

July 2016 Open Access Transmission Tariff (OATT) Filing Overview

September 22, 2016

Overview

- Introduction
- PEI OATT timeline
- Tariff backgrounder
- PEI Transmission System overview
- Description of key concepts
- Highlights of current filing
- Description of services and associated costs
- Differences between PEI and NB OATTs

Background

- IRAC directed MECL to develop and file open access transmission tariff (OATT) in April 2006
 - IRAC Order UE06-02
 - In response to US electricity market deregulation
- MECL developed and filed an initial OATT in November 2006

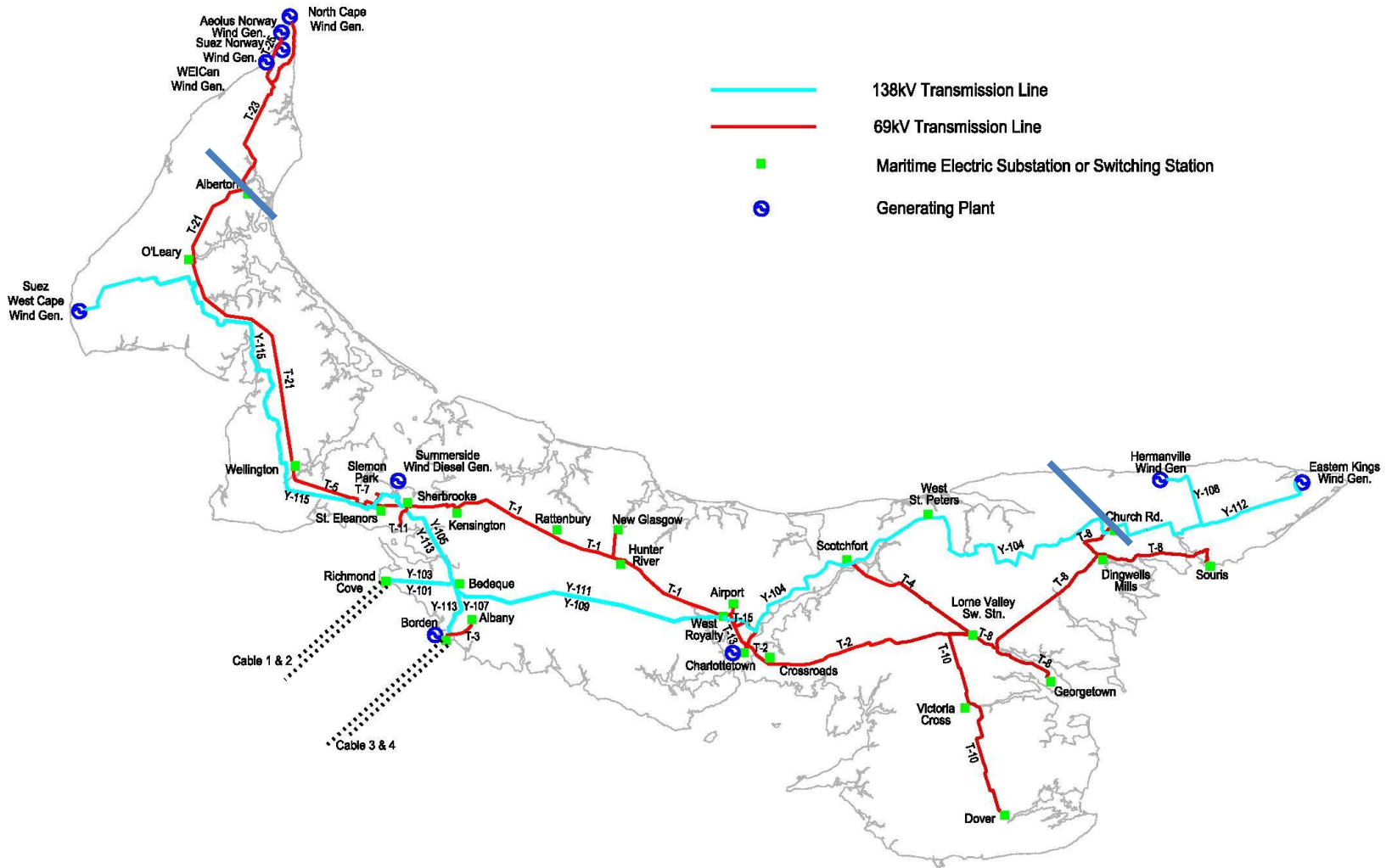
Background (2)

- Stakeholder sessions were held for feedback on initial filing in Q2/Q3 2007
- MECL filed updated OATT in October 2007
- OATT received interim approval from IRAC in March 2008
- OATT still operating under this interim umbrella
 - Costs based on 2004 Cost Allocation Study
- Updated OATT filed in July 2016

July 2016 Filing

- Based on costs from 2014 Cost Allocation Study
 - Intent is to remove ‘interim’ label and have a fully functioning tariff
- Updated to specifically incorporate FERC 890
 - Aligns with FERC 888, 889 and 890, as well as several other FERC Orders
- Closely follows NB where NB Power has received NBEUB approval for deviations from FERC Orders

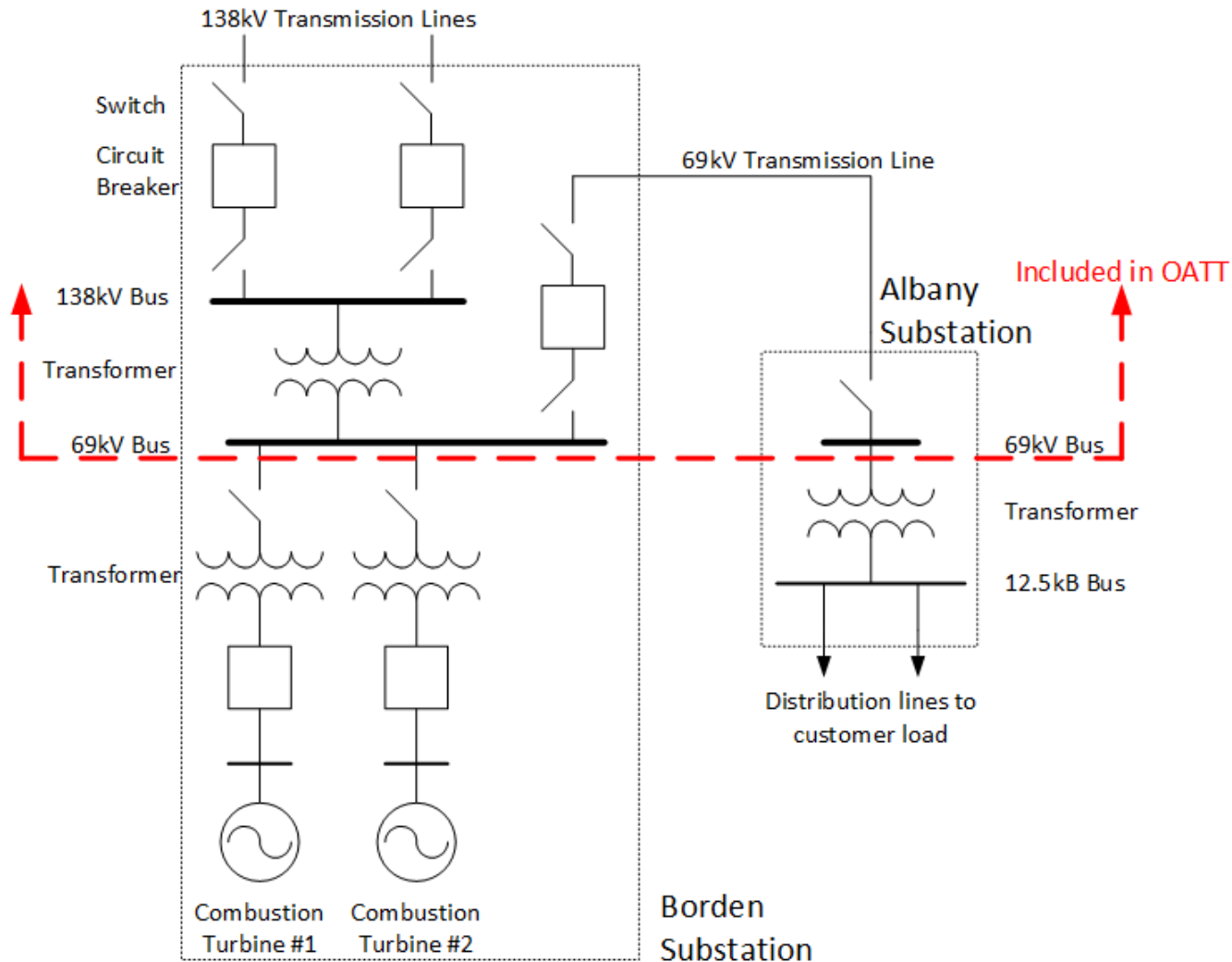
Island Overview – end of 2017



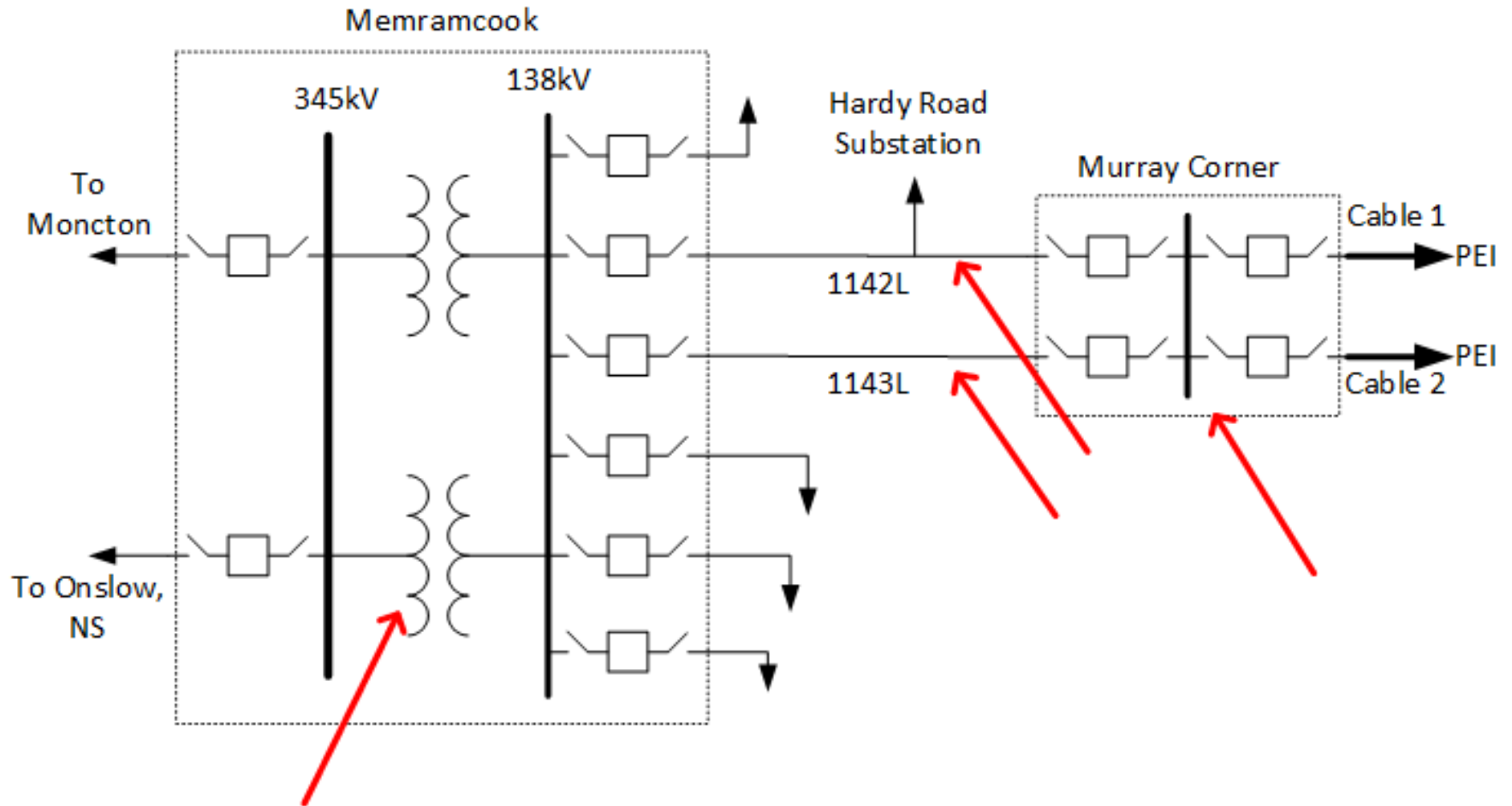
Facilities Included in OATT Costs

- All on-Island 69kV & 138kV transmission lines except T23/T25, Y115, Y108/Y112, portion of T8
- A portion of MECL substations
- Existing Cables 1 & 2 and associated infrastructure
- Some NB Transmission System costs
 - A portion of Memramcook, NB substation
 - Murray Corner, NB substation
 - A portion of 138kV NB transmission lines 1142L and 1143L (lines from Memramcook to Murray Corner)

Transmission vs Distribution & Generation



PEI OATT Costs in NB



Transmission Facilities Not Included in OATT Costs

- T23 & T25 lines from Alberton to North Cape area wind farms (owned by PEI Energy Corp)
- Y115 line from Sherbrooke to West Cape wind farm (direct assign to West Cape Wind Farm)
- Y112 line from Church Road to eastern PEI wind farms (MECL customers)
- T8 east of Dingwells Mills and Church Road substation (MECL customers)
 - This portion of T8, and most of Church Road, will be included in OATT when Y104 is completed in 2017

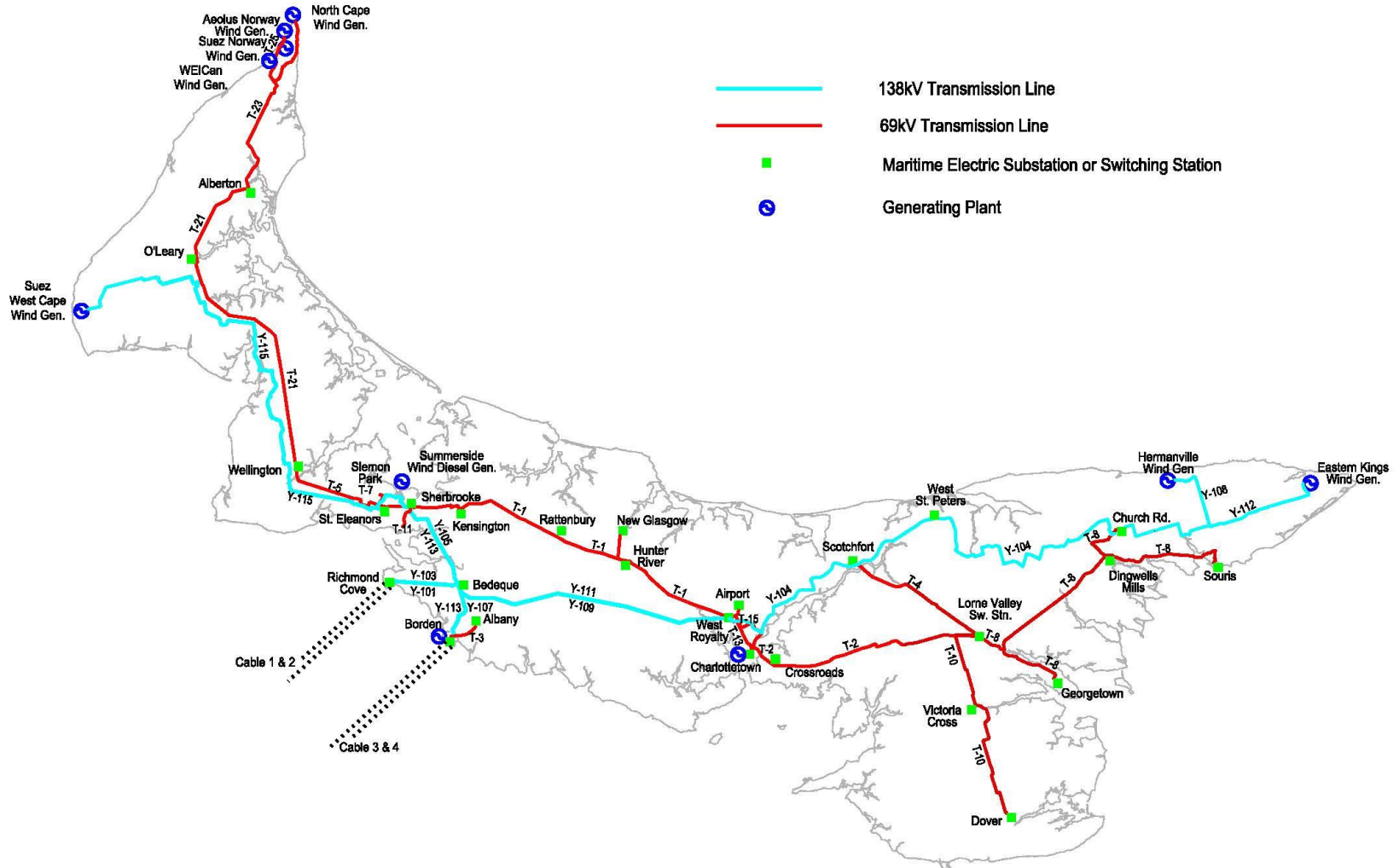
Postage Stamp Philosophy

- Costs to operate Transmission System are bundled together
- Per unit rates are based on total operating cost divided by system usage
- For a given level of service, all Transmission Customers pay same unit rate for access to transmission system
 - Geography is immaterial
- Similar principle to postal system
- NB, NS, QC all use postage stamp philosophy

Energy vs Capacity

- Energy is the amount of power needed to operate customer load in an hour
 - Measured in kilowatt-hours (kWh) or megawatt-hours (MWh)
 - Scheduled across the system on an hourly basis
- Capacity is the amount of transmission or generation capability
 - Generation – how much of the energy ‘pie’ that a particular Customer is entitled to, whether the generator is operating or not
 - Transmission - how much of the ‘pipeline’ is reserved for a particular Customer’s energy to flow from the generator to the Customer’s load

Radial vs Looped Systems

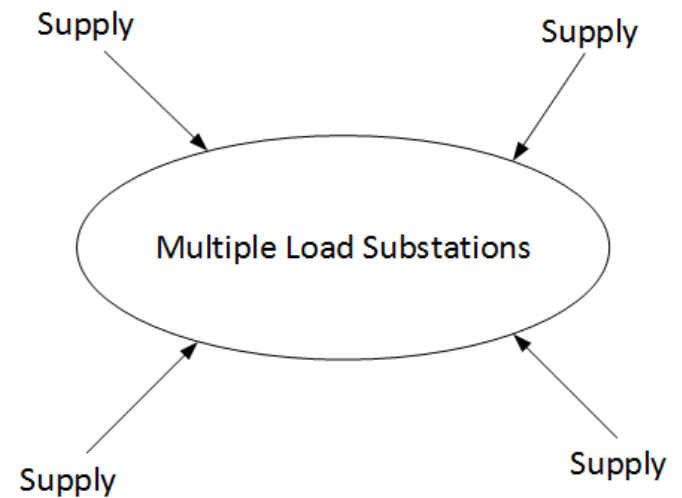
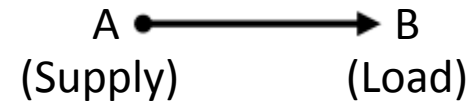


System Impact Study vs Facility Impact Study

- System Impact Study:
 - Determine if proposed project will impact power flow or voltages on Transmission System enough that system upgrades or expansions are required
 - Recommends point of connection, additional lines, substations, etc.
- Facilities Impact Study:
 - More detailed examination of connection
 - Determine required substation equipment, protection & control, metering, communications, commissioning procedures, operating procedures, etc.
 - Often a significant amount of work for multiple departments

Transmission Service Types

- Point to Point
 - Delivery of energy from a defined point of supply to a defined point of load
- Network
 - Delivery of energy from a pooled group of supplies to a pooled group of loads



Point-to-Point Service

- Firm
 - Customer has made a financial commitment to use the system for a stated time period
 - System facilities are built to meet Long-Term Firm financial commitments
- Non-Firm
 - Short-term commitment
 - Uses spare system capacity when available
 - System facilities are not built to meet Non-Firm obligations

Firm Service Pros/Cons

- Pros
 - Long-Term Firm is 'guaranteed' – top level of service
 - Last to be curtailed when system encounters issues
 - System is planned, built and expanded to meet Firm commitments
- Cons
 - Take or pay – still have to pay if not used

Non-Firm Service Pros/Cons

- Pros

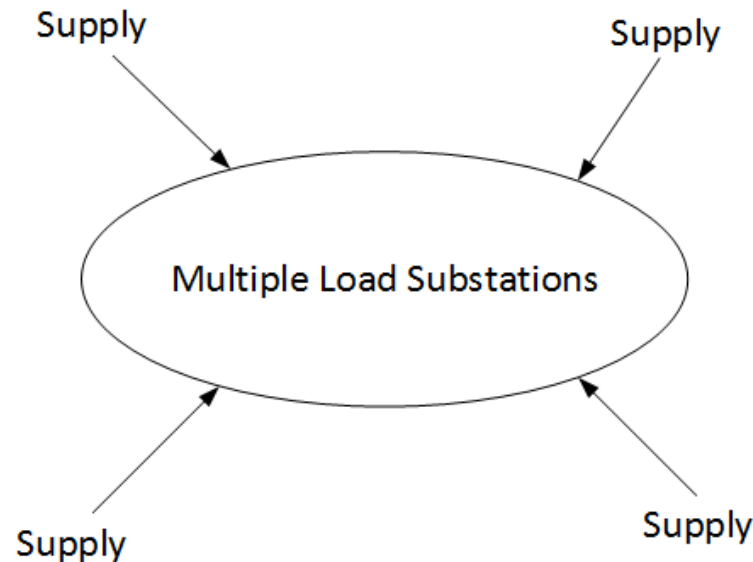
- Can optimize its usage if load is variable
- Has potential to be less expensive than similar amount of Long-Term Firm

- Cons

- Lowest level of service – the first to be curtailed
- Available only when extra system capacity is present
 - System not built to meet its needs

Network Service

- Delivery of energy from multiple points of supply to multiple points of load would be unmanageable



Network Service Pros/Cons

- Pros
 - Highest level of service – similar to Long-Term Firm
 - System is planned, built and expanded to meet projected loads
- Cons
 - May be more expensive than an optimized Firm/Non-Firm combined service

Updates from 2006 Filing (1)

- Minimum term for Network service is five years
- Reservation Priority for existing Firm Service Customers
 - Firm Service customer with a minimum contract length of five years has a right of first refusal on competing service requests
 - Increased from previous minimum of one year
- Conditional Firm now offered
 - Firm service, with provision that it may be curtailed for a specified number of hours per year
- Reciprocity – extended to all members of a power pool

Updates from 2006 Filing (2)

- Line T11
 - Radial line (4km) serving City of Summerside
 - Connects MECL Sherbrooke substation to Summerside Ottawa Street substation
 - Will no longer be considered a Direct Assign facility
 - To be consistent with other Island radial lines
 - Line and loss costs will be included in pooled resources (ie. OATT)
- IRAC must be notified if System Impact Studies not meeting prescribed timeframes

Issues Raised and Addressed Since First Filing

- Network Service
- Reservation Imbalance Penalties
- Recovering Costs for Direct Assignment Facilities
- OM&A Charges for Direct Assignment Facilities
- Wind Generation Capacity Value
- Previous Applications for Transmission Service
- Cost of Service Study
- Bypass Application

Issues Raised and Addressed Since First Filing (2)

- Real Power Losses
- Standards of Conduct
- Open Access Same-Time Information System (OASIS)
- Transmission Planning process

Real Power Losses & Discounts

- Losses – no change to Real Power Loss methodology
 - Postage stamp application will remain
- Reservations for off-Island electricity exports will continue to be discounted to off-peak rates when export paths are unconstrained
 - Now applies to all generation, not just intermittent renewable generation

Standards of Conduct

- Removed Standards of Conduct from OATT
- Will be stand alone requirements
 - Posted separately on MECL website
 - Filed with IRAC for separate approval
 - MECL currently does not have marketing function employees
- Consistent with NB OATT

OASIS

- No significant changes
 - All information and processing to be provided manually through OATT Administrator
 - Island has one Network customer, two Point-to-Point customers, and no internal marketing activity
 - Automating the process is considered to be uneconomic
- Automated OASIS can be revisited if transmission activity increases

Transmission Planning Process

- FERC Order 1000 provided additional guidelines for transmission planning
- Attachment K – ‘Transmission Expansion Policy’
 - Has been replaced with ‘Transmission System Planning’
 - Formalizes transmission planning process
- Similar to NB OATT

Differences Compared to NB OATT

- Initial Allocation of Available Transmission Capacity – removed in PEI, since NB-PEI interconnection is unconstrained
- No Island separation of Load-Serving Entity and Marketing Entity
- OASIS – PEI is manual; NB is automated
- Minor differences in Transmission Planning process due to relative size of systems
- PEI penalties for under-scheduling of energy are higher
 - NB Final Hourly Marginal Cost of energy is typically lower than contract price
 - There is an incentive on PEI to under-schedule energy

OATT Revenue Requirement

- MECL total transmission cost - \$9.104M
 - Based on 2014 Cost Allocation Study
 - Includes operating, amortization, financing, return costs
- OATT transmission facilities cost - \$7.307M
- ECC related cost - \$298K
- OATT costs allocated to Transmission Customers through Schedules
 - Cost for each service is broken down

Schedule 1 – Scheduling, System Control & Dispatch

- Required to schedule the movement of power into, within, and out of the Island Transmission System
- Provided by MECL Energy Control Centre
 - Must be procured from MECL

Schedule 1 Rates

- Rates shown are per MW of Reserved Capacity

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$1,073.75 / MW per yr	1/12 th of \$1,148.45 / MW per yr
Monthly Delivery	\$89.48 / MW per mo	\$95.70 / MW per mo
Weekly Delivery	\$20.65 / MW per wk	\$22.09 / MW per wk
On-Peak Daily Delivery	\$4.13 / MW per day	\$4.42 / MW per day
Off-Peak Daily Delivery	\$2.94 / MW per day	\$3.15 / MW per day
On-Peak Hourly Delivery	\$0.26 / MW per hr	\$0.28 / MW per hr
Off-Peak Hourly Delivery	\$0.12 / MW per hr	\$0.13 / MW per hr

- Network: \$95.70 / MW per month

Schedule 2 - Reactive Supply & Voltage Control

- Cost of on-line generators to produce or absorb reactive power as needed to maintain acceptable Transmission System voltages
 - Must be procured from MECL

Schedule 2 Rates

- Rates shown are per MW of Reserved Capacity

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$1,736.19 / MW per yr	1/12 th of \$1,535.61 / MW per yr
Monthly Delivery	\$144.68 / MW per mo	\$127.97 / MW per mo
Weekly Delivery	\$33.39 / MW per wk	\$29.53 / MW per wk
On-Peak Daily Delivery	\$6.68 / MW per day	\$5.91 / MW per day
Off-Peak Daily Delivery	\$4.76 / MW per day	\$4.21 / MW per day
On-Peak Hourly Delivery	\$0.42 / MW per day	\$0.37 / MW per hr
Off-Peak Hourly Delivery	\$0.20 / MW per day	\$0.18 / MW per hr

- Network: \$127.97 / MW per month

Schedule 3 – Regulation & Frequency Response

- Required to provide continuous balancing of resources (generation and interchange) with load, and for maintaining scheduled Interconnection frequency at 60 Hz
- Can be self-supplied or procured externally
- Rates are posted on NBTSO website if procured from NB
 - If MECL gets bill from NB on behalf of Transmission Customer, MECL flows costs through directly to customer with no markup

Schedule 3(a) - AGC Rates (1)

- Rates shown are per MW of Monthly Demand (Existing) and Monthly Obligation (Proposed)

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$623.04 / MW per yr	1/12 th of \$99,855.95 / MW per yr
Monthly Delivery	\$51.92 / MW per mo	\$8,321.33 / MW per mo
Weekly Delivery	\$11.98 / MW per wk	\$1,920.31 / MW per wk
Daily Delivery	\$2.40 / MW per day	\$384.06 / MW per day

Schedule 3(a) - AGC Rates (2)

- Billing determinant changed in NB from Demand (2008) to Obligation (2015)
- Costs are essentially equivalent, except for escalation

Calculation from Proxy Unit Cost		2008	2015
Proxy Unit Cost (\$/kW-yr)	a	88.31	99.89
BA Requirement (MW)	b	19	19
Revenue Requirement (\$000/yr)	c=a*b	1677.9	
12NCP Area Load (MW)	d	2693	
OATT Rate (\$/MW-yr)	e=c/d*1000	623.1	
2008 OATT Rate (\$/MW-mo)	f=e/12	51.9	
2015 OATT Rate (\$/MW-mo)	g=a/12*1000		8324.2

- Similar approach for Schedules 3(b), 5, 6(a) and 6(b)

Schedule 3(b) – Load Following Rates

- Rates shown are per MW of Monthly Demand (Existing) and Monthly Obligation (Proposed)

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$1,440.72 / MW per yr	1/12 th of \$99,448.43 / MW per yr
Monthly Delivery	\$120.06 / MW per mo	\$8,287.37 / MW per mo
Weekly Delivery	\$27.71 / MW per wk	\$1,912.47 / MW per wk
Daily Delivery	\$5.54 / MW per day	\$382.49 / MW per day

- AGC & Load Following for non-dispatchable wind generators (3(c)): Rate = \$0.29/MWh.

Schedule 4 - Energy Imbalance Service

- Provided when the actual hourly energy flow across the Interconnection differs from the scheduled hourly energy flow
- Cost based on NB Final Hourly Marginal Cost
- MECL determines responsibility and bills Transmission Customers accordingly
- A tiered penalty band approach will negate incentive to under-schedule
 - Some relief for intermittent generators (exempted from penalties in the third band)

Schedule 5 - Operating Reserve – Spinning Reserve Service

- Needed to serve load immediately in the event of a system contingency
- Typically provided by dispatchable generators that are on-line and loaded at less than maximum output
- Currently applies to MECL & Summerside
- Can self-supply or procure externally
 - Usually procured externally since PEI's dispatchable generation is typically offline

Schedule 5 Rates

- Rates shown are per MW of Monthly Demand (Existing) and Monthly Obligation (Proposed)

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$1,523.28 / MW per yr	1/12 th of \$99,312.59 / MW per yr
Monthly Delivery	\$126.94 / MW per mo	\$8,276.05 / MW per mo
Weekly Delivery	\$29.29 / MW per wk	\$1,909.86 / MW per wk
Daily Delivery	\$5.86 / MW per day	\$381.97 / MW per day

Schedule 6 – Operating Reserve – Supplemental Reserve Service

- Also referred to as ‘non-spinning’ reserve
- Needed to serve load in the event of a system contingency, however is not available immediately to serve load
- Two categories – 10 minute and 30 minute
- MECL and Summerside typically supply their own reserves

Schedule 6(a) – 10 min Supplemental Rates

- Rates shown are per MW of Monthly Demand (Existing) and Monthly Obligation (Proposed)

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$3,272.64 / MW per yr	1/12 th of \$64,600.60 / MW per yr
Monthly Delivery	\$272.72 / MW per mo	\$5,383.38 / MW per mo
Weekly Delivery	\$62.94 / MW per wk	\$1,242.32 / MW per wk
Daily Delivery	\$12.59 / MW per day	\$248.46 / MW per day

Schedule 6(b) – 30 min Supplemental Rates

- Rates shown are per MW of Monthly Demand (Existing) and Monthly Obligation (Proposed)

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$4,054.56 / MW per yr	1/12 th of \$64,600.60 / MW per yr
Monthly Delivery	\$337.88 / MW per mo	\$5,383.38 / MW per mo
Weekly Delivery	\$77.97 / MW per wk	\$1,242.32 / MW per wk
Daily Delivery	\$15.59 / MW per day	\$248.46 / MW per day

Schedule 7 – Long-Term Firm and Short-Term Firm Point-to-Point

- Charged for Firm Point-to-Point Service
- Additional system resources will be added when system cannot meet all Firm obligations

Schedule 7 Rates

- Rates shown are per MW of Reserved Capacity

Time Period	Existing	Proposed
Yearly Delivery (paid per month)	1/12 th of \$27,085.88 / MW per yr	1/12 th of \$30,522.91 / MW per yr
Monthly Delivery	\$2,257.16 / MW per mo	\$2,543.58 / MW per mo
Weekly Delivery	\$520.88 / MW per wk	\$586.98 / MW per wk
On-Peak Daily Delivery	\$104.18 / MW per day	\$117.40 / MW per day
Off-Peak Daily Delivery	\$74.21 / MW per day	\$83.62 / MW per day

- Network: \$2,543.58 / MW per month

Schedule 8 – Non-Firm

Point-to-Point Transmission Service

- Charged for non-firm Point-to-Point service on PEI transmission system
- Provided only when it can be accommodated using existing system resources

Schedule 8 Rates

- Rates shown are per MW of Reserved Capacity

Time Period	Existing	Proposed
Monthly Delivery	\$2,257.16 / MW per mo	\$2,543.58 / MW per mo
Weekly Delivery	\$520.88 / MW per wk	\$586.98 / MW per wk
On-Peak Daily Delivery	\$104.18 / MW per day	\$117.40 / MW per day
Off-Peak Daily Delivery	\$74.21 / MW per day	\$83.62 / MW per day
On-Peak Hourly Delivery	\$6.51 / MW per hr	\$7.34 / MW per hr
Off-Peak Hourly Delivery	\$3.09 / MW per hr	\$3.48 / MW per hr

Schedule 9 – Non-Capital Support Rate Charge

- Direct Assign facilities are built and owned by MECL, paid for by Transmission Customer
- Transmission Customer charged for indirect OM&A component on a Direct Assign facility

	Existing	Proposed	
Rate	1.92%	1.79%	* Based on upfront cost of facility

- MECL also charges Transmission Customer labour and material (at cost) for work completed on Direct Assignment facility

Schedule 10 – Residual Uplift

- Provides for a periodic settlement of expenses and revenues not reflected in other Schedules
 - Penalties for deficiencies
 - Unrecovered replacement capacity costs
 - Unrecovered purchase/sale of emergency energy
- Charged directly to the impacted Transmission Customer
- Calculated each settlement period; historically charges have been infrequent

Differences with NB OATT (2)

- System costs are different, leading to different system charges (Schedules 1, 2, 7-9)
- Schedule 9 (Non-Capital Support Charge Rate) costs much lower on PEI
 - PEI Schedule 9 (1.79%) includes overhead only; maintenance is charged at cost
 - PEI Schedule 9 all-in cost would be 4.19%
 - NB Schedule 9 (5.88%) includes all costs

Timeline & Process

- Updated OATT filed with IRAC in July 2016
- Technical Conference September 22, 2016
- IRAC hearing October 17-21, 2016
- Goal of IRAC approval Q4 2016
- Target updated OATT effective date: January 1, 2017