Tariff Design Advisory Group Tutorial
Tariff History Overview: 1996–2018

John Martin, Senior Tariff and Special Projects Advisor

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Topics

- Conventions and eras
- Allocation to demand and supply
- Rate design principles
- Sub-functionalization
- Classification to demand, energy, and customer
- Gridco rate design
- EAL rate design
- AESO bulk system, regional system, and point of delivery charges design
- Discussion and questions

Please ask questions during presentation

Some conventions have been adopted to standardize discussion

- Current terms are used throughout this presentation, even though other terms may have been used in historical tariffs
  - For example, “regional system” is used throughout although previous tariffs used “local system” to refer to the same facilities
- Discussion focuses on historical rate designs used to recover costs of bulk and regional transmission system
  - Costs are approved in tariffs of transmission facility owners
  - Discussion includes allocation, sub-functionalization, and classification of costs, as well as rate design for cost recovery
- Some details are omitted where not significant
  - For example, interruptible load remedial action scheme (ILRAS) costs were allocated and classified differently than other ancillary services costs

ISO tariff has evolved through three main eras

- Grid Company of Alberta (Gridco)
  - Collaboration of ATCO Power, ENMAX, EPCOR, and TransAlta
  - Rates based on Gridco tariffs were in effect from January 1996 to May 2000 (EAL adopted Gridco rates in June 1998)
- ESBI Alberta Ltd. (EAL)
  - Independent for-profit firm selected through competitive process
  - Rates based on new EAL tariffs were in effect from June 2000 to December 2005 (AESO adopted EAL rates in June 2003)
- Alberta Electric System Operator (AESO)
  - Not-for-profit organization combining Power Pool and Transmission Administrator functions
  - Rates based on new AESO tariffs were first in effect in January 2006 and remain in effect today

Allocation has varied over eras and today is established in legislation

Cost Component	Demand	Supply
Gridco		
Wires costs	100%	0%
Non-TFO other costs	100%	0%
Regulated generating unit connection costs	0%	100%
New generating unit connection costs	0%	100%
Operating reserve	100%	0%
Other ancillary services	100%	0%
Voltage control	100%	0%
Losses	50%	50%
Administration	100%	0%

Allocation has varied over eras and today is established in legislation (cont'd)

Cost Component	Demand	Supply
EAL		
Wires costs	58%	42%
Non-TFO other costs	58%	42%
Regulated generating unit connection costs	0%	100%
New generating unit connection costs	0%	100%
Operating reserve	50%	50%
Other ancillary services	50%	50%
Voltage control	50%	50%
Losses	0%	100%
Administration	58%	42%

Allocation has varied over eras and today is established in legislation (cont'd)

Cost Component	Demand	Supply
AESO		
Wires costs	100%	0%
Non-TFO other costs	100%	0%
Regulated generating unit connection costs	0%	100%
New generating unit connection costs	0%	100%
Operating reserve	100%	0%
Other ancillary services	100%	0%
Voltage control	100%	0%
Losses	0%	100%
Administration	100%	0%

Similar rate design principles have been used in all eras

Gridco	EAL	AESO
Recover revenue requirement	Balanced budget	Recovery of revenue requirement
Recognize value of service	Value of service	—
Recover cost of service	Cost of service	Provision of appropriate price signals
Promote efficient use	Efficiency	
Be comparable with adjacent jurisdictions	Comparability	
Avoid undue discrimination	Non-discrimination	Fairness, objectivity, and equity
Promote ease of understanding and acceptance and ease of administration	Stability	Stability and predictability
	Administrative simplicity	Practicality
Support competitive market	—	—

Transmission costs have seen more granular sub-functionalization over eras

Sub-Functionalized Cost	Gridco	EAL	AESO
Wires costs			
Bulk system	☑ 60%	☑ 40%	☑ 41→58%
Regional system	☑ 40%	☑ 60%	☑ 17→22%
Point of delivery			☑ 42→20%
Ancillary services			
Operating reserve	☑	☑	☑
Transmission constraint rebalancing		☑	☑
Voltage control (TMR)			☑
Other system support			☑
Losses	☑	–	–
Administration	☑	☑	☑
Other industry costs		☑	☑

Note: Table includes only costs sub-functionalized to load

Classification has grown more complex over eras

Sub-Functionalized Cost	Gridco	EAL	AESO
Wires costs			
Bulk system	CP	Energy	93% CP 7% Energy
Regional system	NCP	NCP	87% NCP 13% Energy
Point of delivery			87% NCP 13% Cust
Ancillary services			
Operating reserve	NCP	Energy	Energy
Transmission constraint rebalancing			Energy
Voltage control (TMR)			Energy
Other system support		NCP	NCP
Losses	Energy	–	–

Classification has grown more complex over eras (cont'd)

Sub-Functionalized Cost	Gridco	EAL	AESO
Administration	NCP	40% Energy 60% NCP	54% CP 36% NCP 7% Energy 3% Cust
Other industry costs		40% Energy 60% NCP	54% CP 36% NCP 7% Energy 3% Cust

Gridco rate design emphasized contract capacity

- Bulk system costs were recovered through a $/MW charge applied to billing capacity multiplied by on-peak load factor
  - On-peak load factor was used as a proxy for coincidence with system peak demand
    - Minimum of 15% applied if on-peak load factor was greater than zero
- Regional system costs were recovered through a $/MW charge based on billing capacity
  - Billing capacity was greater of contract capacity or 100% ratchet over past five years
  - 100% excess demand charge applied to billing capacity above contract capacity
- Ancillary services and administration costs were recovered as part of regional system costs

EAL rate design recovered more costs through energy charges

- Bulk system costs were recovered through a $/MWh charge based on total metered energy
- Regional system costs were recovered through a $/MW charge based on billing capacity
  - Billing capacity was greatest of highest metered demand, 90% of contract capacity, or 90% declining five-year ratchet
  - Ratchet was 90%-85%-80%-75%-70% in last 1-2-3-4-5 years
- Most ancillary services costs were recovered through a $/MWh basis
  - Billing was based on metered energy × percentage × pool price

AESO bulk system charge is designed on consideration of cost causation

- Bulk system costs are recovered primarily through $/MW demand charge applied to demand coincident with system peak
  - Bulk system costs are classified to demand and energy using a minimum system approach
- In 2006 tariff proceeding, Board approved bulk system charge based directly on cost causation study rather than adjusted as proposed by AESO
  - Board approve recovery of demand-related bulk system costs based on demand during twelve monthly coincident system peaks (12CP)
  - Board rejected IPCAA proposal to use an average of several peak hours based on considerations of complexity

AESO bulk system charge is designed on consideration of cost causation (cont'd)

- In 2007 tariff proceeding, Board approved continuing to recovery bulk system costs primarily using 12CP approach rather than through charge based on billing capacity as proposed by AESO
  - Board concluded that transmission system is planned for peak load and rejected AESO hypothesis that load in every hour is important, due to shortcomings of analysis
  - Board rejected AESO proposal that average system load factor determine energy-related classification and excess system load (above the average) determine demand-related classification
  - Board approved continuing to classify bulk system costs to demand and energy using a minimum system approach
  - Board approved continuation of 12CP rate design based on impact being load shifting rather than avoidance of peak entirely

AESO bulk system charge is designed on consideration of cost causation (cont'd)

- In 2010 tariff proceeding, Commission maintained functionalization and classification approved in 2010 tariff proceeding
  - Commission deferred incorporating results of transmission operating and maintenance cost study due to uncertain impacts of future transmission capital build
- In 2014 tariff proceeding, Commission approved updated cost causation study that included both transmission capital and transmission operating and maintenance costs
  - Interveners unanimously supported negotiated settlement agreement for 2014-2016 cost causation study

AESO bulk system charge is designed on consideration of cost causation (cont'd)

- In 2014 tariff proceeding, Commission maintained recovery of bulk system costs primarily using 12CP approach based on transmission system being primarily planned on the basis of system peak
- In 2014 tariff proceeding, Commission rejected CCA proposal to recover bulk system costs on greater of coincident metered demand or 85% of highest metered demand in on-peak hours
  - Commission accepted that there is considerably more diversity on the bulk system than indicated by an 85 per cent on-peak load factor
- In 2014 tariff proceeding, Commission rejected UCA proposal to classify costs of non-load-driven "special projects", at least in part, as energy-related, due to cost causation drivers for those projects being the same as for historical projects

AESO regional system charge is designed on consideration of cost causation

- Regional system costs are recovered primarily through $/MW demand charge applied to billing capacity
  - Regional system costs are classified to demand and energy using a minimum system approach
  - Billing capacity is greatest of highest metered demand, 90% of contract capacity, or 90% two-year ratchet
    - Ratchet revision was based on increasing operational flexibility for market participants while preserving revenue stability
- In 2007 tariff proceeding, Board approved billing capacity use in regional system rate design, based on regional system exhibiting considerably less diversity than bulk system

AESO regional system charge is designed on consideration of cost causation (cont'd)

- In 2010 tariff proceeding, DUC proposed that some local system costs be recovered on coincident peak basis
  - DUC proposal was contingent on adoption of transmission operating and maintenance cost study; deferral of that adoption resulted in no need for Commission to comment on DUC's proposal
- In 2010 tariff proceeding, DUC proposed that all transmission assets in cost causation study should be valued at replacement cost new (RCN)
  - Commission was not persuaded that use of RCN rather than historical cost would necessarily have significant impact on transmission sub-functionalization

AESO regional system charge is designed on consideration of cost causation (cont'd)

- In 2014 tariff proceeding, DUC proposed that some regional system costs be recovered based on distance from 240 kV bulk system
  - Commission rejected DUC proposal as non-compliant with "postage stamp" tariff requirements of the *Electric Utilities Act*

AESO point of delivery charge is designed on consideration of cost causation

- Point of delivery costs are recovered through $/MW demand charge applied to billing capacity and through $/month customer charge
  - In 2006 tariff proceeding, Board approved rate design based directly on cost causation rather than treat customer-related cost as demand-related as proposed by AESO
  - Point of delivery costs are classified to demand and customer using a point of delivery cost function based on analysis of historical connection projects
    - Point of delivery cost function has been refined in successive tariff proceeding, including incorporation of upgrade projects in 2010 tariff
    - Point of delivery cost function is also used to develop maximum level of investment to ensure alignment between point of delivery charge and investment

Discussion

- Questions?

For more information

- John Martin
  Senior Tariff and Special Projects Advisor
  john.martin@aeso.ca
  403-539-2465
- Tariff Design Advisory Group information and related documents are posted on AESO website
  - Rules, Standards and Tariff ► Stakeholder engagement ► ISO Tariff Design for Allocating Costs of Capacity Procurement and Bulk and Regional Transmission

Thank you