

Export Transmission Service (ETS) Tariff Study – Discussion and Recommendations

Stakeholder Meeting
August 10, 2009



Recap of ETS Tariff Work

- Engaged in discussions with neighbours regarding reciprocal treatment of ETS tariff, including potential tariff elimination.
 - Results of discussions were not overly favourable but nonetheless informed ETS tariff options and study approach.
- Reviewed potential incremental impact of ETS tariff options with respect to HOEP, export revenues, export and import volumes and Ontario market efficiency.
- Aim was not to optimize these parameters; rather, to ascertain the incremental impact on each of these key parameters.
- Reviewed potential incremental impacts on air emissions, given state of current and emerging emissions policies.
- In addition, potential impacts on surplus base-load generation (SBG) events (e.g., magnitude, duration and timing).

Recap of ETS Tariff Work cont...

- ETS tariff design and rate options considered:
 - Option 1 – status quo (baseline scenario),
 - Option 2 – equivalent average embedded network rate,
 - Option 3 – reciprocal tariff treatment,
 - Joint ETS tariff elimination
 - Reciprocal treatment based on avg. embedded network cost, except New York
 - Option 4 – Ontario unilaterally eliminates ETS tariff
 - Unilateral ETS tariff elimination, all hours
 - Unilateral ETS tariff elimination, off-peak hours only

Some Limitations on Review and Analysis

- Contracted generator arrangements and obligations for the most part have been modeled with limited detail (i.e., with the exception of Lennox, and NUGs/CHP resources).
- Strategic bidding behavior within Ontario and within neighboring regions has been modeled in only a rudimentary fashion.
 - Peaking gas units' bids are inflated to reflect strategic bidding on-peak
 - Coal units' bids are reduced to reflect bidding behavior off-peak
- Implications of potential changes in uplift charges and their consequential impacts on export/import transactions are not considered.
- Limited understanding of hydropower output shape in Quebec and New York.
- Some potential transmission constraints into, out of, and inside of Ontario are not modeled. No internal constraints are modeled.

Quantitative Assessment of ETS Tariff Options

Table 1 - Summary of Incremental ETS Tariff Impacts

ETS Tariff Option	Export Volume (GWh)		Import Volume (GWh)		Producer Surplus (\$Millions)		Consumer Surplus (\$Millions)	
	2010	2015	2010	2015	2010	2015	2010	2015
Status Quo	11,715	12,996	5,511	5,259	\$5,971	\$9,999	-	-
Avg. Embedded Network Rate	-35%	-46%	-33%	-35%	-\$214	-\$187	\$207	\$176
Reciprocal Treatment - Joint ETS Tariff Elimination	38%	24%	174%	158%	-\$299	-\$198	\$297	\$192
Reciprocal Treatment - Avg. Embedded Network Cost	1%	-1%	3%	-5%	-\$14	-\$53	-\$5	\$46
Unilateral ETS Tariff Elimination - All-Hours	7%	10%	14%	6%	\$102	\$59	-\$111	-\$56
Unilateral ETS Tariff Elimination - Off-Peak Hours	3%	6%	6%	1%	\$35	\$20	-\$36	-\$18

All dollar values are 2008\$

Quantitative Assessment of ETS Tariff Options

Table 2 - Summary of Incremental ETS Tariff Impacts

ETS Tariff Option	ETS Tariff Revenues (\$Millions)		HOEP (\$/MWh)		Market Efficiency (\$Millions)	
	Test Year 2010	2015	2010	2015	2010	2015
Status Quo	\$11.7	\$13	\$52	\$79	-	-
Avg. Embedded Network Rate	\$27	\$23	-2.5%	-1.4%	-\$7	-\$10
Reciprocal Treatment - Joint ETS Tariff Elimination	-\$12	-\$14	-3.7%	-1.6%	-\$1	-\$6
Reciprocal Treatment - Avg. Embedded Network Cost	\$2	\$2	-0.2%	-0.4%	-\$19	-\$7
Unilateral ETS Tariff Elimination - All-Hours	-\$12	-\$14	1.3%	0.4%	-\$9	\$3
Unilateral ETS Tariff Elimination - Off-Peak Hours	-\$9	-\$10	0.5%	0.2%	-\$1	\$2

All dollar values are 2008\$

Quantitative Assessment of ETS Tariff Options

Table 3 - Summary of Incremental ETS Tariff Impacts

ETS Tariff Option	Cross-Border Emissions					
	Regional NOx(tonnes)		Regional SOx(tonnes)		Regional CO ₂ (thousand tonnes)	
	2010	2015	2010	2015	2010	2015
Test Year	2010	2015	2010	2015	2010	2015
Status Quo	790,349	769,716	2,558,569	2,154,373	873,511	858,314
Avg. Embedded Network Rate	-999	-1,052	-5,547	-1,941	304	196
Reciprocal Treatment - Joint ETS Tariff Elimination	-3,143	287	-15,004	-1,678	1,609	2,067
Reciprocal Treatment - Avg. Embedded Network Cost	-327	-449	-905	606	-516	-342
Unilateral ETS Tariff Elimination - All-Hours	-112	-9	-657	1,347	-130	-75
Unilateral ETS Tariff Elimination - Off-Peak Hours	103	68	22	244	-6	34

Qualitative Assessment of ETS Tariff Options

Table 4 - Qualitative Assessment

ETS Tariff Option	Implementation Impact Tests.			
	Operations & Reliability	Regulatory & Legal	Surplus Base-load Generation Events	
			2010	2015
Status Quo	Impacts manageable. No rules or settlement changes required.	Doesn't appear to violate any of the regulatory and legal tests.	Limited	Limited
Avg. Embedded Network Rate	Potential impacts manageable. Market Rules amendment required.	Doesn't appear to violate any of the regulatory and legal tests.	Moderate	Moderate
Reciprocal Treatment - Joint ETS Tariff Elimination	Potential impacts manageable. No rules or settlement changes required.	Doesn't appear to violate any of the regulatory and legal tests.	Limited	Limited
Reciprocal Treatment - Avg. Embedded Network Cost	Potential impacts manageable. Market Rules and settlement changes required.	Appears to be in conflict with traditional "cost of service" principles for approving or fixing just and reasonable rates.	Moderate	Moderate
Unilateral ETS Tariff Elimination - All-Hours	Potential impacts manageable. No rules or settlement changes required.	Doesn't appear to violate any of the regulatory and legal tests.	Limited	Limited
Unilateral ETS Tariff Elimination - Off-Peak Hours	Potential impacts manageable. No rules changes required; however, minor settlement changes required.	Doesn't appear to violate any of the regulatory and legal tests.	Limited	Limited

- 1. Operations and Reliability**
 - a. Market administration
 - b. Settlement processes
 - c. Market Rules
 - d. Reliability of the IESO-controlled grid

- 2. Legal & Regulatory**
 - a. National Energy Board Fair Market Access provisions
 - b. FERC/DOE non-discriminatory open access transmission tariff provisions
 - c. General Agreement on Tariffs and Trade (GATT)
 - d. North American Free Trade Agreement (NAFTA)

- 3. Surplus Base-load Generation (SBG) Events**
 - a. Observe impacts on SBG events during periods of significant surplus base-load generation resources.

Key Findings and Conclusions

- There is strong nexus between the ETS tariffs and export and import volumes, export revenues, HOEP, and producer and consumer surplus.
 - A lower tariff contributes to increased exports, but imports are generally less affected on an absolute basis. A lower tariff also results in upward pressure on HOEP because external demand and exports from neighbouring markets are expected to rise.
 - Unilaterally eliminating the ETS tariff (i.e., \$1MWh) has relatively moderate impact on exports because the tariff is currently fairly low relative to Ontario's neighbours.
 - Reduction of the ETS tariff tends to increase producer surplus (i.e., facilitates more exports) and reduce consumer surplus consumer surplus is reduced due to the increase in HOEP associated with more export demand.
 - ETS tariff revenues rise in the scenarios that involve tariff increases; while this tends to reduce export volume, under certain scenarios (i.e., Option 2 and Option 3, scenario 2) the reduced exports volumes are more than offset by the higher tariff revenues.
 - While mutual elimination of the ETS tariffs (Option 3, Scenario 1) may be desirable, this will be very difficult to achieve.

Key Findings and Conclusions cont...

- Impacts on SO₂ and NO_x emissions are small as a result of:
 - Ontario's CO₂ policy concurrently reduces those emissions well below their regulated caps irrespective of the ETS tariff scenario.
 - The US Clean Air Interstate Rule (CAIR) policy restricts the emissions of both pollutants in neighboring U.S. regions; however, some scenarios show small increases in regional emissions relative to the status quo (but all scenarios are well below their caps).
 - Under a North American cap-and-trade policy for CO₂ emissions, the ETS tariffs will have no significant effect on North American power system CO₂ emissions (because emissions would be set by the cap).
- Potential operational and reliability impacts are considered manageable. Some settlement changes and Market Rules amendments may be necessary depending on the option approved for implementation.
- Certain options may introduce regulatory and legal issues (e.g., subsidy and inconsistency with OEB cost of service principles) but these appear to be manageable.

IESO Staff Recommendations and Discussion

- Implement an ETS tariff that is based on Option 2 – Average Embedded Network cost.
- Option 2 will yield the largest positive net benefit to Ontario (e.g., total surplus and ETS tariff revenues, etc.), as well as best satisfy the four principles that an “appropriate” ETS tariff must exemplify.
- This tariff design is consistent with similar principles on which export and wheel-through transmission services tariffs are established in neighbouring markets where there are no reciprocal agreements to eliminate the tariff.
- Given that the cost of constructing and operating existing interconnections, as well as new or modified facilities (e.g., new Quebec-Ontario intertie) are paid by Ontario network transmission customers; this appears to be more rational from a fairness and equity perspective.

IESO Staff Recommendations and Discussion cont...

- Since the ETS tariff will be administered equally, this will not have any regulatory or legal issues (e.g., perceived subsidy and inconsistency with the OEB's cost of service principles for approving and fixing just and reasonable rates).
- While observed potential incremental emissions impacts are moderate in either direction, there are generally greater degrees of reductions than increases.
- Potential operational and reliability impacts are manageable, including market rule amendments.
- The potential impact of the ETS tariff on SBG events is at worst moderate.

Principles for Determining Appropriate ETS Tariff

- Reviewed potential impacts of each ETS tariff option to establish an “appropriate” tariff, taking into consideration the following principles:
 - Simplicity of implementation (i.e., implementation challenges and requirements, including potential operations and regulatory and legal issues);
 - Consistency with rates in neighbouring markets (i.e., comparison of ETS tariff and opportunities for convergence with respective neighbours);
 - Fairness and equitability (i.e., comparison of potential impacts on ETS customers and other transmission customers in Ontario); and
 - Market Efficiency (i.e., consideration of potential impacts on the efficient operation of the integrated electricity markets and their affect on Ontario).

Observed Impacts of ETS Tariff on SBG Events

- There were no conclusive SBG events resulting from our re-run (i.e., subsequent to June 25, 2009 stakeholder meeting) of the model and resulting analysis given the set of assumptions considered.
- The analysis however shows that the ETS tariffs can contribute to a reduction in the number of SBG events by facilitating more economical exports. In general, a lower tariff, relative to other transactional charges, will contribute to a greater “basis differential” and more economical trades.
- The effects of the ETS tariffs on observed SBG events are less pronounced during off-peak hours when significant surplus base-load generation is expected to exist (i.e., the price gaps between Ontario and its neighbours are generally greater).
- The extent of the price gaps between Ontario and neighbouring markets will determine how much affect the ETS tariff has on export volumes and consequential SBG events (i.e., the greater the price the gap, the less affect the tariff has on export volumes).

Example Assessment of Impact on SBG Events - Status Quo July 2010

ETS Tariff Option	Observed SBG Events		Period	
	Base-load Manoeuvred (MW)	Duration (Hrs)	Season	Month
Status Quo	0	0	Winter	Jan
	0	0	Winter	Feb
	0	0	Spring	Mar
	0	0	Spring	Apr
	0	0	Spring	May
	0	0	Summer	Jun
	0	0	Summer	Jul
	0	0	Summer	Aug
	0	0	Fall	Sep
	0	0	Fall	Oct

Example July load-blocks	68	69	70
Hours	34	10	5
(1) Load	12,562	11,422	10,937
(2) Net Exports	3,836	4,791	5,218
(3) Pumped Storage	122	122	122
(4) Wind	256	288	249
(5) Hydro	3,465	3,448	3,429
(6) NUGs, CHP and Landfill Gas	1,534	1,534	1,534
(1-3) less (4-6)	11,264	11,065	11,065
Nuclear Base-load	11,065	11,065	11,065
Base-load Manoeuvred	None	None	None

Example Assessment of Impact on SBG Events – Status Quo July 2015

ETS Tariff Option	Observed SBG Events		Period	
	Base-load Manoeuvred (MW)	Duration (Hrs)	Season	Month
Status Quo	0	0	Winter	Jan
	0	0	Winter	Feb
	0	0	Spring	Mar
	0	0	Spring	Apr
	0	0	Spring	May
	0	0	Summer	Jun
	0	0	Summer	Jul
	0	0	Summer	Aug
	0	0	Fall	Sep

Example July load-blocks	68	69	70
Hours	34	10	5
(1) Load (MW)	13,036	11,853	11,350
(2) Net Exports (MW)	3,585	4,814	5,211
(3) Pumping for Pumped Storage (MW)	122	122	122
(4) Wind (MW)	503	564	489
(5) Hydro (MW)	3,500	3,487	3,456
(6) NUGs, CHP and Landfill Gas (MW)	1,446	1,446	1,446
(1-3) less (4-6)	11,293	11,293	11,293
Nuclear Base-load (MW)	11,292	11,292	11,292
Base-load Manoeuvred (MW)	None	None	None