



SEPTEMBER 11, 2015

Renewable to Retail Technical Conference

Renewable to Retail

- Introductions
- Housekeeping
- Seven Minutes for Safety

Renewable to Retail Project

- NS Power initiated consultation process with respect to the development of the RtR Market;
- Between June 2014 and August 2015 NS Power engaged in a process of seeking input from stakeholders into the design of the tariffs and market documents;
- UARB issued the Schedule for formal regulatory process on July 15, 2015;
- Hearing commences Monday, January 18, 2016

Information Requests to NS Power

ROUND 1

- Tuesday, September 22 with responses Friday October 9

ROUND 2

- Monday, October 26 with responses Monday, November 9

FORMAT OF IRS

- Numbering: If your Round 1 IRs are (example) IR-1 to IR-22; Round 2 starts with IR-23
- Please provide in PDF and Word format

Evidence

- Intervenor Evidence Friday, November 20
- IRs to Intervenors Tuesday, December 1 with responses Friday, December 11
- Deadline for Settlement Conference Tuesday, December 15
 - Settlement Report, if any, Monday, December 21
- Rebuttal Evidence (NS Power and Intervenors) Friday, January 8
- Hearing starts Monday, January 18

Application Overview

- The Application provides background, context, and rationale
- Application asks for UARB approval of
 1. Distribution Tariff
 2. LRS Participation Agreement and LRS Terms & Conditions,
 3. Energy Balancing Service Tariff
 4. Standby Service Tariff
 5. Amendments to 2014 OATT Schedule 4; new OATT Schedule 4A
 6. Other amendments to the OATT
 7. Renewable to Retail Market Transition Tariff
 8. Amendments to the NS Power Regulations
 9. Amendments to Market Rules
 10. Amendments to the GIP and GIA

Application Appendices

- Appendix 3 to 15 contain the record of stakeholder consultation
 - Materials issued and/or presented by NS Power, NSDOE, Robert Cary
 - Written responses from stakeholders
- Appendix 16: Robert Cary Design Basis Report
- Appendices 17-28 contain the proposed tariffs and other documents, and the Tariff Calculation Workbook (Appendix 24)

Remaining Agenda

9:30 to 10:45	Renewable to Retail Market Framework – Bill Ellis
10:45 to 11:00	Coffee Break
11:00 to 11:50	Renewable to Retail Tariff Overview – Voytek Grus
11:50 to 12:00	Concluding Remarks – Brian Curry



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Stakeholder Technical Conference

RtR Market Structure

Summary of presentation

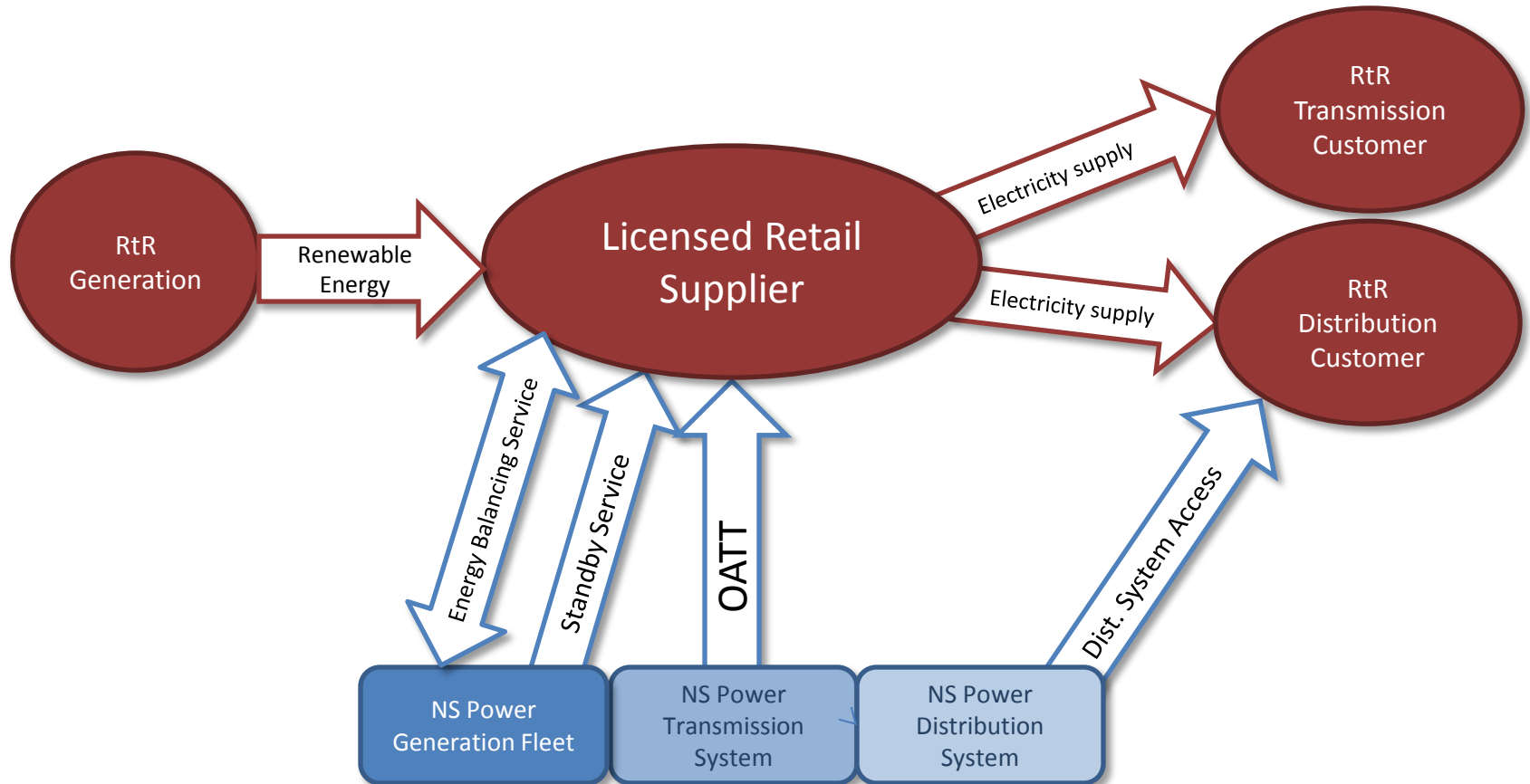
- Fundamentals of the RtR Market Structure
 - RtR Supply Chain
 - Participants and roles
 - Disaggregated design overview
- RtR Market Mechanisms and RtR Tariffs
 - Market Rules, Market Participation – LRS and Generators
 - NS Power Regulations
 - LRS Participation Agreement and Terms and Conditions
 - LRS Tariffed Services and the Distribution Tariff
 - Operating Agreement for Transmission-connected RtR Customers
- Other RtR Topics

The NS Renewable to Retail Market

- The RtR market is established in the Electricity Act.
- Includes the following participants:
 - Certified Generators of renewable low-impact electricity located in Nova Scotia;
 - Licenced Renewable Suppliers (LRS), licenced by the Board to sell the renewable electricity; and
 - Retail electricity customers in Nova Scotia.
- Generators supply electricity to LRS's customers (Generation resource may be contracted or LRS-owned).
- LRSs utilize tariffed delivery services and balancing services from NS Power to enable to delivery of electricity to their retail customers.
- Retail customers enter into contracts with an LRS for their renewable electricity supply and take service from NS Power under the Distribution Tariff¹.

¹The Distribution Tariff does not apply to transmission connected RtR customers.

Disaggregated Design



OATT = Open Access Transmission Tariff

EBS = Energy Balancing Service

SS = Standby Service

Note: EBS & SS address: Top Up and Spill and provision of Back Up supply.

Renewable to Retail Design Overview

- RtR design framework based on a disaggregated tariff approach.
- Each service is delivered through a separate tariff.
- Applied as an interdependent set to provide the required services and cost recovery.
- The tariffs are applicable to the LRS except for the Distribution Tariff which applies to all distribution-connected RtR Customers.

Renewable to Retail Design Overview (continued)

- Charges for the tariffs are determined based on the aggregate of the LRS's customers' metered load and the aggregate of the LRS's metered generation resources (owned or contracted)
- Charges for the Distribution Tariff are determined using each individual distribution customer's meter readings.
- Existing Open Access Transmission Tariff remains for transmission services with amendments to address RtR requirements.
- Existing Market Rules are utilized as amended and expanded to include the RtR market participants and RtR market requirements.

RtR Structural Components

■ Market Administration

- The Renewable to Retail market was established through legislation.
- Market participation is governed by the Market Rules.
- RtR generators and LRSs must be eligible to participate under the rules of the RtR Market.
- The existing Nova Scotia Wholesale Electricity Market Rules address Wholesale Market participants and activities, but not RtR Market participants and activities.
- Amendments proposed to the Market Rules would:
 - encompass the RTR market activities and Market Participants.
 - enable participation by the LRS and RtR Generators.
- Result: “Nova Scotia Wholesale and Renewable to Retail Electricity Market Rules”

RTR Market Participation - Generators

- The existing Wholesale Market Rules provided for participation by Generators in the Wholesale Market.
- Amendments proposed broaden the scope of the Wholesale Market Rules to include the RtR Market.
- This would enable the RtR Generators to enter a Market Participation Agreement with NSPSO to participate in the RtR Market.
- T & D Generator Interconnection Procedures continue to apply.

RTR Market Participation - LRS

- LRS market participation is not provided for in the existing Wholesale Market Rules.
- Market Rule amendments proposed include the RtR market in Market Rules' scope and introduce the LRS as a new class of Market Participant for the RtR Market.
- This qualifies the LRS to become a Market Participants, and:
 - a) The LRS is eligible to enter a Market Participation Agreement with NSPSO to participate in the RtR Market;
 - b) The LRS is eligible as a Transmission Customer under the OATT and can receive transmission services.

LRS Participation in NS Power Tariffs –

The LRS Terms and Conditions and the LRS Participation Agreement

- Participation by the LRS in the LRS Tariffed Services is accomplished through the LRS Participation Agreement and the associated LRS Terms and Conditions.
- The LRS Terms and Conditions govern the relationship between NS Power and the LRS and address procedures for Retail Customer transactions, metering, Load Settlement and LRS billing.
- To qualify for the LRS Tariffed Services the LRS must have a Retail Supplier Licence issued by the Board, execute the LRS Participation Agreement, adhere to the security requirements and become a Market Participant under the Market Rules.
- The LRS Participation Agreement binds the LRS and NS Power to the procedures, terms and conditions contained in the LRS T&Cs.

Key Responsibilities in the LRS Terms and Conditions

Element	LRS	NS Power
Supply of Electricity to Retail Customers	-Procurement of supply of renewable low impact electricity	N/A
Tariffs	-Acquire services under the tariffs	Provide services under the tariffs
Billing/Invoices	-Billing of Retail Customers -Payment of NS Power invoices	-Settlement and billing of LRS -Issuance of LRS invoices
Retail Customer Transactions	-Initiating and submitting transaction requests and obtaining customer authorization	-Processing transaction requests and notifying the LRS
Customer Information	-Provision of up to date customer information to NS Power	-Maintaining customer information -Exchange of information
Metering	-Payment of incremental meter costs for RtR related metering	-Providing metering services -Provision of metering data to LRS -Own and maintain meters
RtR Customers	-Contracts for sale of electricity with LRS -Contact point for matters related to renewable electricity supply	-Provision of Distribution Access Service -Contact point for matters related to Distribution Access Service
Security	Meeting security requirements	N/A

LRS Terms and Conditions – Procedures

Customer Transactions to enroll or transfer a customer .

- LRS submits an RtR Customer Transaction Request Application to NS Power, with the applicant customer's authorization.
- Required to
 - Transfer RtR customers:
 - » NS Power customer to an LRS
 - » A Retail Customer, not currently an NS Power customer, to an LRS
 - » Return an LRS's RtR Customer to NS Power
 - » An existing RtR Customer one LRS to another LRS
 - Obtain Customer Information from NS Power/ Provide updated Customer Information to NS Power; and
 - Initiate other transaction request types as determined by NS Power.
- One LRS per RtR customer at any given time.

LRS Terms and Conditions – Procedures

Metering:

- Revenue class interval meters with remote polling capability will be used for all RtR Customers.
- Meter data will be used for Load Settlement and to determine charges for the LRS Tariffed Services.
- Meter data will be used to determine charges for Distribution System Access under the Distribution Tariff.
- Generation (whether owned or contracted) metering will be in accordance with the applicable Generator Interconnection Agreement.
- NS Power will install all revenue class meters used for RtR tariffs.
- NS Power will charge the costs of the supply and installation of metering devices and communications equipment and services which are incremental to the metering requirements applicable to NS Power's Bundled Service.
- Meters and associated revenue metering equipment remain the property of NS Power.
- NS Power Regulations with respect to metering will apply.

LRS Terms and Conditions – Procedures

■ Billing RtR Customer:

- NS Power will provide RtR Customer metering data to the LRS.
- NS Power will calculate Distribution Tariff charges.
- The LRS will include charges for Distribution Access Service on its bill to the RtR customer.

■ Billing LRS:

- NS Power will bill the LRS monthly for LRS Tariffed Services based on the LRS's aggregated load and generation meter readings.
- NS Power will also bill the LRS for the costs associated with the Distribution Access Service NS Power provides to the LRS's RtR Customers under the Distribution Tariff.

LRS Billing – Aggregation of Metered Load Data

- Charges for LRS Tariffed Services are based on the aggregated RtR Customer load and the LRS aggregate generation in each hour.
- These include:
 - OATT
 - Standby Service
 - Energy Balancing Service – Top Up; Spill
 - RtR Transition Tariff – Recovery of embedded costs
- NS Power will aggregate the individual meter interval readings for each hour in the Billing Period to determine the aggregated LRS hourly load and generation profiles using interval meters.
- The aggregated hourly load and generation profiles will be used in the settlement calculations for the tariffs listed above.

NS Power Regulations

- NS Power Regulations are applicable to the provision of Distribution Access Service and are applicable to certain LRS functions as identified in the LRS T&Cs.
- Key amendments to the Regulations:
 - An agreement is deemed to exist between NS Power and the Retail Customer receiving Distribution System Access service.
 - Net Metering Regulations and those pertaining to Budget Billing and Group Billing do not apply to RtR Customers.
 - Definitions

Generator Interconnection - GIP & GIA

- Two amendments are proposed to the GIP to accommodate the introduction of the RtR market.
- Addition of a new market readiness milestone in Section 7.2 for Interconnection Queue advancement applicable to RtR generating facilities owned by a LRS. This is required as otherwise the project cannot have Interconnection Studies completed and proceed through the interconnection process.
 - *7.2 (vii) e): demonstration by the Interconnection Customer to the satisfaction of the Transmission Provider that the Interconnection Customer is a retail supplier pursuant to the Electricity Act, S.N.S 2004, c. 25.*

Generator Interconnection - GIP & GIA (cont)

- Amendments are proposed to Section 11.4.2 of the Standard Generator Interconnection and Operating Agreement (Appendix 6 to the GIP).
- Costs associated with the addition of all network upgrades resulting from the interconnection of RtR generation are the responsibility of the RtR generation interconnection customer and not eligible for repayment by NS Power.

Partial Service

- The proposed RtR model assumes customers will either take service from NS Power under its bundled utility rates or from a Licenced Retail Supplier, with the associated RtR tariffs in effect.
- Splitting service between two suppliers on one account is inconsistent with established practice in competitive retail electricity markets.
- NS Power's rates are based on average costs and consumption on an annual basis across all hours, not the prospect of selecting bundled service at certain time of the year or day.
- This would expose other customers to a risk of cost transfer.
- A customer who has multiple accounts can take RtR service on any of its individual accounts.

RtR Interruptible Service

- The Large Industrial Interruptible Rider requires five-year advance notice for a customer to switch back to firm service from interruptible service. The Company may permit earlier conversion.
- Requests for transition of an existing interruptible customer to interruptible RtR service should be addressed on a case-by case basis.
- For an interruptible customer to take service from an LRS, the three parties would have to agree on the mechanism of the value exchange: interruptibility of the load (the interruption process) , the credit and the penalty.

Behind the Meter RtR Generation

- To ensure full cost recovery, it is necessary to apply all RtR tariffs to the behind-the-meter arrangement.
- Revenue-class interval metering is necessary to measure the LRS's generation output and customer gross load.
- With this secondary metering, LRS settlement can be completed for billing of the RtR tariffs.
- The LRS T&Cs include a requirement for such secondary metering to be installed and used for such settlement.

Renewable to Retail Tariffs

- The tariffed services provided by NS Power include physical delivery and connection services, generator backup and balancing services.
- The LRS must subscribe to all the LRS Tariffed Services:
 - Energy Balancing Service Tariff - provides Top Up & receives Spill
 - Standby Service Tariff – provides Backup service.
 - RtR Transition Tariff - provides for recovery of embedded fixed costs and deferred costs.
 - OATT - with the LRS as the Transmission Customer – Network Service & Ancillary Services
- Retail Customer remains an NS Power customer under the Distribution Tariff for Distribution System Access as a regulated service from NS Power.
 - DT charges are based on RtR Customer's metered energy/demand
 - Distribution System Access includes distribution connection services, retail services, special customer charges, etc.
 - NS Power Regulations apply

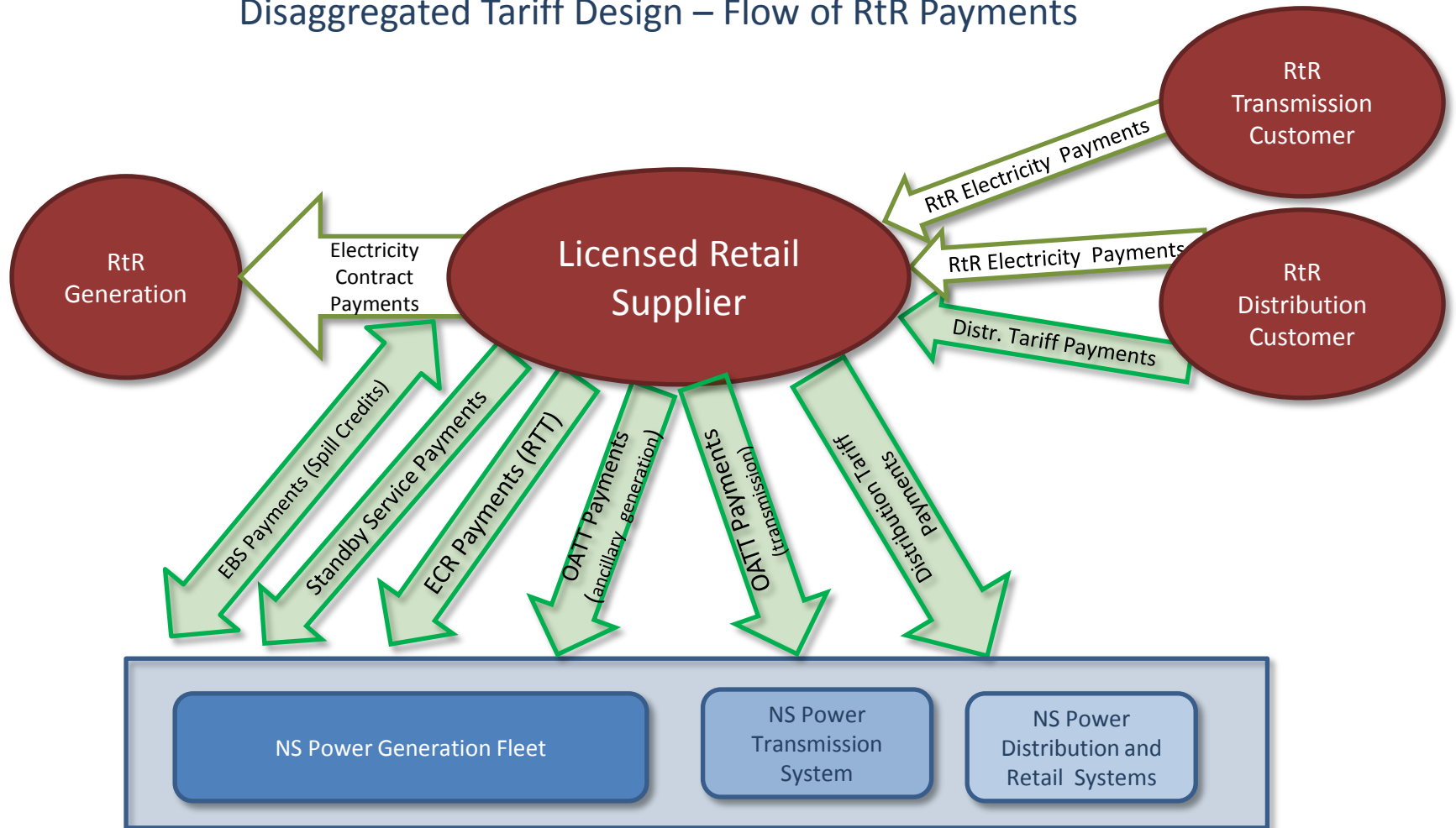


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RtR Tariff Overview

Renewable to Retail Market Opening

Disaggregated Tariff Design – Flow of RtR Payments



EBS = Energy Balancing Service

SS = Standby Service

Note: EBS & SS address: Top Up and Spill and provision of Back Up supply.

Distribution Tariff

Definition

The Distribution Tariff outlines the rules, terms and conditions and rates payable by the RtR Customer for Distribution System Access. NS Power's Regulations continue to apply to RtR Customers connected to the Distribution System. Not applicable to transmission-connected RtR Customers.

Rationale

RtR Customers remain connected to NS Power Distribution system and receive Distribution Access Service from NS Power. These services are comprised of delivery of electricity on the distribution system and related services including connections, disconnections, line and service extensions, inspection services, meter services, power restoration, meter reading, and customer service.

Rate Design

To the extent practical we have leveraged existing rate structures. Revenue requirement and rate classification is based on existing COS for bundled services. Proposed rate structure is aligned with that used for bundled services.

Distribution Tariff – Rates

- Applicable to the RtR Customer's load as metered.

Rate Class	Customer Charge	Distribution Charge	Demand Charge	Minimum Monthly Charge	Transformer Ownership Credit
	\$/month	¢/kWh	\$/kVA	\$/month	\$/kVA
Domestic Service	10.83	2.549	0.000	10.83	0
Domestic Service Time of Day	10.83	2.549	0.000	10.83	0
Small General	12.65	2.362	0.000	12.65	0
General (1)	0	0.000	5.458	12.65	-0.32
Large General (2)	0	0.000	3.361	12.65	-0.32
Small Industrial	0	0.000	4.494	12.65	-0.32
Medium Industrial	0	0.000	3.496	12.65	-0.32
Large Industrial Firm (2) Rate Code 23	0	0.000	2.430	12.65	-0.32
Outdoor Recreational Light Rate	0	3.551	0.000	0	0
Unmetered Service Rates	0	0.000	11.960	17.51	0
Miscellaneous Small Loads	0	0.000	11.960	17.51	0

Footnotes:

(1) Demand Charges and credits are applicable to kilowatt (kW) demand.

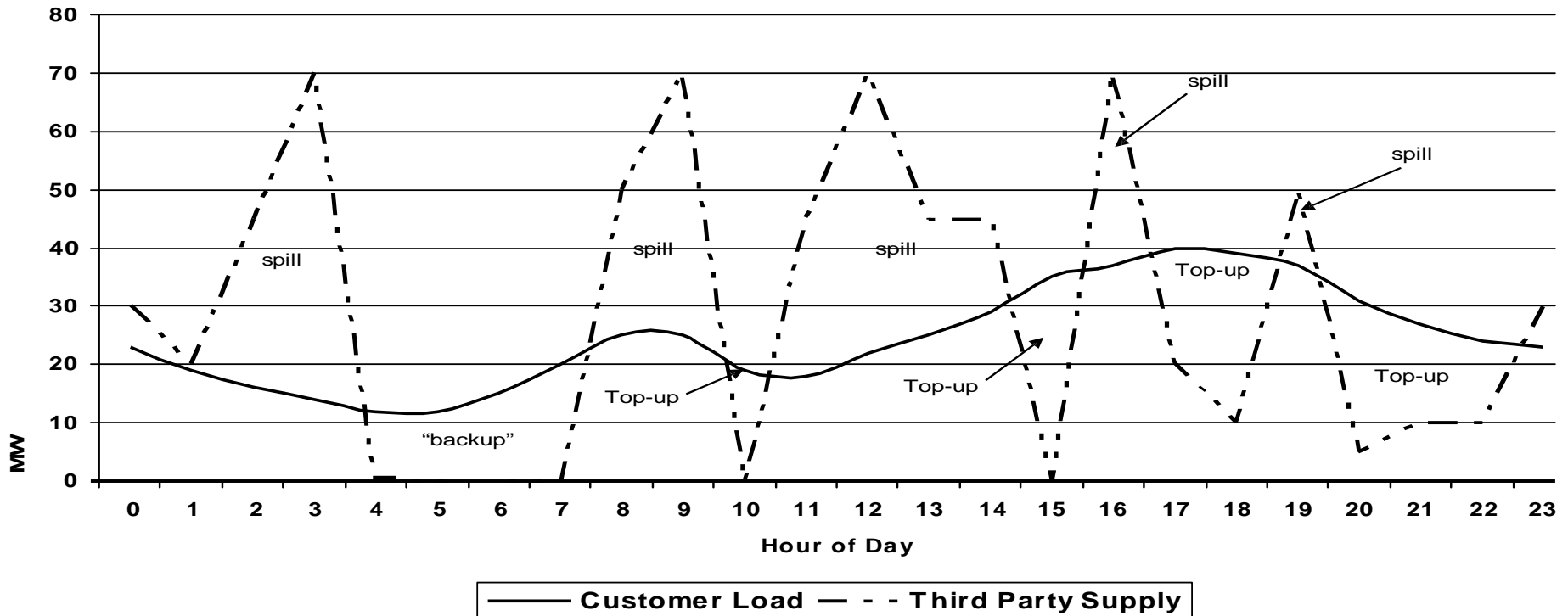
(2) Demand Charges and credits are applicable to kilovolt-ampere of maximum (kVA) demand of the current month or the maximum actual demand of the previous December, January or February occurring in the previous eleven months regardless whether service was taken under the bundled or unbundled service.

Energy Balancing Service Tariff and Standby Service Tariff

- The output of non-dispatchable low impact renewable generation cannot be controlled on-demand by the operator and matched with RtR customer load on an hourly basis.
- In hours when generation falls below customer load, the utility must provide top-up energy.
- In hours of surplus generation (spill), the utility must absorb it into its system.
- To ensure that service to RtR customers is reliable, the utility must also provide backup/standby service.

Top-up/Spill service concept

Hypothetical Supply/Demand Day
Demonstrating Backup/Top-up and Spill



Energy Balancing Service Tariff

- Administration charge of \$1,053.03 based on incremental administration costs.
- Energy charge for top-up (9.959 ¢/kWh) to include:
 - Annually adjusted fuel cost (6.650 ¢/kWh)
 - Fixed cost for fixed energy-related gen costs (3.309 ¢/kWh)
- Energy credit (5.27 ¢/kWh) for spill to include
 - Monthly credit reflective of value of spill
 - Year-end compensation adjustment for surplus spill energy
- Derivation of rates is provided in NS Power response to Multeese DR-25, in Appendix 13 pages 105-107, and Appendix 13B.

Standby Service Tariff

- Administration charge of \$1,053.03 based on incremental administration costs.
- Demand charge of \$5.370/month/kW applicable to Monthly Standby Contract Demand (MSCD) determined as an excess winter coincident demand over dependable capacity contribution provided by the LRS's owned and contracted generation. This is captured in the formulae set out in the tariff.
- Derivation of this rate is provided in NS Power response to Multeese DR-29, 30, 31 and 35, in Appendix 13 pages 111-118 and 124-128, and Appendix 13C and 13D.

RtR Market Transition Tariff

- For any electricity NS Power supplies to LRS load, fixed and deferred costs are recovered by the EBS and SS rates.
- When NS Power is not supplying electricity to LRS load, fixed and deferred costs are recovered by the RTT.
 - The rate structure provides for cost mitigation and for annual energy cost adjustment, both subject to annual adjustment.
- The amount of embedded cost to recover
 - Depends on characteristics of RtR generation and load
 - Depends on LRS's usage of NS Power Standby and Energy Balancing services.
- The tariff is applied to each LRS in respect of its aggregate load and generation, not on a customer-specific basis.

Proposed RTT Rates

The tariff has two components, Demand Charge and Energy Charge.

- Note that past FAM costs are recovered separately per the FAM tariff.

Energy Charge Components	Cents per kWh
Fixed Cost Adder from Energy Balancing Service Tariff	3.309
Annually Adjusted Energy Savings Credit	-
Annual Energy Cost Adjustment	-
Total	3.309

Demand Charge Components	Dollars per kW
Demand Charge from Standby Service Tariff	\$5.370
Annually Adjusted Demand Savings Credit	-
Total	\$5.370

Proposed OATT Amendments

- Amendment of the definition to add the LRS as an eligible customer. (1.14 Definition of Eligible Customer)
- Clarified that the LRS is the Network Customer in respect of its aggregate RtR customer load. (1.24 Definition of Network Customer)
- Clarified that Network Service is the applicable service for the LRS's RtR transactions on the transmission system. (1.25 Definition of Network Integration Transmission Service)
- Inclusion of new Ancillary Service – Generation Forecasting Service applicable to the LRS generation resources. (3.0 Ancillary Services)
- A change to permit the output of the RtR generator to exceed the RtR load, plus losses. This accommodates delivery of spill energy by the LRS generation under the terms of the EBS tariff. (30.4 Operation of Network Resources)
- Inclusion of new Schedule 4A – Generation Forecasting Service
- Note clarifying applicability of Schedule 4.
- Inclusion of other RtR definitions.

OATT – Schedule 4A

Generation Forecasting Service

- OATT - Schedule 4 not applicable to RtR market.
- EBS tariff to address all payments for generation imbalance provisions.
- Added new Schedule 4A to provide incentive for accurate forecasting of generation present in Schedule 4.
 - Hourly aggregate forecast discrepancies outside of +/- 10 % hourly deviation band subject to a charge of 10% of average marginal costs by on-peak and off-peak periods for the billing month.