. In other words, the demand for allowances should always just equal the fixed cap, if the price of allowances can move (i.e., is not at the price floor). Firms can be expected to reduce emissions when the cost of abatement (emissions reduction) is cheaper than the cost of an allowance. As illustration, let's say that allowances are trading at $20/tonne. Further, let's assume an aluminum smelter can reduce emissions by taking actions that cost $18/tonne. The smelter operator saves money by spending $18/tonne to reduce emissions and avoids having to retire some allowances. After all, by reducing emissions the smelter operator can sell those allowances for $20/tonne on the open market and realize a $2/tonne profit. Firms for whom the cost of cutting emissions exceeds $20/tonne will prefer to use allowances to cover their emissions. The cap fixes the amount of emissions from the covered sector (ignoring trading with other cap and trade systems and offsets for the moment). Now say a GGRA-funded initiative reduces emissions from a cement manufacturer by 1,000 tonnes/year. How does that affect the allowance market? The supply of allowances is unchanged but at the current allowance price of $20/tonne, demand for allowances falls by the 1,000 tonnes saved by this cement manufacturer. That means that we now have an excess supply of allowances at $20/tonne. Some allowances (that firms would like to sell) won't get sold at the current price. The only way to clear the market is to lower the price. As the price goes down, some firms that would have taken steps to reduce emissions will purchase allowances instead – like our hypothetical aluminum smelter. If the allowance price falls to $17/tonne, the smelter operator will find it profitable to limit actions it takes to reduce emissions (that cost $18/tonne) and simply buy and retire allowances (at $17/tonne) instead. Eventually, the price should drop just enough so that the reduction in emissions due to the GGRA-funded initiative at a covered firm is exactly offset by increased emissions from other covered firms. Thus, in general, GGRA spending on programs to reduce emissions covered by Ontario's cap and trade program should reduce the price of allowances in the cap and trade system to the point where allowance demand exactly equals the emissions cap (and supply of allowances).

    For more information, see: Levinson, Arik. 'Belts and Suspenders: Interactions among Climate Policy Regulations' in Don Fullerton & Catherine Wolfram, eds, The Design and Implementation of U.S. Climate Policy (Chicago: University of Chicago Press, 2012); Metcalf, Gilbert. 'Comment on Belts and Suspenders' in Don Fullerton & Catherine Wolfram, eds, The Design and Implementation of U.S. Climate Policy (Chicago: University of Chicago Press, 2012).

13. **Why don't subsidies to reduce fossil fuel use also reduce total capped emissions?**
    Subsidies can reduce the emissions from a particular activity (e.g., heating a building). This would result in fewer allowances being required to cover its emissions. However, this would also free up more allowances to cover other emissions (e.g., from driving a car). This is because allowances can be used for any capped emissions and are not limited to individual activities or companies. Therefore, subsidies decrease the need to reduce emissions from unsubsidized activities. Subsidies would not change the total number of allowances available for all capped emissions.

    Why do capped emissions equal the number of allowances available?
    The need for allowances for all capped emissions increases the cost of GHG-intensive activities. Individuals and companies can respond by reducing emissions or paying more while others reduce emissions. The more reluctant individuals and companies are to reduce their emissions, the higher the allowance price. Conversely, the more willing individuals and companies are to reduce emissions (e.g., because of subsidies), the lower the allowance price. Allowance prices can move up and down until total capped emissions equal the number of allowances available.

    How do allowance prices limit emissions when some allowances are free?
    The cap is based on the total number of both free and sold allowances provided by the government. All allowances are equally valuable because unused allowances can be sold to other companies. Those who must pay for allowances are encouraged to reduce emissions to *save money*, while those with free allowances are encouraged to reduce emissions to *make money*. The value of reducing one tonne of emissions is identical regardless of how allowances are obtained. This value is the price of allowances on the market, which increases until total capped emissions equal the number of allowances available.

How will companies reduce their emissions without being subsidized or forced?
Although companies can also choose to not to reduce emissions, high allowance prices can force them to adapt to stay in business. Even low allowance prices can impact the profitability of GHG-intensive businesses. To improve profitability, companies could consider investing in less GHG-intensive machinery (e.g., things that could be subsidized). Companies could also reduce GHG-intensive activities (e.g., turning off GHG-intensive machinery when not in use). The choice exists because allowance prices encourage (but do not force) all companies to choose the most cost effective means to reduce their emissions to maximize profitability.

How will individuals reduce their emissions without being subsidized or forced?
Although individuals may be reluctant to reduce emissions, high allowance prices can force them to adapt in some way due to financial constraints (i.e., income, savings and credit limits). Even low allowance prices reduce affordability of GHG-intensive activities. Drivers could consider investing in an electric car (e.g., thing that could be subsidized). Drivers could also choose a more efficient gasoline vehicle, drive less often or car pool. Drivers could also reduce costs in other ways (e.g., fly less often, adjust thermostat) to avoid changing driving habits. The choice exists because the allowance price encourages (but does not force) individuals to choose the most cost-effective means to reduce their emissions to minimize disruption of their lifestyle.

14. If the cap is not binding (i.e., allowances are selling at the floor price which indicates an excess of allowances), GGRA funding could reduce overall emissions by providing financial assistance to reduce emissions.

15. Subsidies to reduce GHG emissions, such as through GGRA funding, must be carefully designed to ensure they are complementary to carbon pricing policies, and avoid increasing overall costs (e.g., by shifting GHG reductions towards activities with a higher cost per tonne). For more discussion of these points, see: Canada's Ecofiscal Commission, *Supporting Carbon Pricing* (Montreal, 2017); California Legislative Analyst's Office, *Cap-and-Trade Revenues: Strategies to Promote Legislative Priorities* (Sacramento, CA, 2016).

16. Chapter 2 of this report discusses the status of non-GGRA CCAP commitments, i.e., climate-related policies and regulations.

17. Ontario Ministry of Energy, information provided to the ECO in response to 2016 Annual Greenhouse Gas Progress Report, online: Environmental Commissioner of Ontario <https://media.assets.eco.on.ca/web/2016/11/Ministry-formal-comments-English-compiled-for-webpage.pdf>

18. In contrast, California limits confusion by setting legislative buckets within which its cap and trade revenues must be spent (e.g., 25% for low-income communities), see: "Cap-and-Trade Auction Proceeds Second Investment Plan: Fiscal Years 2016-17 through 2018-19," online: California Air Resources Board <https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/16-17-updated-final-second-investment-planii.pdf> at 22.

19. Adaptation to climate change is likely to be enormously expensive and could easily consume the entire cap and trade proceeds.

20. This is the case since the closure of the coal plants. In some remote communities, electricity is generated by burning diesel. In such locations, electricity conservation would always conserve diesel and therefore would always produce GHG reductions.

21. However, many electricity conservation measures will deliver savings for a decade or more. Emissions reductions may be higher in future years, depending on Ontario's electricity supply choices.

22. The GHG impact of increase/decreases in electricity use will depend on the marginal electricity generation source, which will usually have a higher emissions intensity than the average. In the near term, this can be predicted relatively accurately, as it will depend on Ontario's existing electricity generation sources. Over the longer term, it will depend on the choices Ontario makes for future electricity resources.

23. Default GHG emission factors are used by Ontario and other jurisdictions to quantify the amount of GHGs produced from fuel combustion or electricity use. GHG emissions for project or baseline scenarios are calculated by multiplying the activity level (i.e., the amount of fuel or electricity use over a period of time) by the relevant emission factor(s). The total GHG reduction is then calculated by subtracting project emissions from baseline scenario emissions.

24. GGRA initiatives targeting capped emissions may drive additional reductions if the cap is not binding, i.e., there is an excess of allowances. This could be due to faster than expected mitigation, or the cap being set too loose. For a detailed explanation, see: Canada's Ecofiscal Commission, *Supporting Carbon Pricing* (Montreal, 2017) at 21.

25. Cost-effectiveness is an express objective of the federal Low Carbon Economy Fund. As outlined in Chapter 4 of the 2016 federal budget, "resources will be allocated towards those projects that yield the greatest absolute greenhouse gas reductions for the lowest cost per tonne." See: "Chapter 4 – A Clean Growth Economy," online: Government of Canada <www.budget.gc.ca/2016/docs/plan/ch4-en.html>

26. There is no process for third-party validation of an initiative, other than an informal MOECC committee and the minister's evaluation required by section 71 of the *Climate Act*.

27. Ontario electric utilities spend heavily on electricity conservation. For reasons already described, however, this is not likely to materially contribute to GHG reductions, unless targeted at peak times of demand when natural gas generation is likely to be displaced. Nevertheless, it is complex to distinguish between the effects of multiple initiatives aimed at reducing natural gas consumption, for example in buildings. Such initiatives include the conservation programs offered by natural gas utilities, the impact of the cost of emission allowances, the federal government natural gas appliance efficiency regulations, various voluntary programs predating the *Climate Act* (such as Race to Reduce), and the new incentives to be offered by the Green Ontario Fund.

28. "Appendix A: Introduction to Cap and Trade in Ontario", in ECO, *Facing Climate Change* (2016).

29. See Chapters 7 and 8 of this report for discussions on the importance of applying a climate lens to government decision making, and incorporating low-carbon considerations into procurement decisions.

30. Ontario Ministry of Finance, *2017 Ontario Budget: A Stronger, Healthier Ontario* (Toronto: Queen's Printer for Ontario, 2017), at 219.

31. "Ontario's new Long-Term Energy Plan avoids tough questions on integrating energy and climate policy", online: ECO <https://eco.on.ca/blog/ontarios-new-long-term-energy-plan-avoids-tough-questions-on-integrating-energy-climate-policy/> [Accessed November 30, 2017].