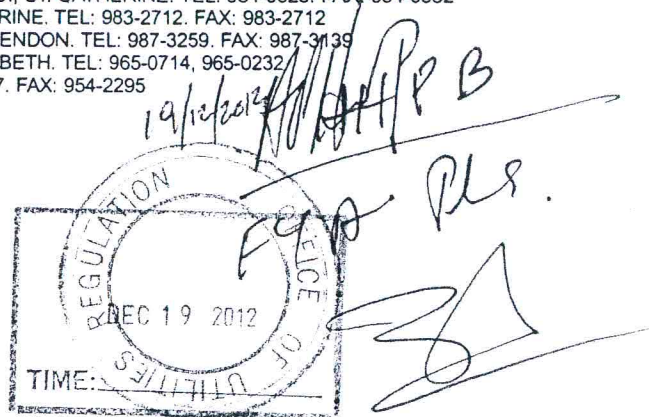


NATIONAL IRRIGATION COMMISSION LIMITED

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December 17, 2012

Mr. Ahmad Zia Mian
 Director General
 Office of Utilities Regulation
 3rd Floor, P.C.J. Resource Centre
 36 Trafalgar Road
 Kingston 10



Dear Mr. Mian,

Re: Irrigation Rates Application for Colbeck, New Forrest and Yallahs.

As it regards the caption we hereby submit an application for irrigation rates to be applied to the newly established irrigation schemes of Colbeck, New Forrest and Yallahs.

The above mentioned irrigation schemes are located in the parishes of St. Catherine, Manchester and St. Thomas respectively.

The Colbeck Irrigation Scheme has been in operation since November 2012 from which we have obtained sufficient empirical operating data on which to base our tariff application. Additionally, in order to guide and inform the development of a tariff for the irrigation schemes in question, the National Irrigation Commission Limited (NIC) engaged a tariff consultant to undertake a tariff study with the objective of determining an appropriate economic tariff.

In this regard, the tariff design and billing structure arrived at were as follows:

Proposed Colbeck Tariff

A. Members of the Water Users Association

Meter Charge	\$490.50
Flat Fee for cubic metres	\$700.00
Next 50 cubic metres	\$38.00
Per cubic metre for any quantity > 70 cubic metres	\$28.50
Reconnection Fee	\$2,300.00

.../2

Mr. Ahmad Zia Mian
Director General
December 17, 2012
Page 3

Re: Irrigation Rates Application for Colbeck, New Forrest and Yallahs.

We have taken the initiative to consult with the farmers on the suitability of the proposed 50% tariff structure as an interim measure and they have formally advised the NIC that the are amendable to the proposal in question. In this regard, we look forward to your prompt response on this matter.

The above proposal is also urgent against the background that our capital partner, the Inter-American Development Bank (IDB), is requesting the swift application of the recommended economic tariff to the schemes in question. This request is critical to the extent that it may result in a breach of contract by the NIC if the appropriate economic tariffs are not administered as per prior contractual agreement.

The application of the interim tariff will go a far way in demonstrating to the IDB our willingness and commitment to abide by our mutually agreed contractual obligations. As well as guarantee continued funding to facilitate completion of the remaining works on the New Forrest and Yallahs Irrigation Schemes.

In support of this application please find enclosed at *Appendix 1* our *Application for an Increased Irrigation Tariff, Irrigation Tariff and Cost Benefit Report for the Colbeck, Yallahs and the New Forrest Irrigation Schemes at Appendix 2 and NIC Audited Financial Statements as at March 31, 2012 at Appendix 3.*

Accordingly, we anticipate your prompt response and you may contact the undersigned should you require further clarification or additional information regarding the forgoing.

Thank you.

Yours truly,
NATIONAL IRRIGATION COMMISSION LIMITED



Tafari Burry
Director of Finance & Corporate Planning

- c. Mr. Hopeton Fraser, Chairman
Mr. Douglas Walker, Chief Executive Officer

NATIONAL IRRIGATION COMMISSION LIMITED

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January 11, 2013

Mr. Ahmad Zia Mian
Director General
Office of Utilities Regulations
PCJ Resource Centre
36 Trafalgar Road
Kingston 10

Dear Mr. Mian,

Re: - Irrigation Rates Application for Colbeck, New Forest and Yallahs

In our letter of December 17, 2012 for application of rates for the above mentioned schemes, it was stated that "*the Colbeck Irrigation Scheme has been in operation since November 2012*". Be advised that the actual commencement date of operation is November 2011.

In furtherance, we omitted to indicate that a condition of our agreement with the Inter-American Development Bank (IDB), our capital partner, is for an annual rate adjustment that reflects inflation. We hereby request that you make provision for an annual rate adjustment for inflation in the pricing mechanism that you ultimately endorse.

Accordingly, we stand ready to address any query and to provide any additional information you may require.

Yours truly,
National Irrigation Commission


Tafari Burry
Director of Finance & Corporate Planning

Copy: Mr. Hopeton Fraser, Chairman, NIC
Mr. Douglas Walker, CEO, NIC
Dr. Earl Green, Project Director – NIDP



National Irrigation Commission Ltd

**APPLICATION FOR AN INCREASE
IRRIGATION TARIFF**

**A SUBMISSION TO THE OFFICE OF UTILITIES REGULATION (OUR)
TO INCREASE THE RATES TO FARMERS BEING SERVICED
BY THE COLBECK IRRIGATION SCHEME**

Prepared by the National Irrigation Commission, December 201

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INTRODUCTION

Consequently, The Government of Jamaica (GOJ) and the Inter-American Development Bank (IADB) through the National Irrigation Development Programme (NIDP) have collaborated to construct new irrigation infrastructures in Colbeck, Yallahs and New Forrest/Duff House to improve the incomes of farmers, farming methods and empower farmers to ultimately manage irrigation systems.

The Colbeck scheme which will initially benefit a 110 hectare, 92 lot farmers' project in St Catherine became operational in January 2012. The other schemes are nearing completion. In the interim, the NIC and the IADB have assisted the farmers to improve their managerial capacities and to organize themselves into water user cooperatives. Through memoranda of understanding, the NIC and IADB are preparing the farmers to ultimately take over the management of the systems under licenses from the NIC.

A conditionality of the IADB Loan agreement of 2003¹, is that the users should cover the full operations and maintenance (O & M) costs and allow for a contribution towards capital recovery. The capital recovery would be taken from the farmer's surplus or net margin after accounting for irrigation expenses. Accordingly The IADB/GOJ had commission a comprehensive tariff study to establish the rates and analyze the projected impact on farmers .Consequently, the tariff study forms a part of this submission.

¹ The loan agreement and several subsequent documents have described and suggested how the methodology should be applied and tariff calculated. A critique of the Agreed Methodology is a part of the IADB?NIC Tariff study.

Given the contractual underpinnings which forms the establishment of these schemes, farmers in the respective project areas are been trained to ultimately manage and operate these schemes. More importantly, they are being made aware of the cost to run these irrigation systems and have been sensitized accordingly.

Also, given several idiosyncrasies which characterizes the NIDP schemes (e.g the creation of Water Users Associations), the treatment of deriving a final tariff has been slightly modified from the standard approaches using rate bases. Also, because the proposed rate for Colbeck is a differentiated rate from the standard rate, a method of cost allocation of NIC's overheads and administrative cost has been employed to establish the economic rate to be paid to non Colbeck users.

Chapter 1. EXECUTIVE SUMMARY

1.1 Replacement of Interim Rates

1.1.1 The current interim irrigation rates been paid by farmers on the Colbeck system were approved in early 2012. These rates are influenced largely by production from surface water supply system at the Rio Cobre and Mid Clarendon which represent 63% of NIC production. The present usage rate is

J\$1.83 (US\$0.02) / m³ for the first 5,508 m³ and

Base service charge J \$30.28 (US\$0.35)/hectare.

The IADB/GOJ agreement stipulates that upon completion, cost recovery irrigation rates for the respective schemes should be determined and applied. Accordingly, this rate application for the Colbeck irrigation scheme is being submitted to replace the interim rates.

1.1.2 The recommended tariff in this submission is arrived at after an extensive review of the project documents, current information on the IADB/GOJ agreements, associated data on NIC operations, and consultation with Colbeck farmers and the Water User Associations. In addition, there have been several meetings and consultations with key persons in the Ministry of Agriculture (MOA), and other principal stakeholders.

1.2. Primary Determinants in Establishing Proposed Tariff Structure

The primary determinants in developing the tariff structures are:

2. Project stipulations on recovering O & M and capital costs
3. Allowing non WUA users access to the water and optimizing the systems
4. Rate of take up of water and associated arrears/delinquency

1.3 Rationale and Basis for Rates

1.3.1 Gradual application of cost recovery

A key consideration for any rate to be applied to Colbeck farmers at this time must be the magnitude of the increase from the current rate of J\$1.83. The increase must be significant enough to keep the systems operating (cover cost of energy, maintenance etc) but also low enough for farmers to absorb the increase. By the next rate adjustment the NIC/IADB will be able to educate the farmers of the benefit of irrigation and in turn gradually equalize the tariff rate and the economic cost.

1.3.2 Incentivize Farmer to join WUAs and Cultivate Idle lands

The establishment of WUA in Colbeck was expected to result in a rapid take up of water by the lot owners, however this has not occurred. Consequently, the proposed tariffs for Colbeck should assist in incentivizing farmers to become members of the WUA and encourage the cultivation of idle lands.

1.3.3 *Monthly Water Requirement*

Based on crops which are best suited (or recommended) for the 110 hectares in Colbeck area, it is estimated that the minimum utilization per hectare will be 80 m³/ha - 85 m³ /ha² per month assuming drip irrigation. As a result, the minimum monthly water required to irrigate the Colbeck is estimated to be between 8,890 m³ and 9,440 m³ (Colbeck). Assuming a loss factor (pressurization, line losses et al) of 30%, the estimated pumped volume will be 11,560 m³ to 12,270 m³ monthly for Colbeck.

1.3.4 *Recovering the Cost for Energy*

The monthly Jamaica Public Service (JPSCo) bills at these volumes are estimated at J\$330,000 to J\$350,000. Based on full production, the average energy costs per cubic metre for Colbeck is approximately J\$28.50³

1.3.5 *Supplying Other Users*

The low level of usage of the Colbeck system by the small number of farmers and high unutilized capacity means that water will have to be sold to other farmers and entities (e.g. National Water Commission) in to make the system ultimately viable.

² Calculated amounts 80.81 m³ and 85.81 m³.

³ Average of the energy costs applying the highest water produced

The objective is to optimize the systems and in turn lower the cost to WUA farmers. While WUA members may receive subsidies, non-WUA users will be required to pay the full economic cost to produce the water.

1.4 Proposed Tariffs

1.4.1 The underlying assumptions for the structure and rates of the Colbeck tariffs are:-

- a. The smallest economic farm unit is one hectare
- b. The minimum monthly water requirement is 70 m³
- d. Cost recovery is based on the number of farm holdings/lots in the project areas.
- e. At least half the production cost is to be borne by the farmers
- f. Non WUA members pay the economic cost to produce the water
- l. At least the cost for energy is to be covered by the tariff

1.4.2 Proposed Colbeck Tariff

Members of WUAs

Meter Charge	\$ 490.50
Flat Fee 20 cu. Metre	\$ 700.00
Next 50 cu. Metre	\$ 38.00
Per cu. Metre > 70 cu. Metre	\$ 28.50
Reconnection Fee	\$ 2,800.00 ✓

Non WUA Members

Meter Charge (Commercial)	\$ 1,180.00
All quantities per cu. Metre	\$ 189.00
Reconnection Fee	\$ 3,100.00

1.4.3 Impact on Colbeck Farmers Irrigation Expenditures

An examination of the May bill for Colbeck Farmers indicates that the proposed Tariff could increase total irrigation expenditure by \$91,000 or 1600%. The farmers' individual expenditures would increased by 700% - 3,800% (Appendix 2).

1.4.4 Possible Reactions to the Proposed Tariff

It is also reasonable to conclude that there is a high likelihood that the wider the magnitude of increase, the greater the resistance and delinquency. However, notwithstanding the risk of increasing arrears, it is expected that overtime most farmers will adjust to the higher expenditure. In this regard, the NIC will be proactive in order to reduce the possible negative responses of the farmers.

1.4.5 Tariff Provides Consumer surplus

Figure 1 shows that at all levels of supply, the proposed tariff would provide consumer surplus to the WUA members. The red dotted line indicates that the consumer surplus at 20 m³ ranges from J\$316 to J\$3,829. The blue line indicates that at 70 m³ the consumer surplus ranges from J\$5,678 to J\$14,489. For commercial users the range is J\$7,770 to J\$10,010 as indicated by the green line.

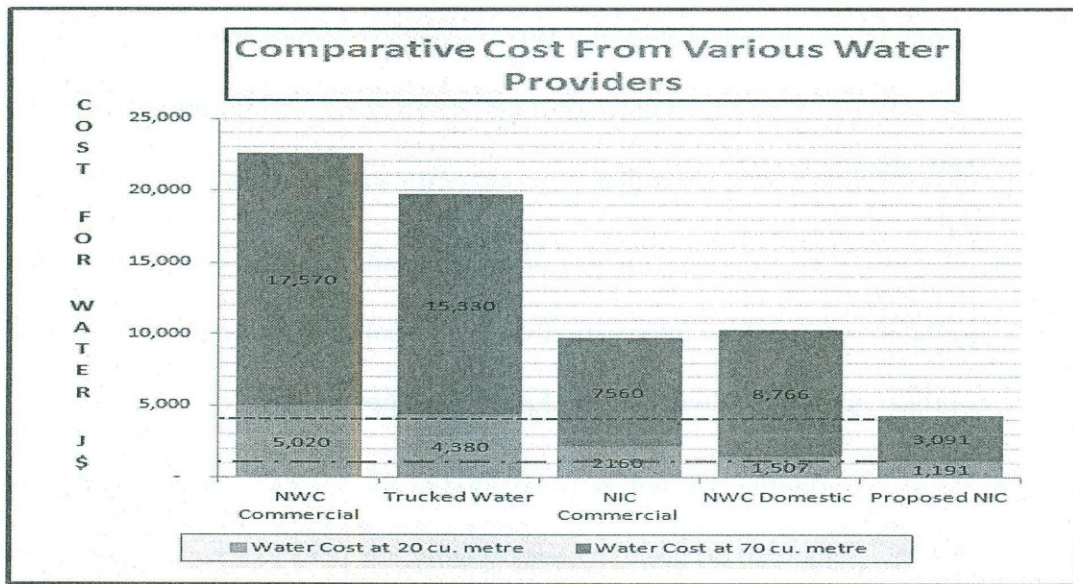


Figure 1 Colbeck-Expenditure Proposed Tariff vs. Other Water Sources

1.5 Actions and Commitments

- 1 The proposed tariff will be the first in several of increases to ultimately equalize the revenue with the costs of operation. The magnitude of this initial increase suggests that this process of convergence and its timeline should be agreed on by all the stakeholders.

- 2 The NIC has already begun to sensitize Colbeck farmers of the impending increase through a series of workshops and meetings. Upon final approval of the rates it will roll out a campaign to further educate the farmers of the actual operating costs and the associative increased yields from a reliable water supply.

- 3 Allowing users other than the WUA members to purchase water from the schemes is highly recommended will be pursued, as the pump will not be fully utilized even with full production of the project areas.
- 4 There will be an annual review of farm incomes, inputs, costs, current farm practices as well as information on the social and economic activities in the project areas which will assist in future rate applications.
- 5 Most importantly, NIC will be committed to shifting more of the management of the irrigation on-farm, by encouraging the farmers to establish water storage facilities and the use of small lift pumps to optimize water delivery and reduce their own operating costs..

Chapter 2. TARIFF ANALYSIS AND RATE DETERMINATION

2.1 The Colbeck Irrigation Scheme

The current rates which were implemented in April 2012 are shown below:-

First 5,080 m ³	\$1.83/m ³
Service Charge	\$30/acre

Obviously, any tariff which will reflect the high cost of energy will be significantly higher than the prevailing rate. When all the O & M costs are to be recovered from the proposed tariff, the prospect of a even higher tariff and the associated issues – farmers resistance, government concerns etc- will have to be confronted.

2.2 Charging the Economic Rate

2.2.1 Capital Recovery

The Capitalized infrastructure costs for the Colbeck scheme is \$46.4 million respectively (see appendix 1). This submission has treated the issue of the capital recovery based on the contractual requirements of the 2009 and 2011 Memoranda signed between the National Irrigation Commission and the three water users groups. Consequently, this submission does not include the recovery of capital as part of the rate to members of the water users groups⁴.

2.2.2 The Economic Cost for Delivering Water

The Tables Annex 1 give the economic costs (US\$) and annual financial costs/m³ (is used as the proxy for the economic cost/m³) for Colbeck⁵ based on the June infrastructure and operating costs and a maintenance fund (2.5% of the outstanding loan balance). Based on an infrastructure cost of J\$46,420, 758 and an interest rate of 6.1%, a 20 year cost recovery table has been generated. The underlying assumptions are outlined in Annex 2 on cost recovery. The key assumptions are that there would

⁴ Water user groups are treated differently from other users as they are the catalyst to drive the current project

⁵ The farmers in fact do not get a direct good or service from the capital recovery component of the tariff which is not an installment to purchase the infrastructure. They in fact will pay a licence to operate the scheme.

be a maintenance fund⁶ (as opposed to a depreciation allowance which gets absorbed into the operating cash flows of the NIC.).

2.2.3 The Colbeck Economic Rates From the model, the full recovery of the cost for Colbeck would be US\$2.10/m³ or J\$189.10/m³ (US\$1: J\$90).

2.3 Impact of Energy on the Tariff

2.3.1 The monthly energy cost is the largest cost to operate the schemes. The estimate is that energy represents between 70% and 75% of total (non-depreciation) operating cost. Energy also represents the most critical input in the production of the water. The existing NIC rate is inadequate to cover the cost of energy and consequently, recovering the cost for energy is central in developing the proposed tariff. For the Month of May the energy cost alone exceeded the billed (invoice) amount by 12 times, that is J\$5,517 compared to J\$68,580 a deficit of J\$63,063.

2.4 Deriving the Energy Cost/Cubic Metre

2.4.1 Calculating the energy cost/m³ for the respective schemes has been complicated as the data indicates a wide disparity between the amount of water produced and the billed volume used by the farmers (table 2.5). This indicates a high percentage of water loss (due to pressure release among other reasons).. In addition, as the JPSCO bills include a demand (or reserve power) charge which is adjusted every six month, any initiative to permanently reduce NIC's energy bill will have a six months lag before it impacts the Commissions's overall energy cost.

⁶ The Regulators will have to be convinced that the fund is to be used to repair and replace the pump under extreme circumstances

2.4.2 The table1 provides the energy cost per cubic metre (i.e. for volume actually pumped as opposed to amount billed) for December 2011 – October 2012. Currently the cost for pumping and delivering water is about **\$34/m³ - \$28/m³ in Colbeck**. Based on a minimum use of 78 m³/ha monthly, the minimum water required to irrigate Colbeck's 110 hectares is approximately 8,580 m³ or 12,250 m³ assuming a loss factor of 30%. At current rates the monthly energy bill would be about \$350,000⁷.

Month (2012)	Volume Pumped M ³	Volume Invoiced M ³	kWh (JPS Co)	Current Charges (J\$)	Energy J\$/ M ³	Loss Factor %
Dec 2011	8,200	1,860	4,076	\$283,284	35	77%
Jan 2012	8,900	2,979	5,004	\$304,076	34	67%
Feb 2012	12,900	7,553	6,492	\$357,118	28	41%
Mar 2012	8,900	4,437	4,804	\$311,494	35	50%
Apr 2012	5,800	2,269	3,768	\$277,010	48	61%
May 2012	11,400	2,540	5,784	\$343,976	30	78%
June 2012	12,400	10,257	6,880	\$363,334	29	17%
July 2012	13,100	6,591	6,380	\$360,840	28	50%
Aug 2012	9,200	6,922	6,332	\$341,723	37	25%
Sept 2012	13,000	8,425	7,208	\$407,113	31	35%
Oct 2012	3,589	2,366	1,920	\$250,780	70	34%
Table 1 Production and Energy Costs /m³						

⁷ The relationship between volume pumped and cost/m³ is not linear due to the JPSCo demand charge. A higher volume reduces the average unit demand charge; which suggests that NIC needs to sell excess water to justify operating the scheme.

Chapter 3 THE PROPOSED TARIFFS

3.1 Factors Influencing Proposed tariff structure are

- 1 A fixed charge to recover the direct associated costs –billing etc
- 2 A minimum demand charge based on the economic farm size
- 3 Farmers must receive consumer surplus at all demand levels
- 4 Water could be sold to non members of WUAs at the economic Cost

The following is a review of these factors and reasons for their importance in determining the tariff structure.

3.1.1 The Fixed or Meter Charge is aimed at recovering or more precisely contributing to direct administrative costs – billing, NIC administration etc. This charge is applied to WUA members and other project farmers (and possibly commercial users) connected directly to the distribution network.

3.1.2 Minimum Demand Charge is set at 70 m³ (Colbeck) on the minimum economic unit of one hectare and the farmers current usage. Also, the minimum demand charge is to encourage farmers to grow some crop and to discourage wastage. The final minimum charge (and the related quantities) will be reviewed from time to time. This deviates from the current per acre flat service charge, which penalizes farmers for having more land. In addition, the current “service charge” which is based on the size of the farm, bears no real relationship to any actual cost incurred for producing or delivering the water.

3.1.3 Economic Cost constitutes several cost elements which are presented in a 20 year model. Essentially the model is designed to be adjusted annually given changing variables (long run rates, ratio of Colbeck output to total production etc). Based on the Economic cost recovery model these cost elements are ;

- Annual Loan repayment
- Direct Operation expenses for Colbeck
- NIC apportioned Overheads/administrative costs
- Maintenance fund
- Production cost
- Return on Investment

It is generally accepted that as the infrastructure was built to benefit the project farmers then they should contribute even partially to the capital recovery. The real issues are when and how much? Consistent with this view is that, if the infrastructure is originally to benefit agriculture then subsidies should benefit the farmers directly and not necessarily other users. In this regard, other users should pay the full economic cost to operate the schemes. In respect to non WUA farmers, it would be difficult logistically to provide them with the same benefit as WUA members as they are not connected directly to the distribution network.

3.1.4 More efficient utilization is the hallmark of a correctly priced water tariff. In the present case, the rates for the water are so low that farmers do not need to •conserve or use it efficiently.

The result is that the returns per cubic metre of water falls as more water is used to produce the same or less output. On the supply side, a price which is higher than the economic price will encourage inefficient waste as the NIC will have no incentive to curtail cost.

The proposed tariff attempts to balance the need to recover key costs – e.g. energy- against the magnitude of the increase due to the higher rates. If the Tariffs result in an underutilization of the systems, then Commission would not have achieved the IADB and GOJ's objectives.

3.2 Proposed Tariff

3.2.1 Colbeck

Members of WUAs

Meter Charge	\$ 490.50
Flat Fee 20 cu. Metre	\$ 700.00
Next 50 cu. Metre	\$ 38.00
Per cu. Metre > 70 cu. Metre	\$ 28.50
Reconnection Fee	\$ 2,800.00

Non WUA Members

Meter Charge (Commercial)	\$ 1,180.00
All quantities per cu. Metre	\$ 189.00
Reconnection Fee	\$ 3,100.00

NB rates to NWC will be determined after discussions with the Commission

3.3 Irrigation Expenditures Applying Proposed Tariff

The proposed tariff applied to one hectare in Colbeck at the monthly minimum water usage resultant expenditure is J\$3,090.50 or 1,850% more than the current expenditure. The derived tariff using the agreed IADB methodology would be 3300% higher, while it would be 2790% higher if a single recovery rate of J\$65.41/m³ is implemented. (Table 2 below)

Colbeck - Comparative Irrigation Expenditure at Minimum Water Usage (70 m ³) in J\$					
	Volume m ³	Agreed Methodology ¹	WUA recovery ²	proposed tariff	current
Flat Rate		2,190.07		490.50	30.28
Volume	20			700.00	36.60
	50			1,900.00	91.50
Irrigation expenditure @ 70 m ³		3,206.87	4,581.24		
		5,396.94	4,581.24	3,090.50	158.38
Percent Increase		3308%	2793%	1851%	
1/ Tariff base on cost from 20 year Capital recovery model					
2/ Applying a single recovery rate of J\$65.4t/m ³					

3.4 Proposed Tariff Provides Colbeck Farmers With Consumer Surplus.

The proposed Colbeck and Yallahs tariffs rates are lower than those from alternative commercial sources. The figure 3.1 indicates that Colbeck WUA users would pay \$316 to \$3,829 more for 20 m³ from other water providers when compared to the proposed tariff rates. In figure 3.1 this is represented by the red dotted line. The blue line indicates that at 70 m³ the consumer surplus ranges from J\$5,678 to J\$14,489.

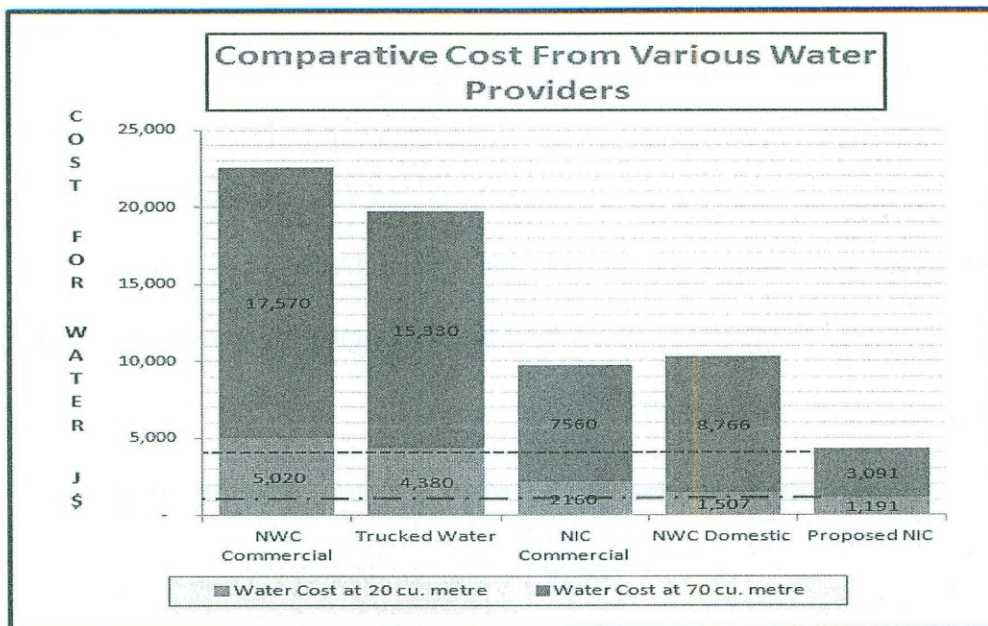


Figure 3.1 Colbeck-Expenditure Proposed Tariff vs. Other Water Sources

3.5 Actions and Commitments

The National Irrigation Commission recognizes that the increase in the rates will result in some adjustment on the part of the farmers. Accordingly it

1. The proposed tariff will be the first in several of increases to ultimately equalize the revenue with the cost of operation. The magnitude of this initial increase suggests that this process of convergence and its timeline be agreed on by all the stakeholders.
2. The NIC has already begun to sensitize Colbeck farmers of the impending increase through a series of workshops and meetings. Upon final approval of the rates it will roll out a campaign to further educate the farmers.
3. Allowing users other than the WUA users to purchase water from the schemes is highly recommended as the pumps will not be fully utilized even with full production of the project areas.
4. There will be an annual review of farm incomes, inputs, costs, current farm practices as well as information on the social and economic activities in the project areas which will assist in future rate applications.
5. Most importantly, NIC will be committed to shifting more of the management of the irrigation system on-farm, by encouraging the farmers to establish water storage facilities and use of small lift pumps to optimize water delivery and reduce their own operating costs

CONCLUSION

The National Irrigation Development Programme is attempting a bold initiative to bring irrigation to more farmers while equipping them with best practice technology. In addition, the programme's main objective is to ultimately transfer the management of these irrigation systems to the farmers through a wider integrated cooperative venture with the formation of water users association.

Central to this process is the gradual incorporation of the actual cost of irrigation into the production costs for agriculture- as is the case with fertilizers etc. However, The National Irrigation Commission is mindful of the need to bring farmers on board and has incorporated into the programme continuous consultation with all stakeholders especially the farmers.

The next stage in the process is to introduce cost based pricing for the water and according it is making this submission for the OUR approval.

The Proposed tariff does not include all the operation and maintenance and capital recovery cost which is a stipulation of the initial agreement between the IADB and the Government of Jamaica. Instead, the approach is to gradually include these costs as the farmers adjust to the increases. Notwithstanding the economic cost will be recovered in the rates to non Water Users members. The Commission considers this the most appropriate path to take at this time.