



**PUBLIC UTILITIES  
COMMISSION  
BELIZE**

**SUMMARY STAKEHOLDERS'  
REPRESENTATIONS**

TO THE BEL PROPOSED ADDITIONAL  
CUSTOMER CLASSIFICATIONS &  
ASSOCIATED TARIFFS

Issue Date: December 12, 2023

## STAKEHOLDER CONTRIBUTIONS TO THE CONSULTATIVE QUESTIONS

The Public Utilities Commission, having received a submission request from Belize Electricity Limited for the consideration of additional Customer Classifications and Associated Tariffs, issued a Consultative Paper on August 18, 2023, to seek input from interested parties.

The consultation period was to close on September 18, 2023, however, upon the request of interested parties, the Commission extended the deadline to October 10, 2023. The PUC hereby publishes extracts of the responses obtained to the questions posed in the Consultative Paper inclusive of the PUC's commentary on the various submissions. The consultative contributions can be accessed in their entirety at <https://www.puc.bz/electricity/>

The PUC also includes follow-up questions that are being posed to the utility, to address the queries and concerns raised by the participants in their responses to the questions posed in the Consultative Paper. These can be located in Annex A of this paper.

The PUC is most grateful for the contributions obtained to date and seeks the continued support of the interested parties in aiding the PUC to arrive at appropriate regulatory decisions.

## ACRONYMS IN USE

The following acronyms are used within this paper.

BEL	– Belize Electricity Limited
CAPEX	– Capital Expenditures
CM	– Caribbean Motors
CPO	– Charge Point Owners
CSL	– Caribbean Shrimp Limited
DER	– Distributed Energy Resources
DG	– Distributed Generation
EV	– Electric Vehicles
ES	– Eduardo Santiago
FIT	– Feed-in-Tariff
FLPC	– Farmers Light Plant Cooperative
MER	– Mean Electricity Rate
OPEX	– Operational Expenditures
PUC	– Public Utilities Commission
PV	– Photovoltaic
SSS	– Sothern Solar Solutions
TOU	– Time-of-use

## Consultative Questions and Responses

### Proposed Grid-Tied DG Rates

Category	Rate
Demand Charge (per KVA per month)	30.00
Peak Energy Charge (per kWh)	0.3500
Off-Peak Energy Charge (per kWh)	0.3000
Feed-in Tariff (FIT)	0.1300

<b>PROPOSED GRID-TIED DG RATES</b>	
<b>DG1: Could you briefly describe your understanding of the BEL proposed rate structure?</b>	
Caribbean Shrimp Ltd. (CSL)	As proposed in the above table, the rates as outline are below the noted MER rates, however, in my opinion, they do not take into account two very important factors; 1. The Solar producer's investment in the solar energy equipment & maintenance, and 2. the inherent national benefit to Belize to supply nationally produced energy to the nation's electricity grid supply. Further, this proposed rate system does not reflect the lessons learns from the green energy production and distribution in other nations such as Canada, United States, Germany, India, Italy, China, Japan, Spain, France and Australia. Nor does it take into account the benefits of clean energy production to the nation of Belize and to the long-term benefits of our environment and sustainability of our tourism economy, which is dependent on our beautiful Belize.
Farmers' Light Plant Corporation (Spanish Lookout)	Yes, costs relate in some way to energy usage itself or to the infrastructure that makes this usage possible. Separating the charges makes sense.
Southern Solar Solutions (SSS)	My current rate structure is first 50kWh 0.33, 50-200kWh 0.38 and over 200kWh 0.43, so my most recent bill of 205kWh for \$75.65 had an average rate of 0.37 If I add solar DG to help provide clean energy to Belize, I would be charged 30 for the peak 15 minute use, which might then be 150 to 240, the timing for peak and off peak is not explained, but the DG would supply power to my home and the grid during daylight hours, where overall grid demand is higher than night-time, but not as high as the two peaks in early morning and after work hours. I would pay for power based on time of day I use it from the grid. My bill would be offset by the time of day (peak vs off peak) and by an additional Feed-In Tariff of 0.13. Traditionally feed in tariffs add to your income to help promote solar DG. However, this amount of feed-in tariff would in no way come close to covering the new Demand Charge that has never been part of residential power bills. Commercial 1 Customers currently enjoy same rates as Residential, and thus this same issue applies to them.

PUC Commentary	<ol style="list-style-type: none"><li>1. CSL does understand that BEL rates applicable to DG is NOT made based on the MER. Believes “green energy” should be given added value such that CAPEX and OPEX incurred by DGs are fully recovered in FIT.</li><li>2. FLPC agrees with the separation of charges in DG rates into: Demand, [peak, off-peak] Energy, FIT</li><li>3. SSS (i) the new Demand Charge should not apply to Residential and Small Commercial customer classes; (ii) the FIT is too low, (iii) BEL has not specified TOU. Core advocacy “FITs add to DG income to help promote solar”</li></ol>
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**PROPOSED GRID-TIED DG RATES**

**DG2: Do you agree with the utility’s approach to setting the Grid-Tied Distributed Generation (DG) Rate?**

Caribbean Shrimp Ltd.	No. I absolutely do not. The rates as proposed discourage the production of renewable energy in Belize, and do not benefit Belize nor support the opportunity to build our national energy sovereignty and supply, and reduce dependence on foreign energy, and in fact produce energy exports during peak production hours.
Farmers' Light Plant Corporation (Spanish Lookout)	Yes, the approach is sensible, little comment can be made on the numbers as such, especially as a subset of these same apply to EV and tourism but with different given reasoning.
Southern Solar Solutions	Absolutely NOT! The Demand Charges should not be added to any Category that does not currently have Demand Charges – doing otherwise promotes uncompetitive practices. Also, for social reasons, there should be a size for average Belizeans that is much simpler and easier to use, so as to not leave out small consumers and the those least able to afford electricity.
Eduardo Santiago (ES) Response	<p>The proposed Grid-Tied Distributed Generation (DG) Rates – subject to the proposed modifications below- should come into effect only after a minimal penetration of PV DG is installed, in service and connected to the BEL grid. Preliminary surveys by BEL, have indicated that the grid can support an overall PV DG hosting capacity of approximately 24-40% of BEL’s peak load demand, given BEL’s current configuration. (*1)</p> <p>Based on this disclosure by BEL, we propose that the proposed rates for PV DG come into effect only after at least 30% of BEL’s system peak load demand is reached by PV DG installations. This will incentivize PV DG penetration with the public and assist Belize in reaching its decarbonization commitments and provide for end user resiliency and service satisfaction in the electricity sector. After this penetration threshold is met, then the rate schedule for PV DG as described in the next question below could be implemented. Before this threshold is reached, the Feed In Tariff paid by BEL to the PV DG owner should be the same rate the owner pays for energy to BEL. This provision should be “grandfathered” in for these early adopters of PV DG installations.</p> <p>(*1): Central Bank of Belize publication CBB-VP-22/002 “Harnessing Distributed Solar Energy to Reduce Belize’s Dependence on Imported Energy: A Preliminary Review of Solar’s Potential.”</p>
PUC Commentary	<ol style="list-style-type: none"> <li>1. CSL does not agree with the DG rates, as proposed by BEL.</li> <li>2. FLPC agrees with implementation of new DG rates, but wants BEL to provide rationale for the numbers.</li> <li>3. SSS also does not agree with the DG rates.</li> <li>4. ES (i) proposes that the proposed DG rates come into effect after 30% PV DG penetration, (ii) Instead, FIT shall be fixed at the MER and grandfathered for early adopters – effectively a Net-Metering regime.</li> </ol>

**PROPOSED GRID-TIED DG RATES**

**DG3: Which approach do you consider most appropriate for estimating renewable energy pricing for exchanging energy with the grid?**

<p>Caribbean Shrimp Ltd.</p>	<p>As I had noted above, this proposed rate system does not reflect the lessons learned and best practices from the green energy production and distribution in other nations such as Canada, United States, Germany, India, Italy, China, Japan, Spain, France and Australia.</p> <p>Nor does it take into account the benefits of clean energy production to the nation of Belize and to the long-term benefits of our environment and sustainability of our tourism economy, which is dependent on our beautiful Belize.</p> <p>I believe the Ontario Canada model is the appropriate model on which to follow, where by grid-connected users fall within their regular rate structures as designated by their usage (residential, commercial, industrial) and the energy producers (wind, solar, hydroelectric, geothermal, bio) supply their energy to the grid at an agreed credit rate, which accounts for the individual's investment in the energy generation equipment as well as the electricity company's cost to provide the net meter and the grid to accept the energy. A fair and equitable rate to "purchase" the energy from the producer, with no tariffs or other fees to deter the production of renewable, nationally sourced electricity for our national electricity sovereignty.</p>
<p>Farmers' Light Plant Corporation (Spanish Lookout)</p>	<p>The feed in rate may unfortunately have to be tied to the changing CFE rates in some manner as all that the feed in offers is an instantaneously temporary and difficult to manage CFE alternative, albeit green. These suggested low feed in rates would encourage "self-consumption" and limit grid feed in... that may or not be beneficial, depending on one's point of view.</p>
<p>Southern Solar Solutions</p>	<p>Small sites, perhaps up to 5kW rated peak solar output (which might produce some 300kWh/month) for Residential and Commercial 1 customers should use net-metering with as little administrative issues as possible. Other customers should only pay demand charges if (sic) their existing structure includes demand charges. Using peak and off-peak pricing, and minimum monthly payments is appropriate. It also needs to be clarified how some of the new classifications fit in – for example, a restaurant that is Commercial adds in EV charging station and DG, this should be encouraged, and they should continue as Commercial.</p>
<p>Eduardo Santiago Responses</p>	<p>The incumbent utility should not discriminate between its proposed sales price of energy to the customer that has a DG facility in its premises and the purchase price it pays its customer for the same type of energy. The purchase of electricity (DG Feed in Tariff) should be equal to BEL's sales price of energy to said customer. Furthermore, as per the Central Bank of Belize publication CBB-VP-22/002 "Harnessing Distributed Solar Energy to Reduce Belize's Dependence on Imported Energy: A Preliminary Review of Solar's Potential", their calculated Levelized Costs of Electricity for PV DG without batteries is 0.34 BZD/Kwh. This should be the minimal Feed-In-Tariff set, and this cost should be indexed on par with the indexation of BEL Energy Charge rates for its</p>

	<p>customers with DG. It is worthwhile to consider that the LCOE for PV DG doesn't factor in a profit margin for the PV DG owner.</p> <p>As for Demand Charges, these should be applied only after the early adoption period proposed above, and only to customers that do not have integrated to their DG plant a battery energy storage system of at least 20% of the plant's installed peak capacity. This provision will incentive PV DG installations with storage that will contribute to grid reliability and resiliency.</p>
<p>PUC Commentary</p>	<ol style="list-style-type: none"> <li>1. CSL proposes current BEL tariffs remain unchanged, thereafter only implement FIT that covers all DG costs.</li> <li>2. FLPC agrees to FIT being tied to avoided costs, which is the assumed rationale for the number BEL affixed to the FIT</li> <li>3. SSS (i) proposes Net-Metering for Residential and Commercial 1 customer classes, (ii) DG rates for other (larger) customers.</li> <li>4. ES (i) proposes Net-Metering for all customers, (ii) proposes that DG rates come into effect after 30% PV DG penetration.</li> </ol>

**PROPOSED GRID-TIED DG RATES**

**DG4: Are there alternative rate-setting methodologies that should be considered [Buy-All/Sell-All, net-metering]?**

<p>Caribbean Shrimp Ltd.</p>	<p>As noted above, I believe the Ontario Canada model is the appropriate model on which to follow, where by grid-connected users fall within their regular rate structures as designated by their usage (residential, commercial, industrial) and the energy producers (wind, solar, hydroelectric, geothermal, bio) supply their energy to the grid at an agreed credit rate, which accounts for the individual investment in the energy generation equipment as well as the electricity company’s cost to provide the net meter and the grid to accept the energy. A fair and equitable rate to “purchase” the energy from the producer, with no tariffs or other fees to deter the production of renewable, nationally source electricity for our national electricity sovereignty.</p> <p>Further, Government should also be involved to provide programs and funding that support the investment into green-energy and building the capacity for a national energy source in Belize to support Belize’s energy sovereignty.</p>
<p>Farmers' Light Plant Corporation (Spanish Lookout)</p>	<p>What is offered here perhaps gives more flexibility than the offered alternative methodologies.</p>
<p>Southern Solar Solutions</p>	<p>As mentioned, I believe net-metering is appropriate for smaller installations.</p>
<p>Eduardo Santiago Responses</p>	<p>Net-metering should be the best approach in Belize for setting rates for PV-DG. This approach is not novel and has been widely adopted and in service to date worldwide.</p>
<p>PUC Commentary</p>	<ol style="list-style-type: none"> <li>1. CSL (i) proposes current tariffs remain unchanged, (ii) implement FIT that covers all DG costs.</li> <li>2. FLPC agrees to DG rates.</li> <li>3. SSS proposes Net-Metering for Residential and Commercial 1 customer classes.</li> <li>4. ES proposes Net-Metering for all customers.</li> </ol>



**PROPOSED GRID-TIED DG RATES**

**DG6—Are there specific elements of the rate structure design that you would like to provide feedback on? For example, demand charges, time-of-use periods, Feed-in Tariff**

Caribbean Shrimp Ltd.	<p>I agree at a set rate for electricity, and the variable rates based on usage levels. I also support the peak demand surcharge, as long as these times are publicly noted, so electricity users can plan their activities around those higher rate-cost times if possible.</p> <p>However, I do not agree that there should be an additional Off-Peak rate fee. That is irrational and unnecessary. The regular rate should be the regular rate. Period.</p> <p>I do not agree in charging energy producers a tariff. This is unfair to the producers as they have invested in the energy production capture equipment, energy production capacity and provide the land on which to capture this energy. They should not be penalized in any way, but rewarded for their investment and reimbursed fairly for the national energy that they produce in the Belize Green Energy sector.</p>
Southern Solar Solutions	<p>As mentioned, Demand charges should not be added to any customer whose existing category does not have those charges – thus the DG category may need expanded to meet the residential, commercial and industrial sectors</p>
Eduardo Santiago Responses	<p>Time of use daily periods should also be clearly defined and stated in the proposed BEL rates.</p>
PUC Commentary	<ol style="list-style-type: none"><li>1. The CSL does not agree to having Demand Charge in DG rates. But is agreeable to implementation of time-of-use (TOU) energy charges, provided that Off-peak energy charges are in fact the regular rate.</li><li>2. SSS does not agree to having Demand Charge for Residential and Commercial customer classes.</li><li>3. ES wants the time intervals for TOU to be clearly stated.</li></ol>

**PROPOSED GRID-TIED DG RATES**

**DG7 – Should time-of-use be considered for the already existing tariff structures?**

Caribbean Shrimp Ltd.	<p>As noted above, I agree at a set rate for electricity, and the variable rates based on usage levels. I also support the peak demand surcharge, as long as these times are publicly noted, so electricity users can plan their activities around those higher rate-cost times if possible.</p> <p>However, I do not agree that there should be an additional Off-Peak rate fee. That is irrational and unnecessary. The regular rate should be the regular rate. Period.</p> <p>What is important to note is that there are many times throughout the day that a solar energy system will produce more electricity than is needed by the business. Under the current structure, the energy equipment just “Powers down” so as not to produce the excess energy and push to the grid where they would be charged. However, the life of the equipment, in my case 10-years, is fixed, and it is not functioning a full capacity. In my case, when the staff go to lunch, if we turn off the A/Cs, our production levels go down to 15%, as that is all we need to meet our demand, the other 85% could go to the grid. The same when the refrigeration storage freezers go into a defrost cycle. It is by far, more cost effective, to produce as much electricity as possible during the life of the equipment, and supply as much energy to the national grid as possible.</p>
Farmers' Light Plant Corporation (Spanish Lookout)	No Comment.
Southern Solar Solutions	Yes
PUC Commentary	<ol style="list-style-type: none"><li>1. CSL does not agree with a special Off-Peak charge.</li><li>2. SSS agrees with TOU charges in all rates.</li></ol>

**PROPOSED GRID-TIED DG RATES**

**DG8—What provisions should be considered to prevent anti-competitive behavior or barriers to entry?**

<p>Caribbean Shrimp Ltd.</p>	<p>Electricity is necessary for our modern-day economy to function. Adding barrier to entry is not the way to operate in today’s free market. Having the structures and the regulation in place that produce an environment that is fair, equitable and just for energy users and producers to operate already ensures a level playing field where all receive the opportunities and work within the same fee structures. For those who have invested in the renewable energy equipment and have the capacity to supply to the Belize national power grid, there should be no barrier to entry other than the physical (they must be connected to the power grid) and the financial (the credits they are paid from the electrical company based on the electricity they supply to the grid – there is no net financial benefit to be gained by having a small kW system and then try to supply excess power to the grid, when you have none to give). The regulatory and rate structure, once defined, produces the environment in which businesses can decide the most financially viable approach to their energy consumption and production.</p>
<p>Farmers' Light Plant Corporation (Spanish Lookout)</p>	<p>No Comment.</p>
<p>Southern Solar Solutions</p>	<p>Simplified process to get approval, especially for small residents and commercial sites. DG works best the more it is Distributed. Consider fees based on kW installed instead of flat fees. The biggest barrier to entry is the up-front cost. While targeted rebates could be used to assist lower income persons, this may be costly to track and implement, and subject to abuse. Allowing NGOs, communities, and associations to wheel power to the lower income persons should be considered with the entire site being regulated at the level of its end-users. As mentioned, the one size fits all DG proposed is itself a major barrier to entry and anti-competitive.</p>
<p>Eduardo Santiago Responses</p>	<p>BEL should not be given any role in authorizing connections of PV DGs systems. The PUC or its designee should be the sole entity that considers for approval DG installations and its connection to the grid.</p>
<p>PUC Commentary</p>	<ol style="list-style-type: none"> <li>1. CSL proposes (i) to remove all barriers to entry for DG, (ii) ensure full cost recovery for DG in FIT.</li> <li>2. SSS proposes (i) simplified authorizations to be implemented by the PUC, (ii) introduce support schemes and allow wheeling to low-income persons.</li> <li>3. ES proposes that the PUC {not BEL} should have the ultimate decision on whom is authorized to connect to the grid.</li> </ol>

## Proposed Electric Vehicles (EV) Rates

Category	Rate
Demand Charge (per KVA per month)	30.00
Peak Energy Charge (per kWh)	0.3500
Off-Peak Energy Charge (per kWh)	0.3000

<b>PROPOSED EV RATES</b>	
<b>EV1: Could you briefly describe your understanding of the BEL proposed rate structure?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Yes, every BEL energy user must subsidize the capital outlay of charge point operators. BEL is concerned that “non-DG customers will disproportionately bear the cost of operating and maintaining the grid” but this concern does not extend to less well-off non-EV customers who disproportionately have to bear the cost of operating and maintaining the grid. Less well-off Belizeans have no real hope of owning an EV within the foreseeable future.
Southern Solar Solutions	All EV stations would be metered separately and pay charges similar to Industrial users – Demand, Peak, Off-peak. This is a major concern
Caribbean Motors	<p>1) What does this EV charging chart apply to? For home charging, Public EV chargers that will charge a customer for usage or a EV charger used for private or public use but there is no charge passed on to the customer? Will each charger be metered separately and standalone, even if they are connected to an existing facility or meter and building?</p> <p>2) Why is there a demand charge applied in this case? I understand the thought process (but don't agree with it) of the demand charge associated with DG solar. In that case someone is trying to reduce their dependence on BEL but still needs them as their backup. But in this case, it is just additional demand for BEL so charging a demand fee per KVA seems odd. Also, what is the KVA based on for the demand fee? How is that measured?</p> <p>3) What is the timeframe for peak and off-peak for the rates?</p>

	<p>4) How will this level the playing field in terms of competing with the existing BEL Charge N Go infrastructure? Will there be a regulated rate that BEL can charge at their chargers? It would appear challenging to compete with BEL as any charging owner appears to have to purchase power for their charger at regular retail -rates. And it appears that BEL is charging regular retail rates at their chargers. So, it would appear there is very little profit to be made by anyone wanting to purchase and install a charger to support public charging.</p> <p>5) Are there any thoughts on if DC super charging can charge higher rates to the consumer based on the convenience of much faster charging times to the EV owner and the much higher investment cost by the charging station owner?</p>
<p>PUC Commentary</p>	<ol style="list-style-type: none"> <li>1. FLPC's understanding is BEL wants all ratepayers to subsidize CPOs, and posits that this is unfair to non-EV customers.</li> <li>2. SSS' proposes CPOs be metered separately and apply an Industrial tariff.</li> <li>3. CM does not agree to Demand charge as a component of the EV rate. CM raise important questions on implementation details and the competition landscape: (i) Will having an EV charger require separate metering? If not, then how is this EV rate applied? (ii) What are the time intervals for TOU? (iii) What is the market structure and pricing of electricity inputs so that BEL is playing on the same field as other CPOs? (iv) if the PUC fixes EV rates, how will CPOs price differentiated services?</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV2: What are your views on the utility participating in the charging market as owners of the EV charging infrastructure?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Having stated the above, no issue. There is perhaps a case to be made that the utility sets up a number of off-grid PV array facilities for EV charging OR non-peak time on-grid PV array facilities for EV charging. Profits could then further subsidize "Social" energy rates.
Southern Solar Solutions	I believe it is reasonable for the utility to participate in the charging infrastructure at government offices, archaeology sites, protected areas, etc
Eduardo Santiago Responses	BEL should not be directly or indirectly permitted to be an owner or operator of EV Charging Infrastructure.
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC has no difficulty with utility participation in the EV Charging Market.</li> <li>2. SSS has no difficulty with utility participation in the EV Charging Market, if limited to public spaces.</li> <li>3. ES believes there should be no participation by the utility in the EV Charging Market.</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV3: What in your view, would be the advantages or disadvantages of the utility's participation in the EV charging market?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	No comment.
Southern Solar Solutions	Advantage – they have resources to provide ahead of EV market. Disadvantage – EV charging is not like filling a fuel tank, it takes an hour perhaps. What do drivers do for an hour? Restaurants, tourism sites, workplaces, parking garages and lots are good places, and private enterprise is best suited to those sites
Eduardo Santiago Responses	The utility has an intrinsic unfair advantage and would tend to place barriers to other service providers and competitors. This is an opportunity for innovative solutions provided by specialized ESCO's in the EV segment that would incentivize EV adoption by the public.
PUC Commentary	<ol style="list-style-type: none"> <li>1. SSS (i) Advantage - market position and resources, (ii) Disadvantage – ready-to-go is not possible, therefore time to charge will require partnership with other enterprises whom allow customers enough time to charge their EV</li> <li>2. ES – Disadvantage to society, because the utility has market position giving unfair competition.</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV4: Do you consider the current electricity regulatory framework as facilitating or hindering the private ownership and deployment of the EV charging infrastructure?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Let us assume that a charge point operator puts up backup generation capability to ensure business continuity in the event of blackouts, then that entity would find that the 75kW limit is extremely stifling.
Southern Solar Solutions	Biggest concern is this new category. If a private site chooses to install EV charging, their category changes? They have additional costs and paperwork? This appears to be a major hindrance.
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLP:C: facilitate charging by CPOs utilizing backup generation because of possible BEL outage, therefore licence requirements for &gt;75 kW hinders EV market development.</li> <li>2. SSS needs clarity on classification assignment (EV? DG? Commercial?) by BEL for enterprises providing EV charging to their customers.</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV5: What are your views on the regulation of EV charging activities?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	On the whole less regulation is desirable as regulation adds cost and narrows options without necessarily always adding value to the consumer.
Southern Solar Solutions	Similar to all use of electrical appliances
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC proposes light regulatory approach for EV.</li> <li>2. SSS says regulatory treatment should be similar to other electrical appliances.</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV6: Kindly express your views on the effects of large-scale EV adoption on the electricity supply system.</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Unless we have a central nuclear fusion backbone, and perhaps even with this, we are simply trading one set of inefficiencies, losses and pollution for another set of possibly greater inefficiencies, losses and pollution elsewhere; this at cost to every customer while appearing responsible. Ideally, EV owners would charge their vehicles directly from their own or from cooperative PV sources so as to keep the flow of charging energy <b>out</b> of the grid. While this is not necessarily often practical, it would enhance <b>a real case</b> for the use of EVs.
Southern Solar Solutions	With time, we should move to a smart grid such that EVs can be used to help balance grid by supplying power when parked. A larger difference between peak and off-peak pricing could be useful.
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC does not foresee large-scale adoption of EV, and believes the ideal application of e-mobility is decentralized charging of EVs.</li> <li>2. SSS says that for large scale adoption an asymmetrical TOU tariff is supportive.</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV7: What do you think of charging EVs at home, work and/or commercial places?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	<i>Please see EV6.</i>
Southern Solar Solutions	Should be encouraged and private, except for those working for government
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC does not foresee large-scale adoption.</li> <li>2. SSS wants EV home-charging to be encouraged.</li> </ol>



<b>PROPOSED EV RATES</b>	
<b>EV8: Do you think a high adoption of EVs will lead to a reduction of your electricity bill?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	No, it would have the opposite result, all would have to help carry the capital cost as proposed above and carry the additional line losses caused by the expanded EV charging, especially as most charging would be done at peak usage time when workers who are able to afford an EV return to their homes. Initially the charging impact would be lost "in the noise" but that would change were everyone currently using an ICE transportation device to switch to an EV transportation device.
Southern Solar Solutions	With smart grid technology, yes
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC does not foresee EV adoption lowering energy bills, because it believes that uncontrolled charging during peak periods will worsen load factor.</li> <li>2. SSS foresee EV adoption lowering energy bills, aided by deployment of Smart Grid technologies</li> </ol>

<b>PROPOSED EV RATES</b>	
<b>EV9: How should the utility plan for increased uptake of EVs?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Unfortunately, to accommodate large scale EV uptake, a grid may need to be bolstered, alternative cheap peak hour energy sources need to be found and these costs need be borne by those directly benefitting from EVs, namely the importers and the charging point operator. Perhaps this could happen by increased import duties on EV to subsidize BEL infrastructure and perhaps by those benefitting therefrom carrying the infrastructure costs? Perhaps the utility could further point out to the public the related issues of large-scale EV usage instead of merely going along with the current lithium mindset?
Southern Solar Solutions	Increase DG, improve overall grid balancing functions in county
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC – Cheap peak-time supplies deployment + Grid modernization + TOU, facilitate widespread EV adoption.</li> <li>2. SSS - Grid modernization is essential.</li> </ol>

**PROPOSED EV RATES**

**EV10 – Are there specific elements of the rate structure design that you would like to provide feedback on? For example, demand charges, time-of-use periods.**

Farmers' Light Plant Corporation (Spanish Lookout)	Time of use metering is a given if two different tariffs are proposed and someone will bear the cost. Here however is an unsolicited comment but one related to peak time use: Trying to move butane/propane heating loads such as cooking and water heating to the grid is wrong. Highest efficiency heat creation is done on site. Putting additional electrical load onto the grid at peak time also lacks a longer-term outlook and is more carbon intensive than cooking with gas. Not everything makes best sense to the people when electric.
Southern Solar Solutions	Demand charges should only be on Industrial users or those who choose to have their EV charging system separate from their business. It should be the owner of the EV charging system decision whether to be part of this category and separately meter their power, or whether to just add it to their existing system. Time of use periods should be based on balancing of grid. Smart grid needs to be in the works. All users of every level should move to Time of Use
PUC Commentary	<ol style="list-style-type: none"><li>1. FLPC - TOU is a given for EV tariffs.</li><li>2. SSS – (i) TOU for EV tariffs, (ii) No Demand Charge, except for Industrial customers</li></ol>

## Proposed SPLC Tariff

Category	First 10 Years	After 10 Years
Demand Charge (per KVA per month)	25.00	8.33
Peak Energy Charge (per kWh)	0.3000	0.3000
Off-Peak Energy Charge (per kWh)	0.2600	0.2600

<b>PROPOSED SPLC TARIFF</b>	
<b>SL1: Could you briefly describe your understanding of the Utility proposed rate structure?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Yes, BEL apparently desires to correct the <i>“legal and economical”</i> anomaly by pursuing the PUC to force the Spanish Lookout Community to connect to the BEL grid and thus gain 2.5% market by adding to its customer count by one. The above proposed rate is a step in accomplishing this desire
Caribbean Motors	1) I see the SPLC proposal chart. I don't see any feed-in tariff rate listed. We know that SPLC produces a large amount of solar and many times has excess solar to sell back to the grid. This excess solar would give the Belize grid additional localized renewable generation at a decent price. By attempting to charge SPLC such a high demand charge for the 1st 10 years it may scare them away from any interconnection thus eliminating that additional cost-effective generation source that BEL could access. A more reasonable approach to the demand fee may open the door to a reasonable discussion that could be ground-breaking in connecting the 2 grids with great benefits to both. Currently SL is a tremendous source of learning and data for DG solar. Some good, some not so good, but great learning nonetheless. I would assume that based on the demand fee proposed, no agreement will be made for interconnection as it appears too one sided.
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC – indicates that it understands the proposed rate structure.</li> <li>2. CM – (i) the FLPC rate proposed makes no provisions for BEL to import electricity services from FLPC, and (ii) the Demand Charge is too high.</li> </ol>

<b>PROPOSED SPLC TARIFF</b>	
<b>SL2: Do you agree with the reasoning of the Utility to introduce a client-specific special rate? Can you suggest any improvements or modifications to the proposed rate change that would better address the concerns and needs of the specific client?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	To capture the Spanish Lookout market a separate rate is essential. Why should the Spanish Lookout Community get a cheaper rate than that offered to others? What needs to be considered is that the Spanish Lookout Community customer carries <b>all</b> of the costs of line maintenance and line growth, this is not passed on to BEL, neither are the costs of fee collection, insurance, depreciation, human resources, vehicles, SSB payments, company tax and so forth. In any event, after factoring in the expenses, an economic case can yet not be made to purchase power from BEL at the rates that they propose.
PUC Commentary	1. FLPC argues that a special discounted rate is merited, however, and posits that the proposed BEL rate does not provide for a viable economic case.

<b>PROPOSED SPLC TARIFF</b>	
<b>SL3: Are there alternative approaches or rate structures that could achieve the same objective more effectively or efficiently?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Perhaps the question should be 'How would reaching the BEL objectives be a win-win solution?' Trust. There are trust issues, from both sides, that would need to be addressed at all levels rather perhaps than in BEL pursuing the PUC to force the Spanish Lookout Community to connect to the BEL grid. Spanish Lookout Community customers pay more for energy than BEL customers and would appreciate cheaper energy; they would also appreciate subsidized street lighting. Yet most Community customers still want their energy to be under their own control. If the objective is of great importance to BEL then the passing of time and then the cultivation of trust would be its best allies.
PUC Commentary	1. FLPC – did not indicate alternative rate structure or approaches.

<b>PROPOSED SPLC TARIFF</b>	
<b>SL4: How should the effectiveness of the proposed rate structure be measured over time? What metrics or indicators would you suggest to be used in evaluating its impact?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	No Comment.
PUC Commentary	

<b>PROPOSED SPLC TARIFF</b>	
<b>SL5: – Are there specific elements of the rate structure design that you would like to provide feedback on? For example, demand charges, time-of-use periods.</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	The demand charges are understood as being the vehicle of financing the substation. This is fully carried by the Spanish Lookout Community consumer. The proposal may start to make financial sense to the Spanish Lookout Community were the demand and service charges eliminated entirely, the energy rate reduced to cost plus handling fee and the Community to have a “walk away option”; the Spanish Lookout Community may be willing to make an up-front contribution toward the cost of the sub-station. This said, the proposed BEL substation fits with BEL electrical architecture to support BEL infrastructure, not that of the Community. The Spanish Lookout Community would need to invest in their own infrastructure to drop the 22kV from the substation to 12.47/7.2kV before it can be used in the Community distribution system. As this Community infrastructure would be placed after the BEL meter, the Community would also have to carry the not insignificant losses of this infrastructure.
PUC Commentary	1. FLPC (i) has concerns with substation voltage mismatch and resulting cost allocation negatively affecting the Community, (ii) doesn't agree with the Demand Charge

<b>PROPOSED SPLC TARIFF</b>	
<b>SL6: Do you believe that the proposed rate change treats all customers fairly and equitably? Are there any concerns about potential cross-subsidization or cost shifting between customer classes?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	The Spanish Lookout Community electrical service is by its customers' choice of lifestyle, <u>a rural</u> electrical service with a rural power infrastructure, operating similarly to the rural cooperatives in the USA. Rural operating costs are high. The people are largely farmers by profession, not white- or blue-collar workers. Care needs be taken when trying to make things 'fair' that the end result isn't loss to all. Some customers value reliability over cost, some want the cheapest rate...
PUC Commentary	1. FLPC believes the rate proposal is not fair and equitable.

## Proposed Tourism Tariff

Category	Rate
Demand Charge (per KVA per month)	30.00
Peak Energy Charge (per kWh)	0.3500
Off-Peak Energy Charge (per kWh)	0.3000

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT1: Could you briefly describe your understanding of the Utility proposed rate structure?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Yes, it is the offer of cheaper rates to lessen Tourism costs to make these operations more competitive to hopefully bring in more "green" tourism.
Southern Solar Solutions	This Category SHOULD NOT EXIST! Businesses providing services to tourists should not get special deals compared to businesses that provide services to Belizeans! Value Added Businesses such as food processing are much more important to the long-term well-being of the average Belizean. Business is business, do not discriminate against Belizeans in favour of Tourists.
PUC Commentary	<ol style="list-style-type: none"> <li>1. FLPC understands the new Tourism Tariff</li> <li>2. SSS understands and believes this category should not exist.</li> </ol>

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT2: Do you agree with the reasoning of the Utility to introduce a sector-specific incentive rate? Can you suggest any improvements or modifications to the proposed rate change that would better address the concerns and needs of the specific sector?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	No Comment.
PUC Commentary	

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT3: Are there alternative approaches or rate structures that could achieve the same objective more effectively or efficiently?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Please firstly read the answer to TT8. A question however; how would the Tourism customers be classified when they have Solar PV and what will be the feed in rates?
PUC Responses	

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT4: How should the effectiveness of the proposed rate structure be measured over time? What metrics or indicators would you suggest to be used in evaluating its impact?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	This form of comparison is difficult in any situation as the customer is not simultaneously experiencing two different outcomes. There is no simple suggestion. The tourism rate is the result of very many factors and isolating the outcome based on a single set of input factors would be... interesting.
PUC Commentary	1. FLPC could not define evaluation [input] factors.

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT5: How do you think this new rate structure will impact the other rate payers? Are there potential positive or negative consequences that haven't been addressed in the proposal?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	Excluding the questions pertaining to Spanish Lookout, these other questions relate all to existing customers of BEL. Where costs are lowered for some, they will have to be recovered from another BEL customer. If the G.O.B. believes that reducing the electrical costs of the tourist establishments is a win for everyone in the country then this could very well be an effective way of doing this.
Southern Solar Solutions	No Comment.
PUC Commentary	1. FLPC suggests that any lower rates introduced will impact BEL's revenue requirements which means that other consumer classes will be required to absorb the impact of the lowering of the rate.

<b>PROPOSED TOURISM TARIFF</b>	
<b>TT6: Do you believe that the proposed rate change treats all customers fairly and equitably? Are there any concerns about potential cross-subsidization or cost shifting between customer classes?</b>	
Farmers' Light Plant Corporation (Spanish Lookout)	See TT5
PUC Commentary	

**PROPOSED TOURISM TARIFF**

**TT7: Are there specific elements of the rate structure design that you would like to provide feedback on? For example, demand charges, time-of-use periods.**

Farmers' Light Plant Corporation  
(Spanish Lookout)

No Comment.

PUC Commentary

**PROPOSED TOURISM TARIFF**

**TT8: Do you agree that the proposed rate structure will incentivise the desired behaviour and support the Utility's goals?**

Farmers' Light Plant Corporation (Spanish Lookout)

It is possible that the largest resorts may be able to drop their tourist fees by a marginal amount. It remains to be seen as to whether or not they pass on the savings to the tourists. It is also unclear whether the tourists are enticed one way or another by the marginally lower costs when selecting a tourist destination. Are the lower costs to be given to the operators so as to allow them more and better advertising of Belize as a "green" country with "green" resorts so as to attract more tourists?

PUC Commentary

1. FLPC is sceptical that the new Tourism Tariff will materially impact competitiveness and thereby indirectly improve BEL's business.



## ANNEX A: Questions & requests for the Utility Provider (BEL)

- 1) Will having an EV charger require separate metering? If not, then how is this EV rate applied?
- 2) More generally, how would BEL determine how a customer is classified as EV, DG or residential/commercial/industrial?
- 3) What are the time intervals for TOU by identifying the peak and off-peak periods?
- 4) Kindly elaborate on the BEL proposed measurement intervals, peak and charge calculations for the demand charges proposed in the Grid-Tied DG, Spanish Lookout, EV and Tourism tariffs.
- 5) What is the proposed market structure and how will pricing of electricity inputs be done, so that BEL is playing on a level field with other CPOs?
- 6) If the PUC fixes the EV rates, how will the CPOs price for differentiated services?
- 7) BEL is requested to provide spreadsheets to show how the tariffs were derived, along with any assumptions and justifications for all proposed tariffs and charges.
- 8) BEL is requested to provide the utility's perspective on how the proposed additional tariffs will impact the existing tariff classifications mix.
- 9) Regarding the Spanish Lookout proposal, can a 115/12.47/7.2kV substation be installed, instead of two substations as proposed: a BEL 115/22 kV substation and an FLPC 22/12.47/7.2kV substation?
- 10) Kindly provide responses and commentaries on the five issues raised by Caribbean Motors' in EV1 prior.