

Report on the Review of the Community Feed-In-Tariff Program

Executive Summary:

The Community-Feed-In-Tariff program was first announced as part of the Renewable Electricity Plan in April 2011. The Renewable Electricity Plan sets out a detailed program to move Nova Scotia away from carbon-based electricity towards greener, more local sources of energy. At the time the Plan was announced, nearly 90 percent of the province's electricity supply came from carbon-based fossil fuels – mostly coal. The plan sets goals of 25 percent renewable energy by 2015, and 40 percent by 2020. Today, the province is currently on track to meet these targets.

After approving more than 100MW of COMFIT energy, the Minister of energy announced review of the COMFIT program in September of 2012. The COMFIT review focusses on administrative functions of the program such as application processing and COMFIT Directives, program eligibility, community support and overall program impacts.

The Department spent the past year reviewing key program components including eligibility, program processes and application status. Program Directives were reviewed and suggested amendments posted for public comment in May 2013. In November of 2014 the *Electricity Reform Act* was introduced which will allow for the creation of a new renewable to retail program which provides an opportunity for independent power producers to sell renewable electricity directly to consumers. The *Act* also establishes the framework for completion of a comprehensive review of Nova Scotia's electricity system. Both of these developments are key considerations taken into account as the COMFIT Program moves forward.

The following are key findings of the review

Program Statistics:

- To date the program has received 123 applications totaling almost 280 MW of capacity. The COMFIT portfolio includes more than 30 community groups.
- To date (January 2014) the program has awarded 89 COMFIT approvals totaling 200MW of capacity.
- As of January 2014 Community Economic Development Funds comprise the majority of COMFIT applications and have raised more than \$10 million for COMFIT projects.
- Complete applications took an average of 138 days to process, ranging from 43-207 days.

Key Actions:

- The Department will not be accepting new eligible entities as part of the COMFIT program at this time.

Finding One: Further work should be completed to provide support mechanisms (workshops etc.) for farmers to access the program within the existing program framework

- The Department will not be accepting new eligible technologies or entities at this time. These matters will be further considered as part of the Electricity Review now underway. Of particular consideration is the future for solar PV as part of Nova Scotia's electricity future. Further assessment of solar opportunities within the province will be completed as part of the Electricity System Review .

Finding Two: No additional technologies will be considered for the COMFIT program. The renewable to retail program currently under development may be a more appropriate option for new technology consideration.

Finding Three: Small wind allocations will be limited to ensure continued opportunities for small community group involvement in the COMFIT program.

- The Department has drafted a policy with regard to community support for COMFIT projects. This is in response to a number of concerns raised that there needs to be more clarity in what constitutes community support under the program.
- The Department will no longer be accepting applications over 500kw. Applicants will have until March 21 to complete any existing applications. Applications that are not complete, including all required information and a preliminary impact assessment from Nova Scotia Power, will not be accepted.

Finding Four: COMFIT applications will be limited to 500kw.

Introduction

The Community-Feed-In-Tariff program was first announced as part of the Renewable Electricity Plan in April 2010. The Renewable Electricity Plan sets out a detailed program to move Nova Scotia away from carbon-based electricity towards greener, more local sources of energy. At the time the Plan was announced, nearly 90 percent of the province's electricity supply came from carbon-based fossil fuels – mostly coal. The plan set goals of 25 percent renewable energy by 2015, and 40 percent by 2020. Today, the province is currently on track to meet these targets.

To encourage a range of projects widely dispersed throughout the province the plan established a community-based feed in tariff known as COMFIT. The plan expected 100 MW of renewable energy projects connected to the grid at a distribution-level. To ensure broad community ownership of these projects COMFIT was limited to community groups, First Nations, co-operatives, municipalities, community economic development funds (CEDIF's) and combined heat and power plants are all eligible for the COMFIT program. The renewable electricity plan also established that the program would be reviewed after 18 months.

In 2010 the Renewable Electricity Regulations were brought into force, establishing the regulatory framework for the COMFIT program. The *Regulations* include eligible entities, application components and the requirement that Nova Scotia Power purchase all COMFIT electricity that has a Ministerial approval. In September of 2011 the Utility and Review Board set rates for the COMFIT program by technology, and shortly thereafter (September 19th) the program began accepting applications.

Table One: Utility and Review Board Approved COMFIT Rates

Wind > 50 kW	\$131 per MWh
Wind ≤ 50 kW	\$499 per MWh
Biomass CHP	\$175 per MWh
Small-Scale In-Stream Tidal	\$652 per MWh
Run-of-the-River Hydroelectricity	\$140 per MWh

After approving more than 100MW of COMFIT energy, the Minister of Energy announced the review of the COMFIT program in September of 2012, meeting the commitment made in the Renewable Electricity Plan. The Minister also announced that the program would not continue to accept large wind applications for the duration of the review, but may consider those that can demonstrate significant research and development potential (such as storage). The COMFIT review focusses on administrative functions of the program such as application processing and COMFIT Directives, program eligibility, community support and overall program impacts. A subsequent review regarding overall outcomes will be conducted once COMFIT projects come online.

Section One: Administrative Review

COMFIT Applications

On September 19th 2011 the Department of Energy began accepting applications to the Community Feed In Tariff Program. Sixty-four applications were received the first day the program opened, with eighty-five applications received within the first three weeks. To date the program has received 123 applications totaling almost 280 MW of capacity. The COMFIT portfolio is now represented by more than 30 community groups.

To date, the program has awarded more than 89 COMFIT approvals totaling almost 200 MW. Every region within the province has an awarded COMFIT project.

Table Two: Total Applications Received as of December 2013 by Technology

Technology	Number of Projects	Total MW
Large Wind	83	244
Small Wind	22	1.1
Biomass	6	14.7
Hydro-electric	2	0.06
Tidal	5	3.55

Summary of Processing:

COMFIT projects are limited to the minimum capacity on a sub-station as per Order by the Nova Scotia Utility and Review Board and program Policy. This policy was set to ensure that power produced from COMFIT projects stays within the community they are located – and do not interfere with the transmission system avoiding costly system upgrades. However this limits the number of projects that can be connected to any one given sub-station. In some cases the Department received a number of applications vying for the same limited capacity.

Initially, the Department determined which projects were in competition by comparing the Transformer ID's on the Preliminary Impact Assessments(PIA) submitted by project applicants. The PIA is an assessment completed by Nova Scotia Power, which outlines the preliminary technical details of a project, including its interconnection point. Applicants were notified on October 4th 2012 that those projects submitted by October 7th would be expected to first collaborate to find mutually beneficial partnerships, or ask the Department of Energy to make a decision as to who would move forward with COMFIT approval. In November a list of all COMFIT project submissions and their transformer ID, was made available on nsrenewables.ca

The Department completed a substantive review of all project business plans and partnership agreements within the first weeks the program was open. It was found that the majority of applications were missing the detailed information needed to ensure regulatory compliance. In particular, applicants were asked to provide additional information on the partnership and equity structures of their projects. Projects were also reviewed for completeness – and those applications which did not contain the required information were contacted within 90 days as per the timelines set in the *Renewable Electricity Regulations*.

After substantive review, applications are forwarded to a One Window Committee represented by Departments outlined in the *Regulations*. Applications are reviewed by members through an online system and any potential barriers are identified.

Based on this information the Department started approving applications, beginning with those that were complete, and had all the information required to determine regulatory compliance and were not in competition with other applicants. The program made its first project awards on December 16th 2011, 88 days after the program opened.

Competition

In February of 2012 the Department issued Directive 008: Process for projects in competition. Projects in competition that were not able to find a collaborative solution would have to ask the Department to make a decision as to who would get priority for the distribution capacity. Selection criteria were outlined in the Directive and applicants were permitted to provide additional project details or make presentations to a decision-making committee. Of the 17 projects locations initially in competition, the Department has only been required to provide a decision for four, with two projects outstanding.

Some partnership agreements were reached February through April of 2012. For projects that were able to reach a partnership agreement, processing time ranged from 85-239 days. However some processing time is a result of additional information requirements detailed below.

The Department began a competitive decision-making process for applications in competition in March of 2012, subsequent to the release of Directive 008. For projects that required a Department decision, the processing time ranged from 253 to 358 days.

Geographic Information System Data (Shape files)

In March of 2012 the Department of Natural Resources identified the need for geographic information system data (GIS or shape files) to process applications – specifically for wind turbines. The number of wind applications has necessitated cumulative impact assessments of environmental impacts. The addition of this necessary requirement has impacted processing times. In most cases the GIS information provided by applicants did not contain the required information and therefore many iterations were needed to ensure completeness of data. In combination with the Renewable Electricity Administrator project bids and existing Environmental Assessments shape files have become paramount for ensuring a timely review by DNR One Window Committee staff.

March 2014

Incomplete shape files significantly impacted processing times. Between the first project award (December 16th 2011) and April of 2012, 32 projects were awarded in 122 days (an average of 1 approval every 4 days, or one per business week). Between April of 2012 and December 2012, 23 projects were awarded in 241 days (and average of 1 approval every 10 days , or one every two business weeks).

Table Three: Summary of processing times

Complete Applications	Average: 138 days Range : 43-207 days
Projects in Competition	Average : 235 Range: 85- 358

Project Status

Generally the first major hurdle for COMFIT projects is the technical studies completed by Nova Scotia Power. Any project more than 100 kw requires a grid impact study be completed by the System Operator. As of January 2014, more than 59 COMFIT projects had either completed or were in the queue for completing their grid impact study.

COMFIT wind projects over 2 MW require an Environmental Assessment be completed by Nova Scotia Environment. As of January 2014 17 COMFIT projects either had an approved, or registered Environmental Assessment.

Section Two: Policy Review

Directives

At the time of review, there were eight program directives issued relating to the COMFIT program. A number relate to device standards and eligibility as well as the allocation and distribution of small wind projects. As the program evolved additional directives were required to provide direction to applicants on how to meet the regulatory requirements of the program. To date there are currently twelve program directives with one forthcoming (COMFIT Compliance).

As part of the COMFIT review the Department reviewed all existing program directives to ensure that they reflected existing program realities. From April 19th 2012 to May 21st 2012 the Department of Energy accepted public comments regarding program directives and eligibility (both technology and entities). Through this process there were several recommendations put forward by a limited number of commenters. No public comments were received regarding program directives, however several applicants provided feedback. The Department conducted an applicant workshop on June 19th which provided an avenue for direct comment from applicants.

Based on the suggestions of applicants, a number of revisions were made to the proposed and existing program directives. Only one policy change was made as a result of this process. Specifically the Department received feedback on Directive 005 – Device Standards as it concerned small wind certification. A number of submissions requested that these standards be changed to allow for increased eligibility of small wind turbines, which was somewhat limited. The international standard applied under directive 005 was ultimately changed such that performance and safety certification was still maintained but less limiting on the turbines that qualify under the program. Program Directives were posted in October- the final COMFIT directives can be found on nsrenewables.ca

Eligibility

The Department received public comment regarding eligibility from five interested persons. In particular one potential applicant submitted three technologies they wished to pursue under COMFIT (Wave, electro magnets, fuel cells). A submission regarding eligibility of the agricultural sector and two submissions were made regarding the acceptance of Municipal Solid Waste under COMFIT. A submission was also made regarding landfill gas.

Considerations regarding future eligibility as a whole must be in the context of the current COMFIT portfolio. To date the program has awarded more than 200MW of capacity to more than 89 projects. Large wind applications have been paused for the duration of the review, as the province is nearing the technical limit for intermittent sources of energy, and there is known potential for an additional 26MW of biomass projects. Though it is expected that distribution-level technical constraints and project financing will lead to project attrition, the program is currently on track to meeting it's goal of 100MW of COMFIT energy.

Future technology considerations would have to demonstrate substantial opportunities for cost effective energy production, increased research and development opportunities (such as integrating intermittent sources of energy) or facilitate other governmental priorities such as economic development. Furthermore they must take into account the ability of community-based entities to execute the projects. Highly experimental technologies without a supporting, structured regulatory regime or existing expertise may create risk profiles more suited to venture capital projects than community-based investment. Experimental technologies also would not have the established reliability required to make them commercially viable for a COMFIT power purchase agreement. Particularly where there is no regulatory framework to support their development.

Eligibility – Entities

In particular the Department received a submission that the agricultural sector be eligible for COMFIT under the small wind category. The key findings presented were that the program requirements surrounding community ownership were too cumbersome to provide access to the program by farmers. A great interest was expressed by the group to be part of wind energy development however the restriction of having to form a co-op was too difficult to overcome.

The recommendation to allow greater access to the small wind category by farmers poses an interesting policy issue. It is generally accepted that the agricultural sector represents a strong community interest, however it is difficult to establish a rationale for allowing individuals to access a program for community based entities. Furthermore, in some communities, fishermen support the community in much the same way a farmer does. It would have to be a policy decision as to why the Department would favour one industry over another. Additionally, the department has heard anecdotally that a number of local businesses – community owned with majority Nova Scotia shareholders, should be considered eligible for the program. It is difficult to determine a policy objective for the program that allows one group of individuals access, or define how one business sector (individuals) is more or less “community” than another.

There is also a larger question of whether or not existing partnership structures under the program would be sufficient to obtain the required objective. If a farmer were to undertake a project with a local community group (for example a fire hall) under a limited partnership structure, the community group would only be required to contribute 20 percent of the equity and there would be an added benefit of liability protection for the individual farmer in the event that the project is ultimately unsuccessful. Cooperatives are also a viable vehicle through which the program could be accessed by these groups. Furthermore the agricultural sector is currently eligible for COMFIT biomass projects and using agricultural waste to produce energy.

Finding One: Further work should be completed to provide support mechanisms (workshops etc.) for farmers to access the program within the existing program framework

Eligibility – Technology

The following provides a brief summary of each proposed technology and recommendation. A more detailed assessment has been attached. Key considerations when assessing the acceptance of new technologies include

- Cost effectiveness of the source of renewable energy
- Technology Viability – currently in commercial operation and able to execute a 20 year power purchase agreement> if not is there a well structured or supportive regulatory regimes

Wave Technology

Wave technology is currently still fairly developmental in terms of a market within Nova Scotia. Given that this program targets Nova Scotia communities (municipalities, First Nations) and investors (CEDIF's) to take on renewable energy projects, an adequate regulatory regime must be in place to support the risk associated with these types of projects. The Marine Renewable Energy Strategy indicated that Nova Scotia has no economic wave resource near distribution capacity or transmission capacity. Furthermore, Nova Scotia is limited in its ability to support all forms of new and emerging technology, therefore the Province is choosing to concentrate in areas where NS has strategic advantages such as in stream tidal. This influenced the decision to limit COMFIT rates to in stream tidal only. Without the appropriate regulatory support, including Wave technology in the COMFIT program may create significant risk to Nova Scotia investors and community groups.

Fuel Cells

The fuel cells proposed generate electricity by electrochemically combining hydrogen and oxygen. The COMFIT Program is specifically designed to bring on new sources of renewable electricity. Based on the submission it would appear as though the proposal is for energy storage and not energy generation. To meet the intent of the program, there must be a source of renewable energy supplying power. Current COMFIT rates are modeled based on technology specific production. Storage options are not commercially viable due to significant capital costs which have not been modeled. Additionally as storage is an emerging and developmental technology it may not be prudent to set an overarching rate to incentivize energy storage. As the COMFIT program is currently on track to meet the initial goal of 100MW, it is not felt that an additional storage rate is required for COMFIT Energy. However it should be noted that through the review the Department accepted proposals for innovative research and development which may consider future projects where storage is employed however not associated to increased COMFIT rates.

*Airborne Wind Energy *Wind Turbine Kites*

Airborne Wind Turbines is a tethered wind with turbines attached flying 250-600 meters in the air. There are currently no certification standards for Airborne Wind Turbines. There is no independent body to both certify their output as well as ensure manufacturing standards. Furthermore as of 2012 there were no airborne wind turbines in regular commercial operation which does not make them appropriate for a 20 year power purchase agreement through the COMFIT program.

Electromagnetic Energy

Electromagnetic energy includes ultraviolet radiation, microwaves and radio waves. Some experimental devices have sought to harvest these electromagnetic waves to produce electricity, though research has shown their output to be equivalent to a cell phone battery. It does not appear as though this would be an appropriate technology to provide electricity to Nova Scotia's distribution system. Furthermore it is unclear whether there are currently projects in commercial operation which does not make them appropriate for a 20 year power purchase agreement.

It is not recommended that electromagnets be part of the COMFIT Program

Finding Two: No additional technologies will be considered for the COMFIT program. The renewable to retail program currently under development may be a more appropriate for new technology consideration.

Municipal Solid Waste and Landfill Gas

Through the COMFIT review and application process, a number of interested parties have brought forward proposals which include municipal solid waste and landfill gas as a fuel source. Non-organic solid waste does qualify as a low impact, renewable source of energy under the *Renewable Electricity Regulations*. In fact, Ecologo standards specifically exclude landfill gas from their definition of biogas. However as this has been identified as an emerging issue the Department has begun a more encompassing approach where all of the relevant Departments will assess the issue from a broader policy context.

Innovative/Research and Development Proposals

Through the COMFIT review the Department signaled that it might accept new proposals for wind development if they support research and innovation in areas such as integrating intermittent sources of energy. The Department received one submission for such a project, which would seek to create a 3.5MW wind project with storage potential and possible economic benefits to the province. The Department will be further exploring this option.

The Department is also aware of two additional large- wind applications. While at this time the Department is not accepting additional large wind applications, these applications will be kept on file should future opportunities arise.

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Solar Photo Voltaic (PV)

The inclusion of Solar PV is part of a separate review process – no recommendation is available at this time. The results of a study regarding solar opportunities within the province will be made available for review as part of the recently announced Electricity System Review . Considerations regarding appropriate technologies for Nova Scotia’s electricity system will be considered as part of this process.

Community Support

A number of comments have been made since the program opened in 2011, requesting further clarity regarding the community support requirements of the COMFIT program. At this time the *Regulations* state that applicants must provide evidence of community support which may include a resolution from municipal council, or letters of support from community members. Those who oppose wind turbines feel adamantly that those who live in close proximity to the projects should be the ones who decide if it moves forward. However this does not account for community consultation processes undertaken by municipal governments to set by-laws and conduct community planning. There is also consultation conducted through the Environmental Assessment process which allows local residents input.

As a result the Department has drafted a policy on community support for COMFIT projects.

Section Three: Continued acceptance of COMFIT Applications:

The COMFIT program is currently on track to meet its original projection of 100MW of in-service capacity. The continued acceptance of COMFIT applications must take into account the need for renewable energy and the diversification of the COMFIT portfolio. The province is nearing the technical limit for intermittent sources of energy and it is yet uncertain how many COMFIT projects will ultimately come on-line.

Through the *Electricity Reform Act* additional opportunities will be made available for renewable energy producers to sell electricity directly to consumers. This provides an alternative to the COMFIT program which ensures additional energy (beyond the 100MW of COMFIT) produced is either cost-competitive or is paid for by those willing to pay more for renewable electricity.

Technical Issues:

The province currently has just over 300 MW of wind that is either committed or in operation. This does not include the 120 MW awarded through the Renewable Electricity Administrator to the South Canoe and Sable Wind projects, or committed COMFIT projects. The technical limit for how much intermittent energy can be cost effectively integrated into the system and not have significant transmission impacts is around 500MW.

When rates were originally set for COMFIT projects, it was envisioned that projects would be in the 2-4 MW range. However, applicants have found opportunities beyond what the program originally anticipated. Large Wind applications have been as large as 11 MW, and there is known capacity for large scale biomass in industrial areas far exceeding that. While the COMFIT program has been limited to the minimum load on substations to ensure that these are distribution projects, continued acceptance of large-scale applications (2-4 MW) may begin to interfere with the transmission system as we approach 500MW of intermittent sources of energy. In areas where there is transmission congestion, occupying substation load limits where the transmission electricity can go and therefore interferes with the system.

Community Based

Large scale applications are beyond the scope of what the program was originally intended to achieve. Large-scale applications generally have limited community equity contributed – just meeting the program requirement of 20 percent. Very few applications have equity contributions more than fifty percent, or are 100 percent community owned (excluding biomass). Increasingly large scale applications (2MW+) are commercial operations where private partnerships are maximized not community investment. This is beyond the scope of what the FIT rate was originally intended. With the renewable to retail program currently under development, large-scale commercial projects will have another avenue to sell their electricity.

The Department will be proposing changes to Directive 007 Eligible Entity Equity and Ownership requirements to further strengthen the financial return to COMFIT communities. Co-op and CEDIF applicants are currently the two investment vehicles eligible for the program. However Co-ops do not have to go through the rigorous public offering process of CEDIF's, which ensures a percentage of Nova Scotian ownership, and diversification of investors. There is currently no vehicle to ensure this sort of standard for Co-ops. Therefore the Department will be developing specific criteria and guidance for Co-ops.

Small Wind

The Department will implement an ownership cap on small wind projects. COMFIT is meant to increase the involvement of smaller community entities. The Department will seek to ensure that these opportunities are available to a number of groups and not held by a few. Generally, the Department will not approve more than six approvals to one entity – or more than three turbines per site. The COMFIT rate was set so that an individual turbine is viable – **business cases should not assume multiple project awards**. Approvals outside of these standards may be considered on a case by case basis. General principles for consideration include

- Geographic distribution of projects: An entity such as a CEDIF that can demonstrate significant community ownership, attracting investment from a wide number of Nova Scotian investors, may be eligible for additional approvals.
- Broad Community interest: the Department may consider approving more than three small wind turbines per site if there is broad community ownership. For example, a group of First Nations or Municipalities may decide to share a site where land is not readily available or suited for wind development.

Execution

The Department has approved approximately 200MW of COMFIT capacity with Community Economic Development Funds representing the majority of COMFIT approvals. In 2014-2015 significant amounts of debt and equity will need to be raised to execute the existing approvals. At this time it is unclear how many approvals will ultimately come online as equity and financing historically significant barriers in executing this scale of project. Program focus should shift to implementing and executing the existing COMFIT approvals. Decisions regarding new COMFIT approvals or reallocating existing capacity should be made once it is clearer how many projects will ultimately come inline.

As the province is nearing the limit of what is both technically feasible and cost effective to integrate into the system, the Department will not be re-opening large wind applications. Furthermore, **the Department will be limiting the size of applications to 500 KW**. As the COMFIT program progresses and projects come online these limits may be re-assessed. However at this time, future acceptance of applications will be based on the re-assignment of unexecuted capacity.

Existing (registered and enabled project applications) will have until March 21 to complete their COMFIT application.

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Finding Three: Small wind allocations will be limited to ensure continued opportunities for small community group involvement in the COMFIT program.

Finding Four: COMFIT applications will be limited to 500kw.