Capacity Market Cost Allocation Analysis (CCAA) Working Group Update

July 4, 2019

John Martin, Working Group Chair
Tariff Design Advisory Group, Calgary

Basis for cost allocation rate ranges in footnote below table on slide 10 updated from July 4 presentation

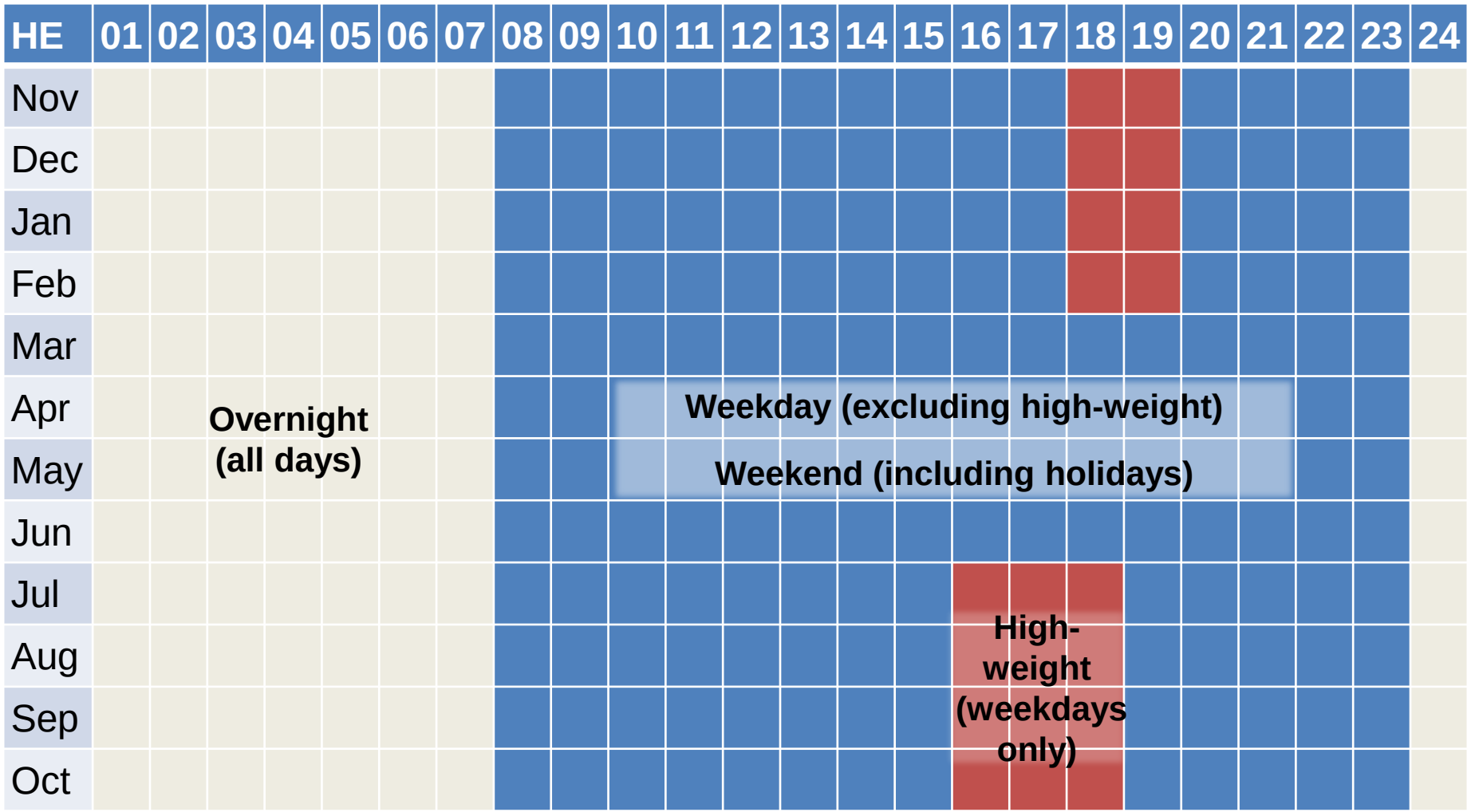
Topics

- Time blocks
- Weights
  - Economic efficiency analysis
- Rate sheet
  - Applicability and terms
- Questions and answers

Please ask questions for clarity during slides.

Discussion of support and opposition should be held until presentation is complete.

Working group continues to recommend "Option K" time blocks from April 15



High-weight: 411 hours
Weekend (light-weight): 1,856 hours

Weekday (medium-weight): 3,573 hours
Overnight (light-weight): 2,920 hours

Working group examined rates with shorter weekend time block

- Shorter weekend (light-weight) time block affected rates in multiple time blocks
  - Small increase (≈$1/MWh) in weekday rate
  - Material increase (≈$3–5/MWh) in weekend rate, over fewer hours
  - Small increase (≈$0.5–1/MWh) in overnight rate, over more hours
- Shorter weekend time block did not improve hours having “reasonably similar” expected unserved energy in time blocks

Working group recommends weights be based on net-CONE procurement volume

- Alberta's resource adequacy standard is a minimum that must be continually met
- Working group recommends that expected unserved energy be determined at the capacity volume associated with the net-CONE price level (rather than at the gross minimum procurement volume)
  - Capacity volume at net-CONE price level is equal to 106% of net minimum procurement volume, which can be interpreted as the long-run equilibrium
  - Capacity volume at net-CONE price level is the quantity that is consistent with the estimated marginal cost of supply
  - It is expected that the capacity market will clear at various points along the demand curve with entry and exit from the market

Unserved energy at net-CONE volume continues to support time blocks

HE	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Sum
Nov	-	-	-	-	-	1	1	2	1	1	1	3	1	1	2	2	3	**6**	**3**	3	3	1	1	-	36
Dec	-	-	-	-	-	-	1	-	1	-	-	-	2	-	-	2	1	**4**	**6**	1	2	-	-	-	20
Jan	-	-	-	-	-	-	-	1	1	-	1	2	-	1	-	1	4	**5**	**4**	7	3	-	-	-	30
Feb	-	-	-	-	-	-	1	3	4	3	6	3	3	4	4	2	2	**5**	**8**	6	4	4	-	1	63
Mar	-	-	-	-	-	-	-	1	1	-	1	1	-	-	1	-	-	1	1	1	1	-	-	-	9
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	2
May	-	-	-	-	-	-	-	-	-	1	-	2	-	-	1	2	3	2	-	-	-	-	-	-	11
Jun	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	3	3	1	1	-	-	1	-	13
Jul	-	-	-	-	-	-	-	-	-	-	-	1	3	6	8	**8**	**13**	**11**	5	2	-	-	-	-	57
Aug	-	-	-	-	-	-	-	-	1	1	1	1	2	5	5	**8**	**10**	**6**	3	2	1	1	1	-	48
Sep	-	-	-	-	-	-	-	-	-	-	2	1	3	2	3	**5**	**9**	**3**	6	1	2	-	-	-	37
Oct	-	-	-	-	-	-	-	1	3	2	2	5	5	4	5	**3**	**5**	**6**	2	8	6	1	1	-	59
Sum	**-**	**-**	**-**	**-**	**-**	**1**	**3**	**8**	**12**	**8**	**15**	**19**	**20**	**23**	**31**	**34**	**53**	**52**	**39**	**32**	**23**	**7**	**4**	**1**	**385**

Values are count of hours with unserved energy contribution greater than 0.0830% per hour, on non-holiday weekdays

Unserved energy at net-CONE volume results in higher high-weight rate

Time Block	Hours	Minimum Procurement Volume		Net-CONE Procurement Volume	
		EUE/hour	Rate ($/MWh)	EUE/hour	Rate ($/MWh)
High-weight	411	0.0646%	$79.70	0.0853%	$104.70
Weekday	3,573	0.0170%	$21.00	0.0155%	$19.00
Weekend	1,856	0.0063%	$7.80	0.0046%	$5.70
Overnight	2,920	0.0003%	$0.30	0.0003%	$0.40
All hours	8,760	0.0114%	$14.80	0.0114%	$14.80

- *Rates based on capacity market costs of $1.0 billion for first obligation period*
- *Weights based on 1× multiplier for all time blocks*

AESO plans to propose cost allocation with 1× multiplier for all time blocks

- Proposal based on economic efficiency considerations for different multiplier alternatives
- Weights based on 1× multiplier for all time blocks achieve cost causation by aligning price signals with the contribution to capacity market costs in each time block
  - Capacity procurement is based on expected unserved energy
- 1× multiplier for all time blocks results in combined energy and capacity prices that are similar on average to historic energy market prices in each time block
  - Loads have historically reduced consumption at price levels expected under the 1× multiplier for all time blocks
  - High-weight multipliers greater than 1× result in combined energy and capacity peak prices substantially higher than historic energy market levels in the high-weight time block

AESO plans to propose cost allocation with 1× multiplier for all time blocks (cont'd)

- Expected unserved energy is already concentrated in the high-weight time block
  - High-weight multiplier greater than 1× is not necessary to incentivize efficient behaviour
- Working group could not reach consensus on multipliers to apply to unserved energy in time blocks

AESO considers 1× multiplier for all time blocks results in reasonable prices

Time Block	Historic Pool Price ($/MWh)	Mitigated Pool Price ($/MWh)	Cost Allocation Rate ($/MWh)	Combined Price ($/MWh)
2014				
High-weight	$129	$51	$52-157	$103-208
Weekday	$67	$41	$10-29	$51-70
Weekend	$49	$36	$3-9	$39-45
Overnight	$27	$26	$0-1	$26-27
2018				
High-weight	$99	$71	$52-157	$123-228
Weekday	$65	$53	$10-29	$63-82
Weekend	$43	$40	$3-9	$43-49
Overnight	$34	$33	$0-1	$33-34

- *Cost allocation rate ranges based on capacity market costs ranging from $0.5 billion to $1.5 billion for first obligation period*
- *Weights based on 1× multiplier for all time blocks*

Basis for cost allocation rate ranges in footnote below table updated from July 4 presentation

AESO considers high-weight multiplier greater than 1× is not necessary

Time Block	Base (1×) Rate Range	3× High-Weight EUE/hr		6× High-Weight EUE/hr	
		Multiplier	Rate Range	Multiplier	Rate Range
High-weight	$52-157	3×	$91-273	6×	$111-334
Weekday	$10-29	1×	$6-17	1×	$3-10
Weekend	$3-9	1×	$2-5	1×	$1-3
Overnight	$0-1	1×	$0	1×	$0
Total	$7-22	–	$7-22	–	$7-22

- *Rate ranges based on capacity market costs ranging from $0.5 billion to $1.5 billion for first obligation period*

Rate ACC – Allocation of Capacity Market Costs

- Rate ACC applies to system access service provided under:
  (a) Rate DTS, *Demand Transmission Service*
  (b) Rate FTS, *Fort Nelson Demand Transmission Service*
  (c) Rate DOS, *Demand Opportunity Service*
  (d) Rate XOS, *Export Opportunity Service*
  (e) Rate XOM, *Export Opportunity Merchant Service*
- In addition, Rate ACC applies to the owner of an electric distribution system who pays charges to the ISO in accordance with the *Isolated Generating Units and Customer Choice Regulation*
  - *Isolated Generating Units and Customer Choice Regulation* requires owner to pay "as if the isolated community were being provided with system access service via the interconnected electric system"

Rate ACC – Allocation of Capacity Market Costs (cont'd)

- The ISO must determine the energy in each time block in a settlement period, for each system access service provided under Rate DTS, as metered energy for the Rate DTS system access service plus electric energy supplied by a generating unit or aggregated generating facility that:

  (A) is not an isolated generating unit as defined in the *Isolated Generating Units and Customer Choice Regulation*;

  (B) is connected to the electric distribution system at the Rate DTS point of delivery; and

  (C) has the electric energy it generates measured on an hourly basis through metering equipment approved for determining a charge under the *Electricity and Gas Inspection Act*

Work remaining to be completed

- Examination of impact on individual consumer bills
- Estimate of deferral account magnitude arising from volume variances

Questions and further discussion

Thank you