SHORE POWER RATE

BC HYDRO
333 DUNSMUIR STREET
VANCOUVER, BC

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BC hydro
FOR GENERATIONS

OUTLINE

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SHORE POWER

- Shore power refers to the electrical service provided to commercial ships when berthed in port and connected to a utility's electrical system, receiving electricity from the grid and allowing the ships to shut down their on-board electricity generation
- BC Hydro currently provides shore power service under TS No. 76:
  - Applies to a specific customer (Port Metro Vancouver (PMV)) at a specific site (Canada Place) on a seasonal basis (April to October, inclusive) for a specific category of ships (cruise ships)
  - Terms and conditions were approved by the British Columbia Utilities Commission (BCUC) effective December 19, 2008 (BCUC Order G-197-08)

SHORE POWER: PORT REQUESTS

- Port Authorities are either planning or have already installed shore power facilities in addition to those at Canada Place

  PMV:

  - PMV is planning to implement shore power capabilities at its container facilities in Vancouver and Delta by December 31, 2015
  - PMV has applied for funding for the project under Transport Canada's Shore Power Technology Program for Ports (SPTP) and is in the final stage of negotiations

  Prince Rupert Port Authority (PRPA):

  - PRPA has installed shore power capabilities at its container terminal and is currently awaiting a shore power rate
  - The shore power facilities were tested in October 2014

- Beyond those planned for the immediate term identified above, further expansions are planned at PMV and PRPA

SHORE POWER AT PMV CANADA PLACE

- Princess, Holland Cruise and Disney cruise ships have been retrofitted to receive shore power at PMV Canada Place
- The following table shows the number of connections in 2014 at PMV Canada Place:

2014 Connection Summary		
Canada Place		
	Total	Percent
Actual Connections	76	78%
Missed Connections		
BC Hydro Interruption	5	5%
Other	17	17%
Total Missed Connections	22	22%
Potential Connections	98	100%

INITIATIVES IMPACTING SHORE POWER

- **California**
  - California At-Berth Regulation (2007) requires container ships, reefer (refrigerated cargo) vessels and cruise ships to take shore power while at berth at California ports starting in 2014 or adopt alternative technology that achieves equivalent emission reductions
  - Defines term “California Ports” as Ports of Los Angeles, Long Beach, San Francisco, Oakland and Hueneme
  - More vessels being retrofitted for shore power (50% 2014-2016, 80% 2020+)
  - Increasing numbers of vessels visiting B.C. are equipped for shore power
- **Government of Canada**
  - August 2012: Canadian/U.S. federal governments enacted the North American Emission Control Area under the International Convention for Prevention of Pollution from Ships
  - Providing funding for shore power facilities through Transport Canada’s SPTP
  - Supporting the reduction of vessel emissions through shore power and alternative technologies

JURISDICTIONS PROVIDING SHORE POWER

Port/Utility	Shore Power Service	Voltage	Energy Charge (cents/kWh)	Demand Charge	Other
Port of Juneau/Alaska Electric Light and Power Company (2001)	Non-firm	T	Variable – capped at 10 cents/kilowatt hours (kWh)	None	Service is interruptible depending on surplus hydro power availability
Port of Seattle/Seattle City Light (2005/2006)	Firm*	D	High load hours: 7.17 cents/kWh; low load hours: 4.78 cents/kWh (Large Standard General Service: City)	$2.02 per kilowatt (kW) per month (peak); $0.22 per kW month (off-peak)	* Rates are based on otherwise applicable tariff
PMV/BC Hydro (2009)	Non-firm	D	8.022 cents/kWh (based on RS 1880) x 1.0344 (distribution loss factor) = 8.298 cents/kWh	None	Administration charge: $150 per month
Port of San Francisco/San Francisco Public Utility Commission (2010)	Non-firm	D	16.163 cents/kWh	None	
Port of Los Angeles/City of Los Angeles Department of Water and Power (2010)	Non-firm	D	7.47 cents/kWh (Alternative Maritime Power AMP rate)	$1.43 per kW per month	Administration charge: $150 per month

JURISDICTIONS PROVIDING SHORE POWER

Port/Utility	Shore Power Service	Voltage	Energy Charge (cents/kWh)	Demand Charge	Other
Port of Long Beach/Southern California Edison (SCE) (2011)	Firm	D	Schedule TOU-8 Time of Use General Service Large Summer peak 33 cents/kWh; summer mid-peak 10.4 cents/kWh; summer off-peak 3.7 cents/kWh (Otherwise applicable tariff for existing load) Schedule Maritime Entities at the Port of Long Beach (ME) applies to new growth	Existing load - $6.18 /kW (Schedule TOU-8) (Otherwise applicable tariff for existing load) New Load - Port material surrounding release of Schedule ME rate states demand charge relief of 90% from Schedule TOU-8	Rate discounts based on new port load estimated to be 15% on electricity bills (Schedule ME) As approved by California Public Utilities Commission in March 2014, SCE will install and pay for 66 kV electric facilities to serve new port load. Shore power load appears to be included in the SCE load forecast
Port of Oakland/Board of Port Commissioners (City of Oakland) (2013)	Non-firm	D	None	None	Flat rate $267/hour plus 7.5% city utility tax
Port of Halifax/Nova Scotia Power Incorporated (2013)	Non-firm	T and D	8.96 – 10.08 cents/kWh	None	
Port of San Diego/San Diego Gas and Electric (2014)	Non-firm		* Blended 18-21 cents/kWh (by season for cruise ship)		* Make-up of blended rate to be confirmed
Port of Hueneme /SCE (2014)					To be confirmed

EXISTING SHORE POWER AGREEMENT (TS NO.76)

- Filed as a special contract applicable only to PMV at Canada Place
- PMV is the customer of BC Hydro for non-firm shore service, since PMV owns the infrastructure and dock at the point of delivery for port electricity at Canada Place
- PMV resells power to cruise ships which are considered metered tenants of PMV for the purpose of applying BC Hydro's Electric Tariff

EXISTING SHORE POWER AGREEMENT (TS NO.76)

- Shore service is non-firm. BC Hydro will only supply shore power if it has the energy and capacity to deliver electricity available
- Non-firm energy is priced at the same rate as the RS1880 energy rate, adjusted for losses. RS 1880 is a non-firm service available to Transmission service customers with self-generation
- RS 1880 energy rate is $80.22 per MWh (RS 1823 Tier 2 energy price) (F15)
- There is no demand charge for capacity for shore service at Canada Place:
  - Shore service is non-firm and can be interrupted
  - Load is not included in BC Hydro load forecast
  - No upstream transmission was advanced or built to serve PMV
  - BC Hydro will interrupt the non-firm shore service if the energy and capacity is needed for any reason

EXISTING SHORE POWER AGREEMENT (TS NO.76)

- PMV responsible for all distribution-related capital costs that arise out of incremental infrastructure associated with non-firm shore service
  - civil infrastructure required to install cables from nearest BC Hydro facility to PMV connection points
  - electrical cables from BC Hydro connection points to PMV connection points
  - required substation improvements including protection and control equipment
- Agreement includes operating procedures specifying connection and disconnection procedures in the event of an interruption
- Agreement is for a 10 year term

PROPOSED SHORE POWER RATE

- BC Hydro will be seeking BCUC approval for a generic shore power rate
- Expand eligibility criteria
  - Include both transmission service and distribution general service customer sites
  - A new Shore Power Rate is intended to expand the definition of “eligible vessels” to include cruise ships, container ships, cargo ships, freighters, tankers, bulk carriers, passenger and vehicle ferries, and similar deep-sea vessels
  - A new Shore Power Rate is intended to expand the definition of “port customers” to mean port authorities, terminal operators, wharf operators and dock operators that provide service to “eligible vessels”
  - Service available year around assuming BC Hydro has the energy and capacity

SHORE POWER LOAD CHARACTERISTICS

- Context for options analyzed
- Shore power loads have the following characteristics
  - Loads are naturally interruptible because vessels have on-board generation
  - Shipping loads are often sporadic, low volume and low load factor

PROPOSED SHORE POWER RATE: OPTIONS

- BC Hydro reviewed the default firm service rates (Large General Service RS16xx and Transmission Service RS 1823); however, given that load can be interrupted, shipping customers do not need firm service
  - Demand charges of $6.925 /kVA for RS 1823 and $9.95 /kW for all additional kW above 150 kW for RS16xx are high relative to those few jurisdictions whose shore power rates contain a demand charge
  - Cruise companies have requested shore power service rates comparable with TS No. 76 and other jurisdictions that do not include demand charges
- BC Hydro does not include loads associated with existing non-firm rates (RS 1880, TS No.76) in its load forecast
- Demand charges are problematic for both Port Authorities and shipping companies
  - Because of low load factor, average blended energy and demand rates are high and discourage the use of shore power
  - Port Authorities have commented that demand charges create uncertain unit energy charges due to uncertainty in load factor

PROPOSED SHORE POWER RATE

- The new Shore Power Rate would incorporate the rate design and pricing principles that were approved for TS No. 76 and RS 1880
  - **Electricity service is provided only when BC Hydro has available energy and capacity to do so**
  - The shore power customer is responsible for the cost of extending the BC Hydro system to serve the new load. BC Hydro will build the extension at the customer cost. **No BC Hydro contribution will be provided**
  - TS No. 76 is designed to recover the costs of providing shore power service. This cost-recovery principle continues to be appropriate to protect non-participating ratepayers from harm

TIMING AND 2015 RDA

- Target filing of RDA is summer 2015 and BCUC decision may not be available until 12 months after. This timing would not meet the requirements of PMV or PRPA
- BC Hydro proposes to file shore power rate application in March 2015
  - January-February 2015 stakeholder engagement process
  - BC Hydro available to meet with stakeholders individually or as a group in February 2015 as a follow-up to this workshop and the associated written comment process

PROPOSED SCHEDULE

Action	Date
Workshop	January 28th, 2015
Workshop written comment period/stakeholder meetings	February 20, 2015/February 2015
BC Hydro files application	March 16, 2015
Deadline for Intervener Registration	March 23, 2015
Commission and Interveners Information Request (IR) No. 1	March 31, 2015
BC Hydro response to IR No. 1	April 26, 2015
Submission on suitability of Streamline Review Process (SRP)	May 3, 2015
Assuming agreement on SRP, date of SRP	May 21, 2015

THANK YOU

SEND COMMENTS TO:

bchydroregulatorygroup@bchydro.com

Mail: BC Hydro, BC Hydro Regulatory Group – "Attention 2015 RDA", 16th Floor, 333 Dunsmuir St., Vancouver, B.C. V6B-5R3

FAX: 604-623-4407, "ATTENTION 2015 RDA"

For further information,
please contact:

BC Hydro Regulatory Group: bchydroregulatorygroup@bchydro.com
Tel: (604) 623-4046

Web: www.bchydro.com/about/planning_regulatory/2015-rate-design.html

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