# AESO 2017 ISO Tariff Consultation

July 7, 2016
AESO Office, Calgary

# Teleconference Details

Within Calgary calling area:

403-410-3051, Conference ID 4366631

Outside of Calgary calling area:

1-855-453-6957, Conference ID 4366631

# Agenda

- Introduction and objectives (slide 4)
- Applications Currently in Progress (slide 5)
- Topics proposed for 2017 Tariff Application (slides 6-10)
- Energy Storage – Tariff Treatment (slides 11-33)
- Rider C/DAR/Rates Update (slides 34-36)
- Consultation process and next steps (slides 37-39)
- Discussion and wrap-up (slide 40)

**Please feel free to ask questions during presentation**

# Stakeholder Session Objectives

- Enhance understanding of ISO tariff application
- Share information prior to filing of 2017 ISO tariff application
- Feedback to ensure tariff application provides all information stakeholders require
- Identify timeline risks for early 2017 filing

# Applications Currently in Progress

- Directions 5-8 on advancement costs and related provisions
  - Decision 3473-D02-2015 issued on August 26, 2015
  - Process letter issued on October 22, 2015 with additional information on process in the new year [2016]
  - Awaiting Commission follow-up
- AESO's 2015 Deferral Account Reconciliation Application
  - Currently before the Commission in Proceeding 21735
  - Interim settlement requested for August 2016
  - Two issues: timing and treatment of primary service credit
- Interim loss factors in Rates STS, DOS, IOS, XOS
  - Currently before the Commission in Proceeding 790
  - New methodology expected to become available in 2016

# Topics Proposed for 2017 Tariff Application

- Not proposing any rate structure changes
- Refinements to connection process in Sections 4 and 5 of terms and conditions
  - Associated refinements to Sections 8 and 9
- In response to Commission directions the AESO will address:
  - Contract capacity versus installed capacity for point of delivery cost function
  - Rider C and deferral accounts
  - Cost responsibility for generator compliance with the CIP Alberta reliability standards

# Update Rates and Investment Levels

- Update transmission cost causation study using previous 2014 ISO tariff application methodology – initiated
  - For years 2018-2020
- Update point-of-delivery (POD) database – initiated
  - Update primary service credit ratio
- Tariff application will be based on 2017 revenue requirement
  - Will be updated with 2018 revenue requirement in compliance filing
- Bill impact analysis
- Rider J – Wind Forecasting Service Cost Recovery Rider

# Terms and Conditions
# Sections 4, 5, 8 and 9

**Reason**: Alignment with Commission Decision 3473-D02-2015 (Compliance with Directions 5 through 8)

- Address implications for system access, planning and forecasting
- AESO's continuing process to improve and refine the connection process
- Will defer to Commission-initiated proceeding (proceeding #) if started before filing of 2017 tariff application

# Terms and Conditions Miscellaneous Revisions

- Update section 10 to include Generating Unit Owner's Contribution (GUOC) rates
- Sections 4 and 5 to address revisions to tariff to align with Market Participant Choice (MPC) and Abbreviated Need Identification Document (ANID) programs
- Clarify for energy storage
- To provide transmission-connected distribution service customer an opportunity to deal directly with a TFO for a connection project
  - Financial obligation and construction contribution provisions that refer to the obligation of the TFO and the market participant
- Updates to Proformas (Appendix B) to reflect current AESO processes

# Topics on horizon

- Section 11 – Ancillary Services
  - Review given fairly recent Commission decision on Transmission Constraint Management and length of time since negotiation
- Rider A1 – Transmission Duplication Avoidance Adjustment, Dow Chemical Canada Inc. / Dow Hydrocarbons / ASU2
  - Review given the “Forecast Benefit to ISO” year ends at 2021
- Climate Leadership Plan / Renewables Procurement
  - No knowledge of impact on tariff and will update if necessary when policy impacts are known

# Application of ISO tariff to energy storage was identified as an issue early in initiative

- AESO launched energy storage integration initiative in September 2012
- AESO published issue identification paper in June 2013
  - Technical standards for connection and operation of energy storage
  - Application of ISO tariff to energy storage
  - Technical requirements for provision of ancillary services
  - Asset classification
  - Application of market rules to energy storage

# AESO established energy storage work group to discuss and prioritize issues

- Work group identified top three priority issues
  - Develop technical and operating requirements to connect and operate energy storage
  - Determine appropriate tariff treatment for energy storage
  - Review technical requirements for provision of operating reserve by energy storage

# Priority issue options were summarized in discussion paper published May 2014

- AESO began developing rules for technical and operating requirements
  - Battery facility rules became effective in April 2016
  - Existing rules applicable to other energy storage technologies
- AESO proposed review of requirements for ancillary services
  - Ensure technology neutrality
  - Consider reducing minimum unit size requirements
  - Consider shortening continuous real power requirement
  - Consider new ancillary services products
  - Consider energy storage providing intertie restoration services
  - Assess application of energy offer submission rules
  - Assess asset classification for energy storage

# Discussion paper included review of tariff treatment

- ISO tariff reflects legislative requirements and Commission decisions
- Rates DTS and STS apply to sites with load and generation facilities
- Separate class of service for energy storage justified only if different costs are imposed on transmission system
- No justification to treat energy storage solely as generators
- Application of Rates DTS and STS to energy storage would need demonstration of appropriate cost causation basis
- Energy storage could not rely on Rate DOS to be a commercially viable operation

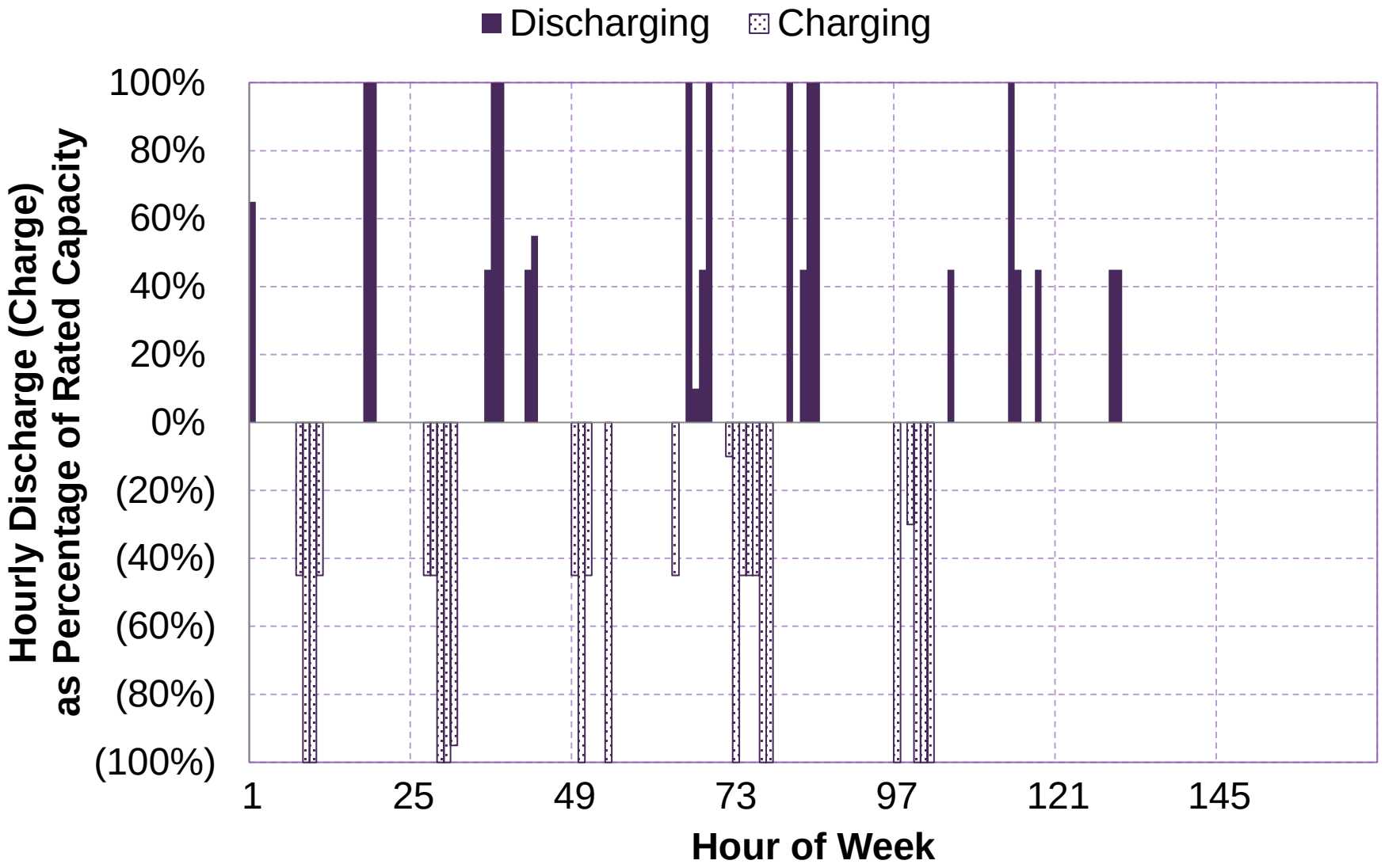
# Further tariff work proposed in recommendation paper in June 2015

- Legislation review concluded that energy storage which offers in energy or ancillary services market cannot be a rate regulated transmission facility
  - Energy storage could be a transmission facility to meet reliability requirements but would not offer in markets
- Further study required to assess if Rates DTS and STS would be appropriate for energy storage
- Operational and economic dispatch study proposed to examine how costs should be attributed to energy storage
  - Technical parameters based on input from energy storage project proponents
  - Dispatch modelling completed by University of Calgary
  - Assessment of cost causation completed by AESO

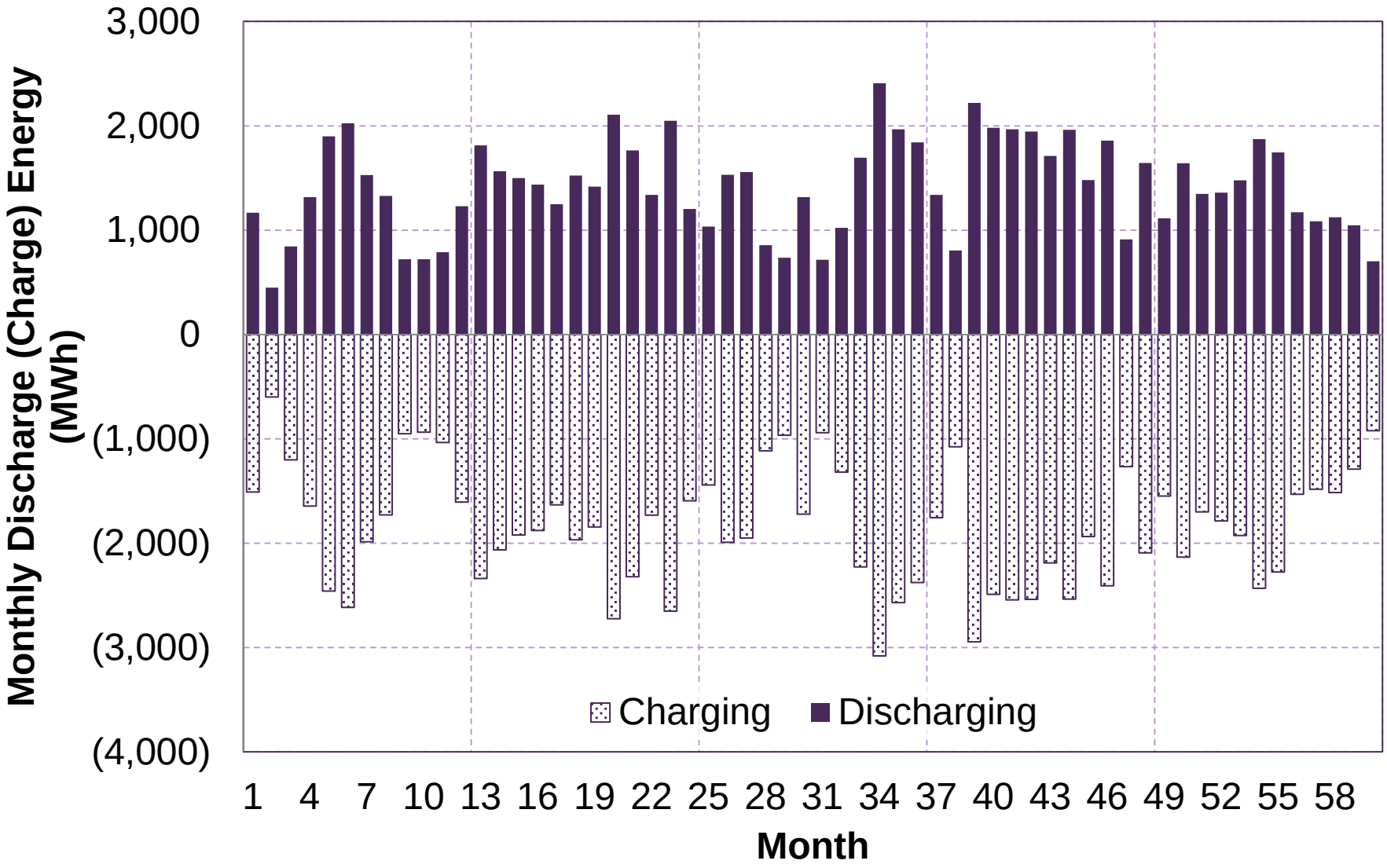
# University of Calgary completed dispatch modelling study in May 2016

- Dispatch modelling study report posted in June 2016
  - Modelled the operation of eight energy storage facilities comprising different technologies and sizes
  - Based on actual hourly merit orders over 260 weeks from January 2010 to December 2014
  - Predicted operation of energy storage attempting to maximize profit through energy price arbitrage
- Comprehensive set of results provided to AESO
- Examples, trends, and observations provided in report

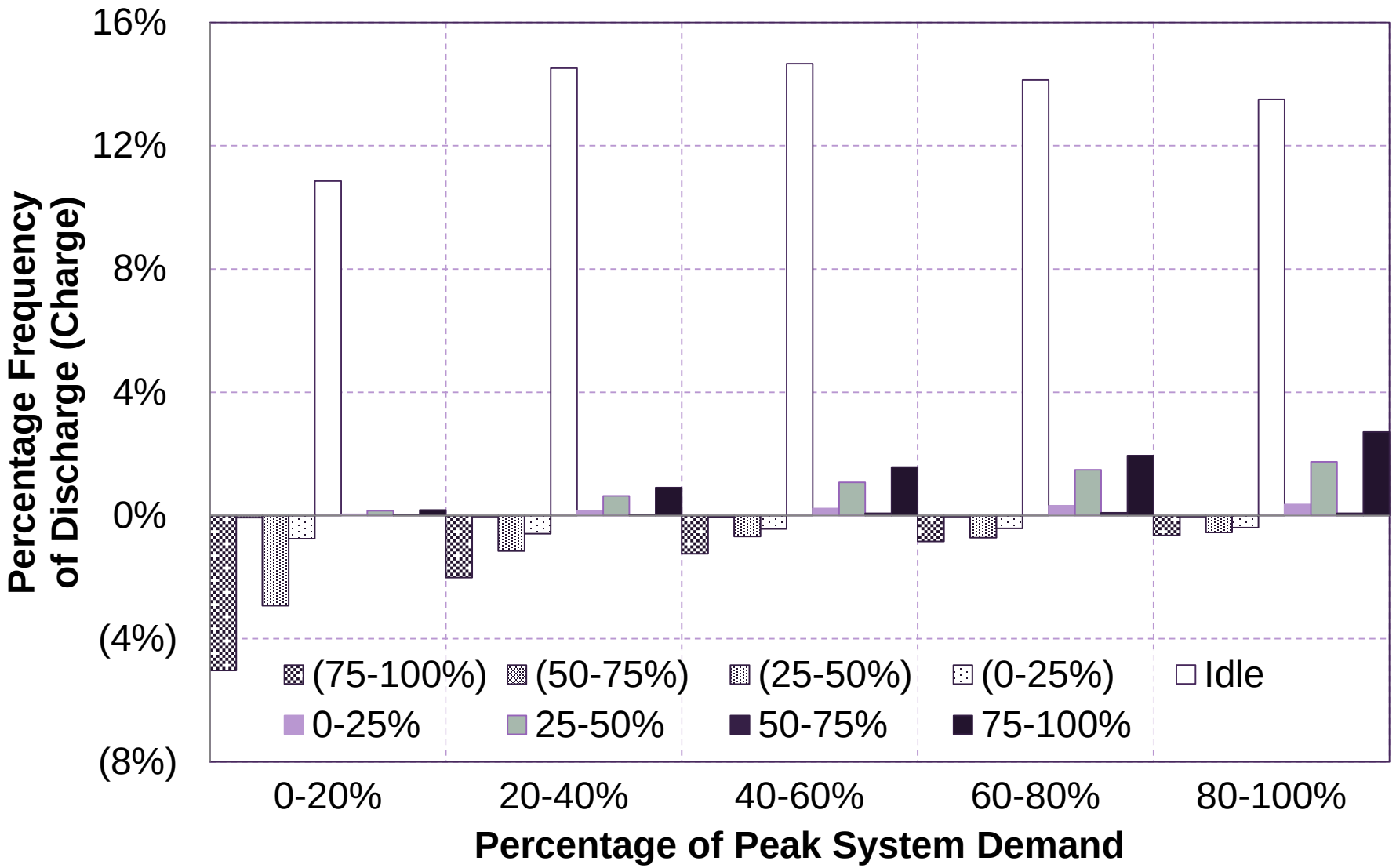
# Dispatch modelling showed typical daily discharge-charge cycle



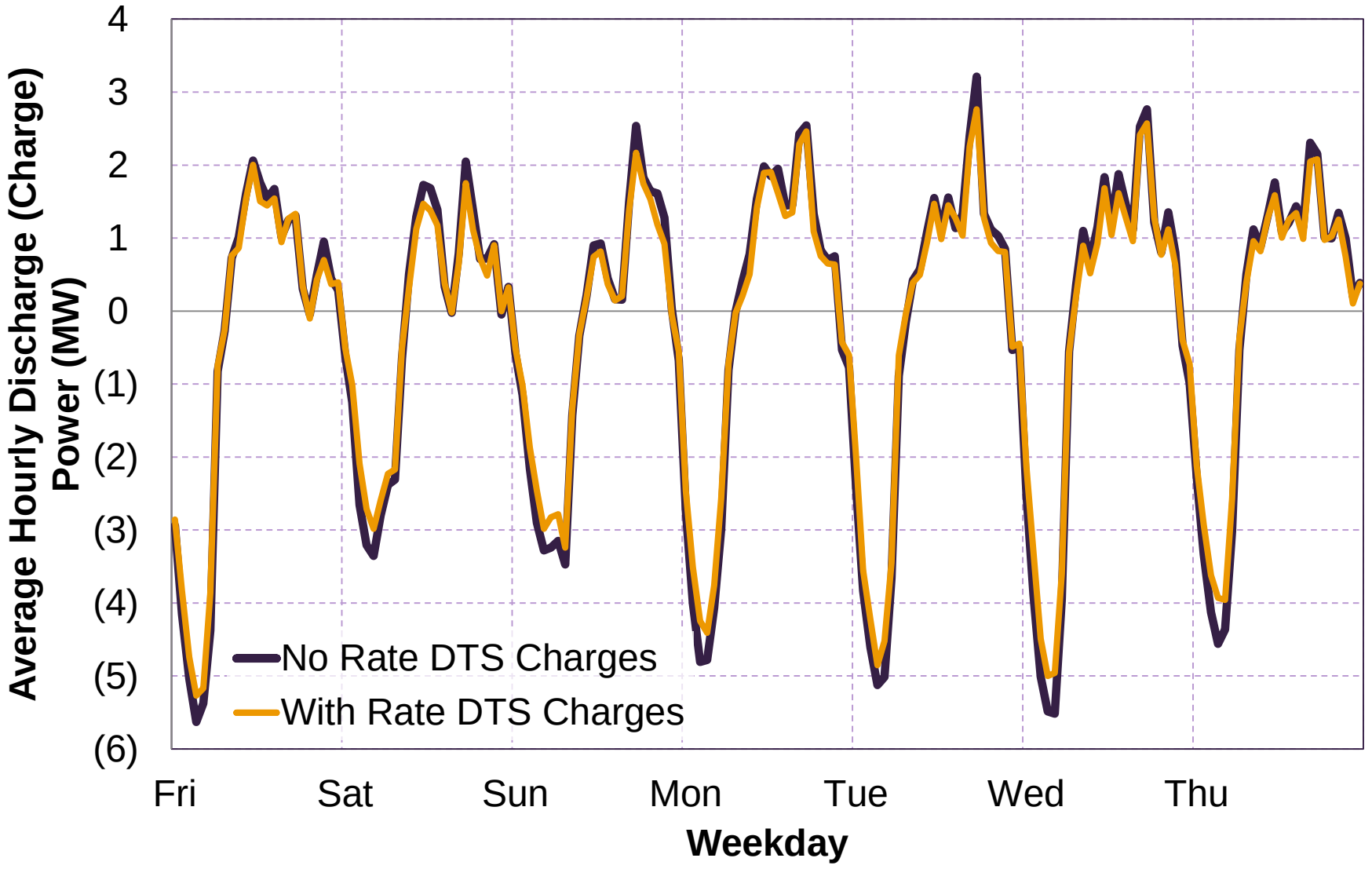
# Dispatch modelling showed large monthly variability with no strong seasonal pattern



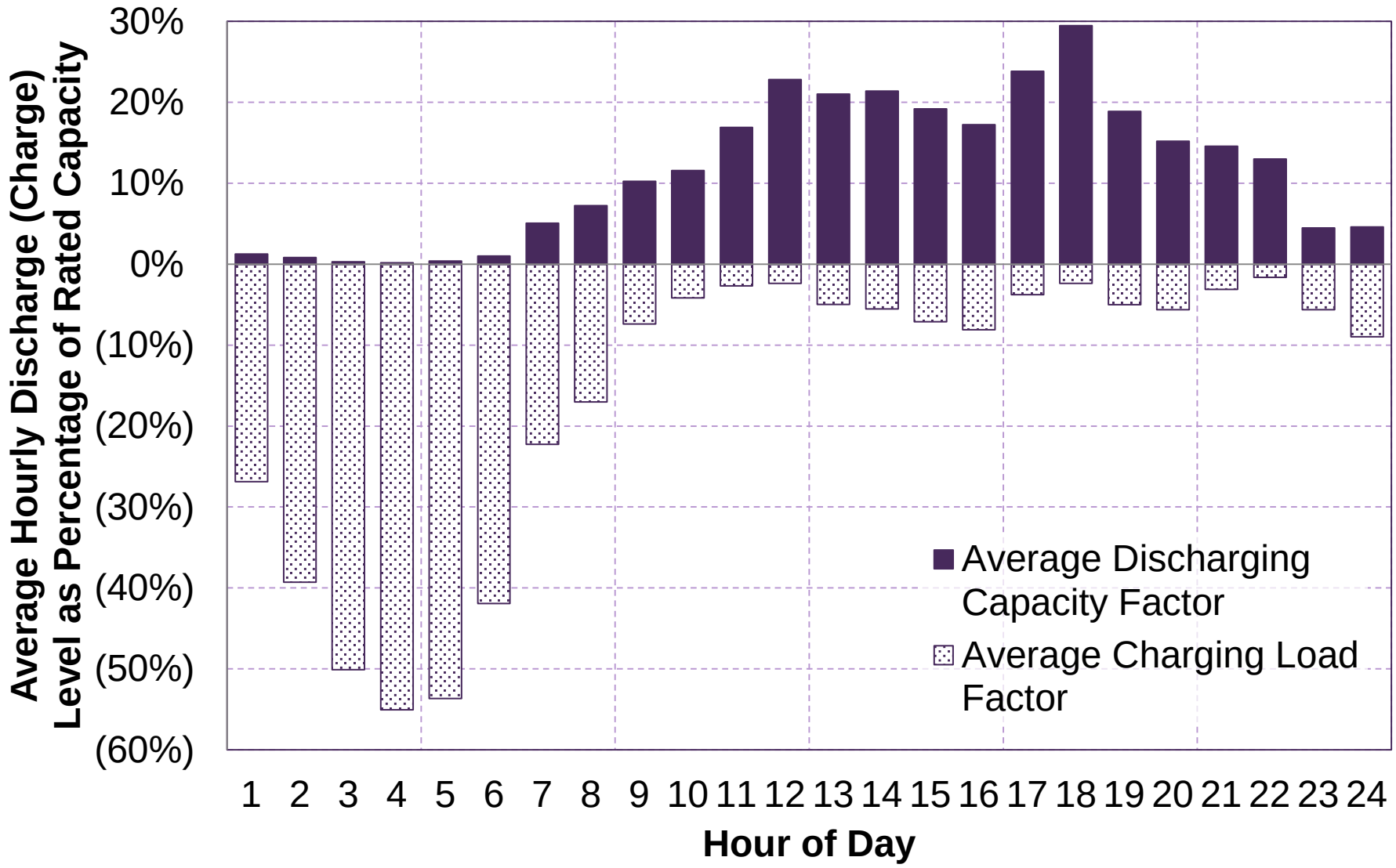
# Dispatch modelling showed indirect correlation with system demand



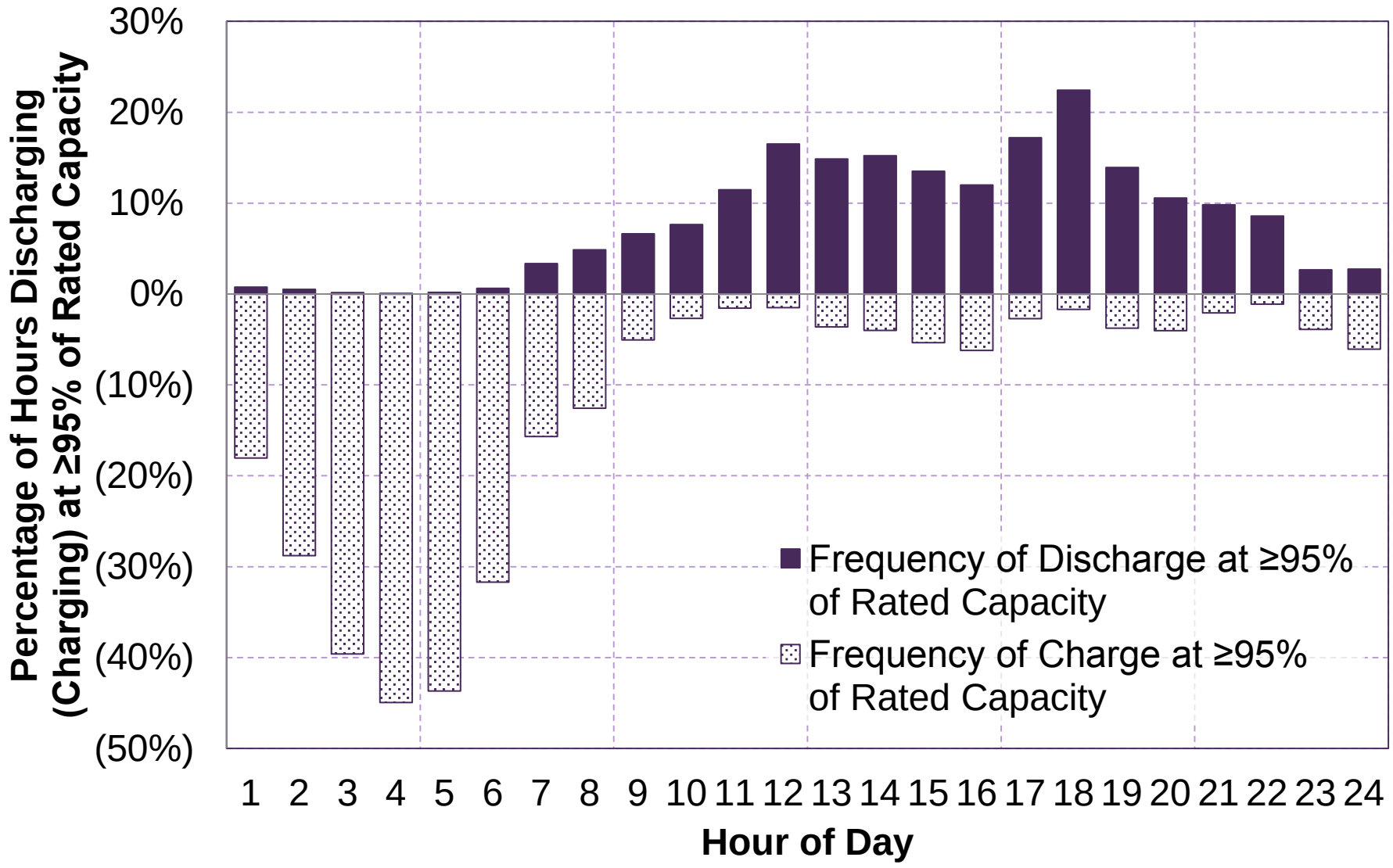
# Rate DTS charges had a small impact on power flow



# Hourly load factor when charging averaged from less than 10% to more than 50%



# Charging at rated capacity occurred for up to 6% of daytime hours



# Cost causation considerations for energy storage are similar to those for load

- Cost causation basis for bulk system charge is coincidence with system peak
  - The Commission has found that system peaks are important in the planning of the bulk transmission system [Decision 2007-106]
  - If an energy storage facility charges during system peak, it could cause bulk system costs
- Cost causation basis for regional system charge is load in any hour
  - The Commission has directed the AESO to use NCP [non-coincident peak] demand, together with a ratchet, to collect regional system costs [Decision 2007-106]
  - If an energy storage facility charges in any hour, it could cause regional system costs

# Cost causation considerations for energy storage are similar to those for load (cont'd)

- Cost causation basis for point of delivery charge is load in any hour
  - The Commission has directed the AESO to use a multi-tiered NCP [non-coincident peak] demand, together with a ratchet, to collect point of delivery costs [Decision 2007-106]
  - If an energy storage facility charges in any hour, it could cause point of delivery costs
- Cost causation basis for operating reserve charge is load in the hour in which costs are incurred
  - The Commission has approved the hourly allocation of operating reserve costs [Decision 2010-606]
  - Contingency reserve volumes vary directly with hourly load and hourly generation [Reliability Standard BAL-002-WECC]

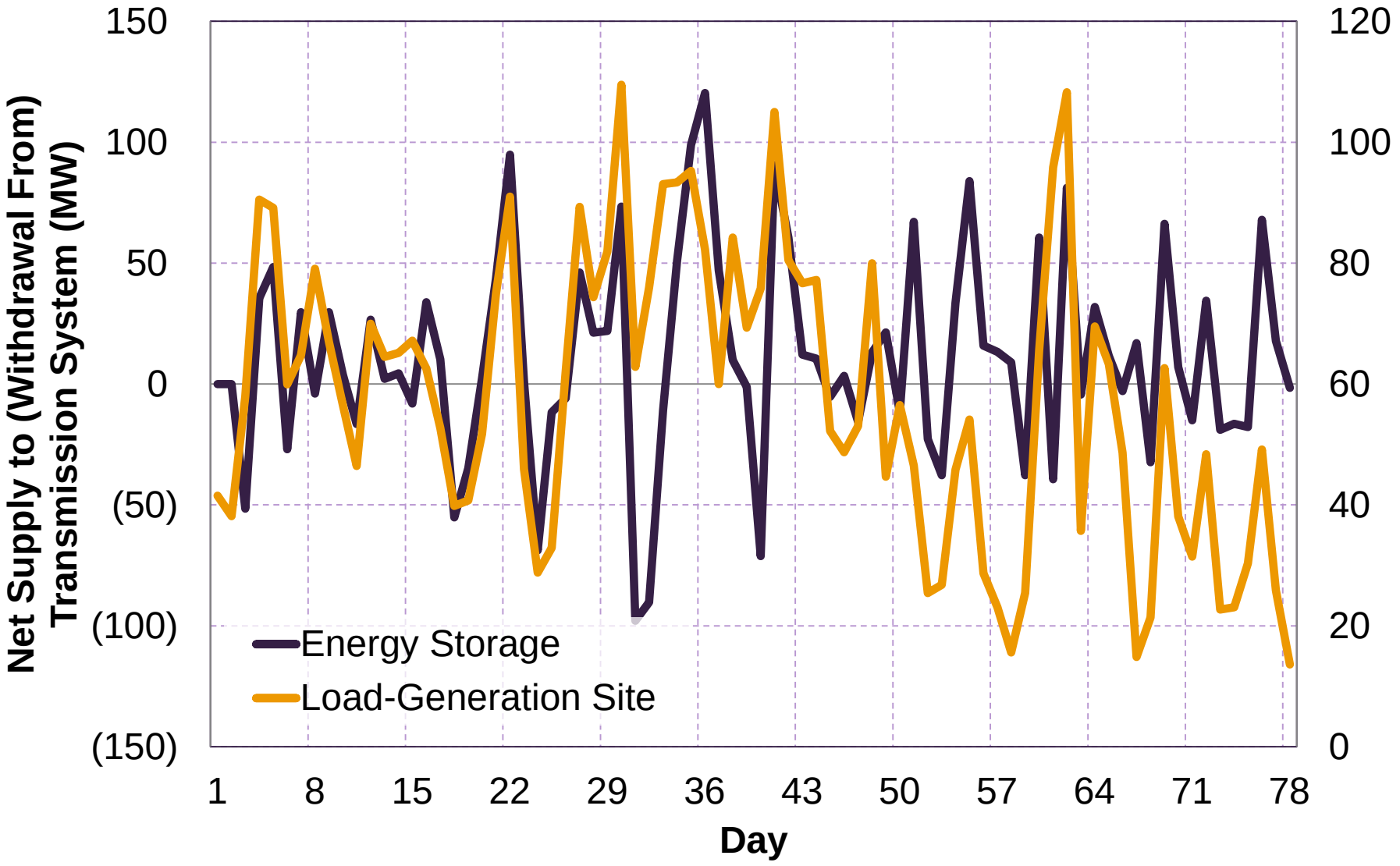
# Cost causation considerations for energy storage are similar to those for load (cont'd)

- Cost causation basis for transmission constraint rebalancing charge is load in the hour in which costs are incurred
  - The Commission has approved the hourly allocation of constraint rebalancing costs [Decision 20623-D01-2015]
- Voltage control charge recovers transmission must-run costs as a variable cost through a $/MWh energy charge [Decision 2005-096]
  - Cost causation basis reflects variable nature of transmission must-run costs that are impacted by many factors
- Other system support services charge recovers miscellaneous fixed costs through a $/MW demand charge [Decision 2005-096]
  - Cost causation basis reflects fixed nature of costs

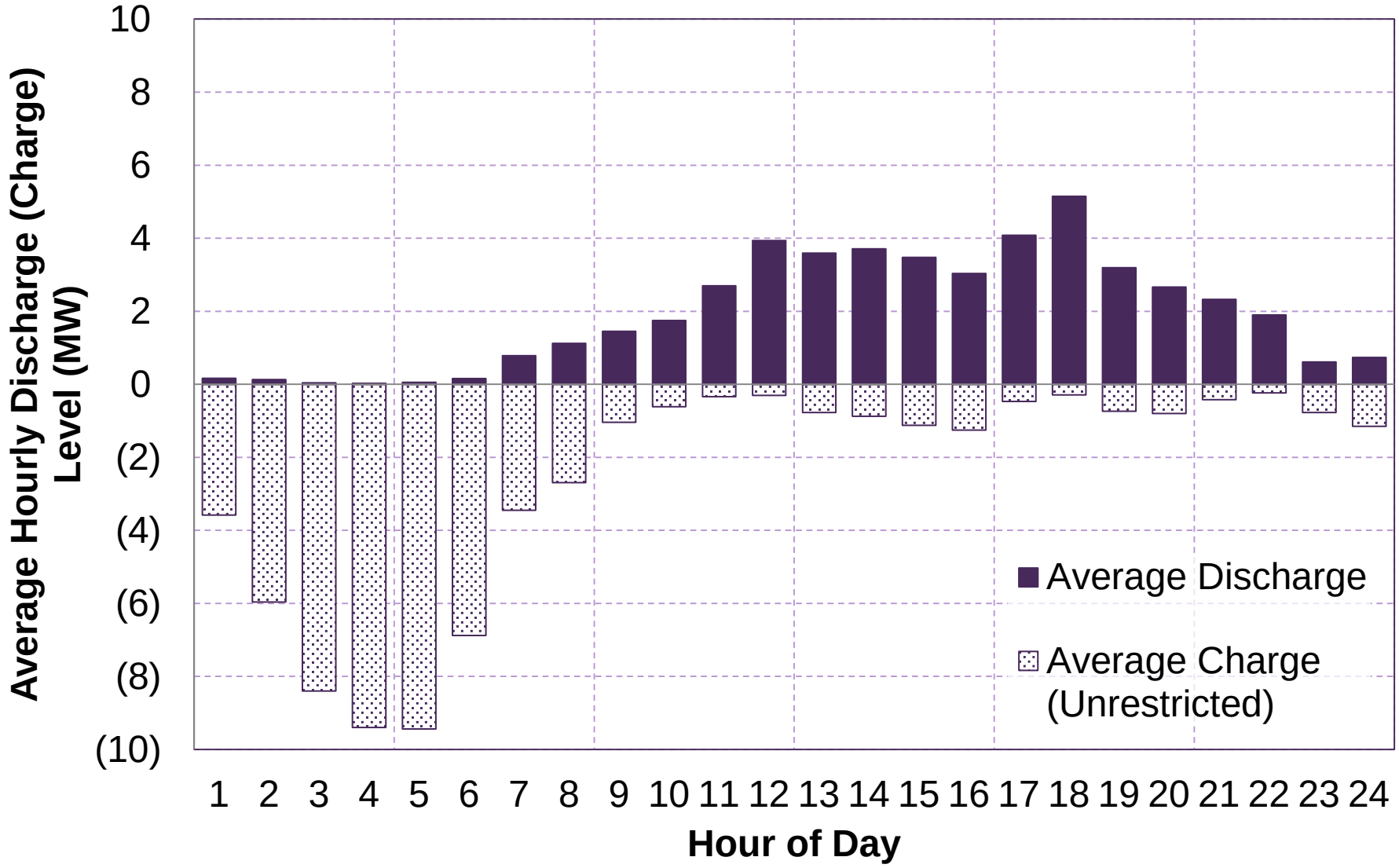
# Cost causation review suggests Rate DTS appropriately applies to energy storage

- Rate DTS would apply only in hours in which an energy storage facility is charging
  - Rate STS would apply in hours in which it is discharging
- Many of the components of Rate DTS can be avoided or reduced by the energy storage participant
- The Commission has previously found the combination of Rates DTS and STS to be appropriate for sites that include load and generation
  - The Commission expressed concerns that a standby rate may not accurately reflect the costs that may be imposed by standby loads [Decision 2007-106]

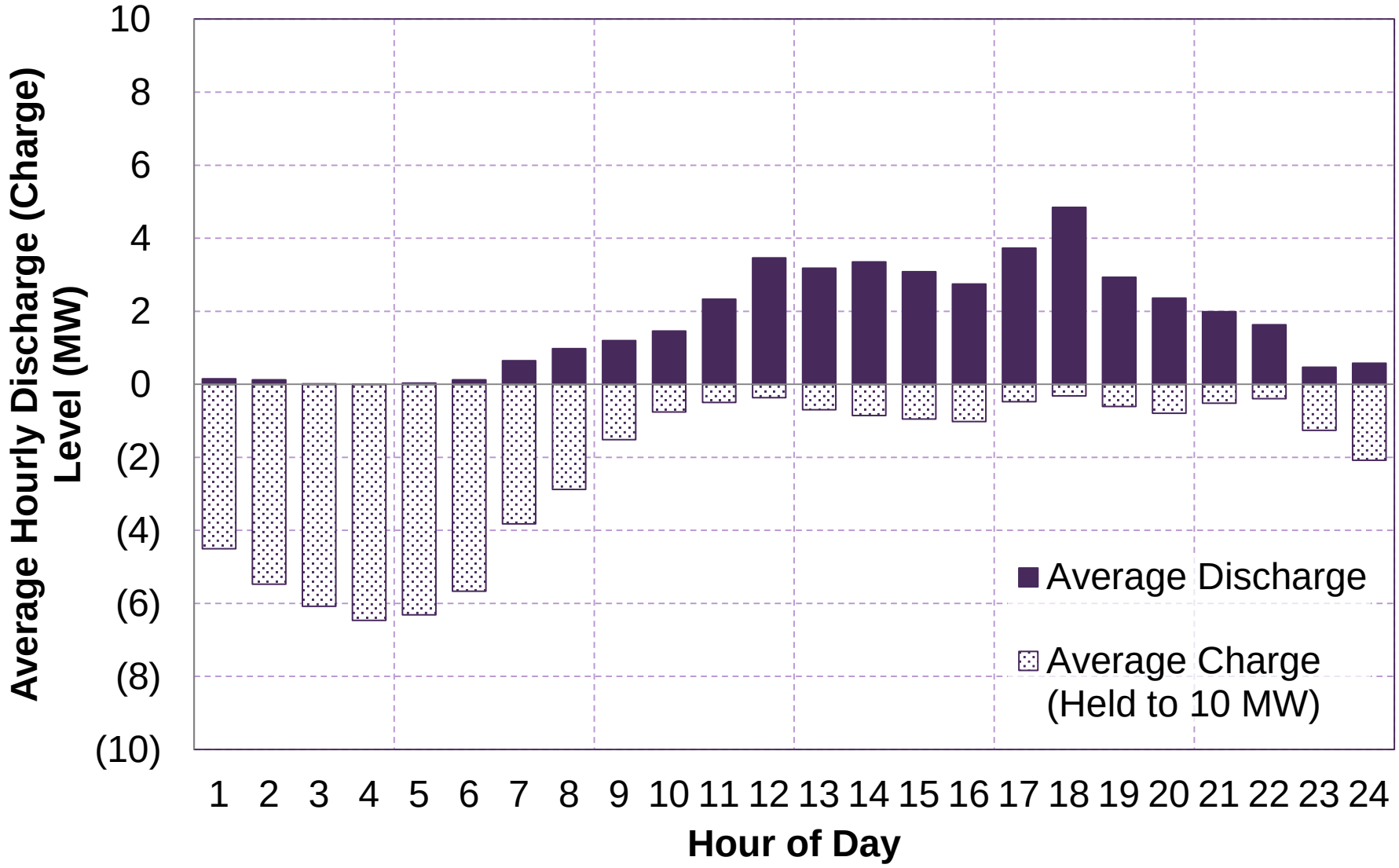
# AESO comparability study found similarities between storage and load-generation sites



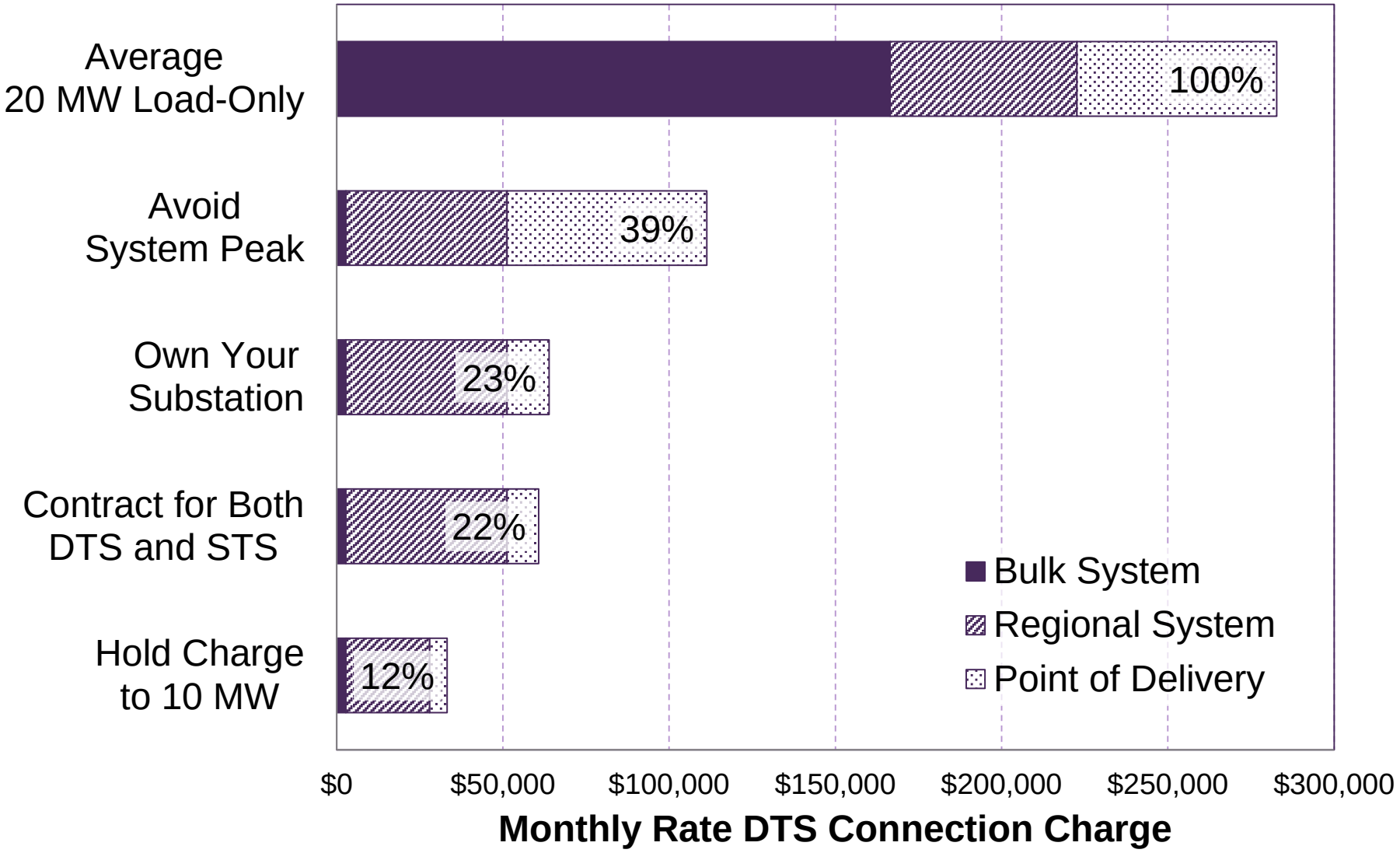
# 20 MW energy storage facility had average discharge-charge pattern with no restrictions



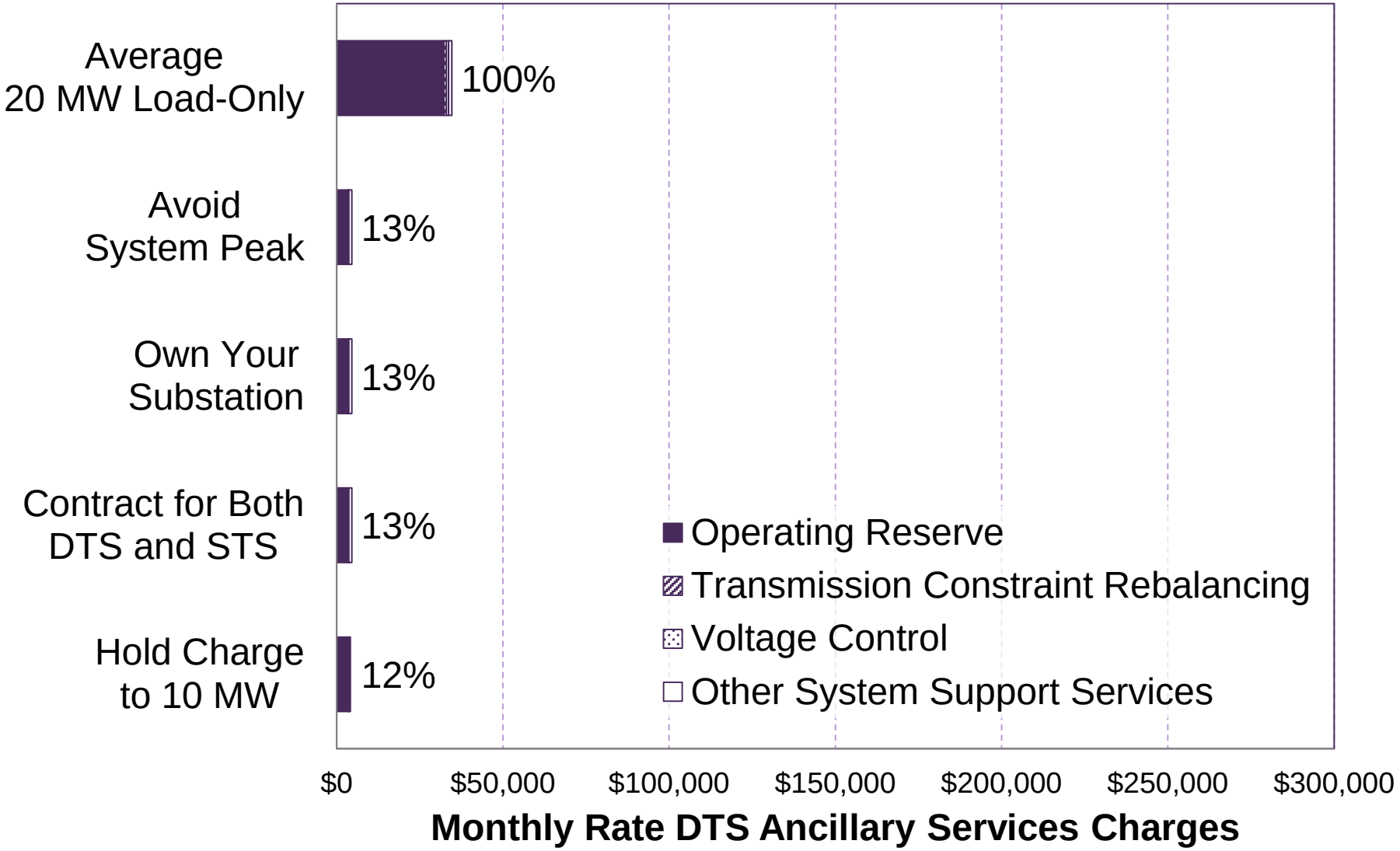
# Discharge-charge pattern remained similar when charge level was held to 10 MW



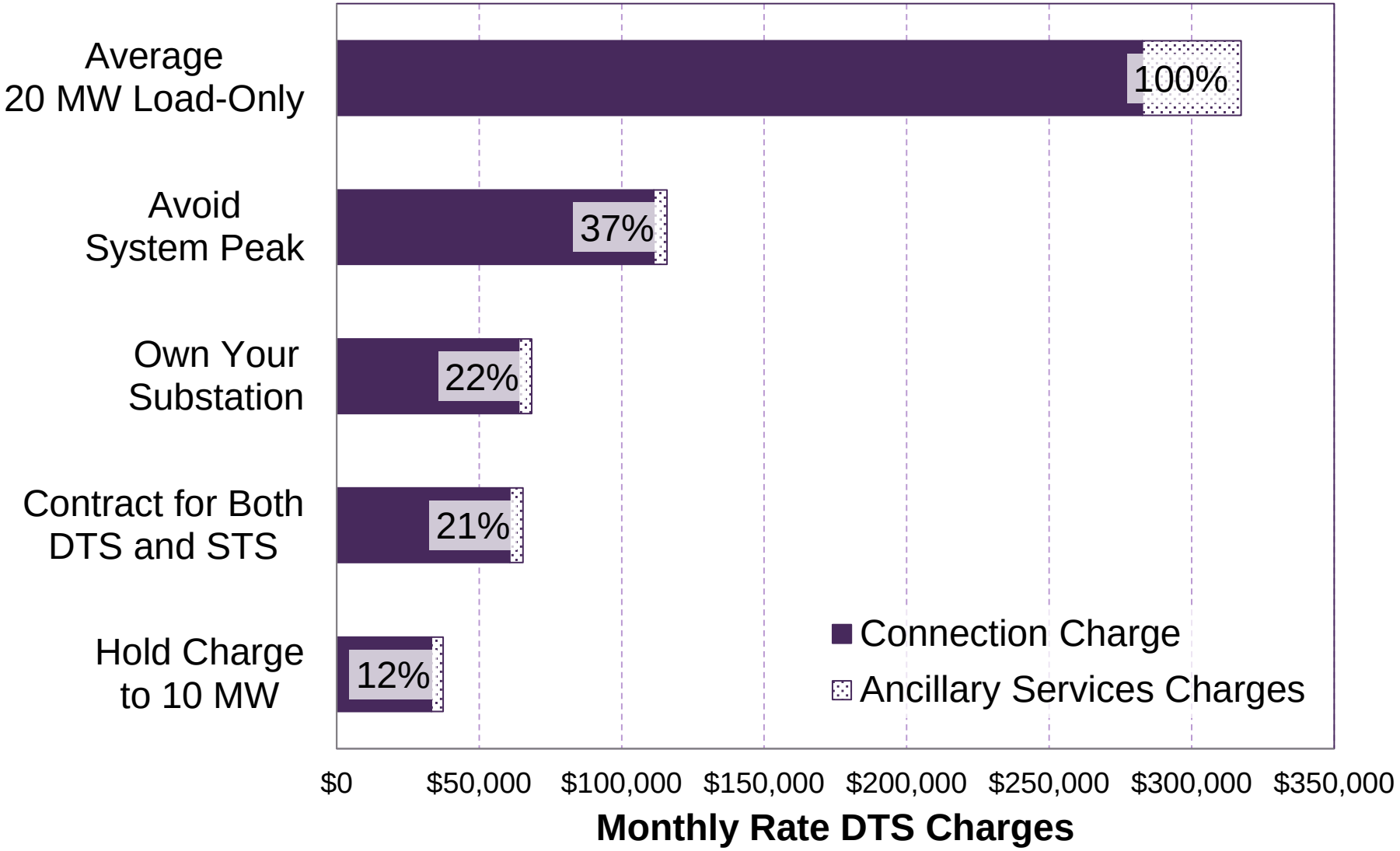
# Connection charge for 20 MW storage could be 12% of charge for load-only service



# Ancillary services charges for 20 MW storage could be 12% of load-only



# Total Rate DTS charges for 20 MW storage could be 12% of total charges for load-only



# AESO will propose Rate DTS apply to energy storage facilities when charging

- AESO will discuss use of Rates DTS and STS for energy storage facilities when charging and discharging, respectively, in its tariff application
- Rates and terminology in tariff will be updated to address energy storage facilities
  - Primarily affects applicability subsections in tariff
- Stakeholders will have opportunity to ask information requests and submit evidence on other approaches during regulatory proceeding before the Commission

# Rider C / DAR Process Update

- Identified in prior work that regular tariff update applications should reduce the magnitude of Rider C
  - The AESO filed 2015 tariff update in August 2015, approved by the Commission and effective January 1, 2016
  - The AESO filed 2016 tariff update in February 2016, approved by the Commission and effective April 1, 2016
- The AESO plans to file upcoming 2017 tariff update in Q3 2016
  - Update of rate and investment levels to reflect 2017 costs
  - Proposed to be effective January 1, 2017

# Rider C/DAR Process Update (cont'd)

Further work required to investigate other Rider C structure impacts – to the end of 2016:

- Impact of early tariff updates
- Impact of seasonal effects
- Impact of converting Rider C to a percentage basis
- Possibility of eliminating quarterly Rider C
- Possibility of moving to prospective Rider C

# Rider C/DAR Process Update (cont'd)

- Incorporation of primary service credit (Rate PSC) amounts in deferral account reconciliation and allocation methodology has been questioned in 2015 deferral account reconciliation proceeding
- AESO is reviewing whether modifications of Rider C or deferral account reconciliation methodology are needed to clarify treatment of Rate PSC amounts
  - Current tariff only includes Rates DTS and FTS in deferral account reconciliation and allocation methodology

# Consultation Process Plan

- Consultation on Scope
  - Share information on topics to be covered in ISO tariff application (to end of July 2016)
- Specific Topic Consultation
  - Begin in September 2016 to address transmission cost causation study results
  - POD cost function database results
  - Sections 4, 5, 8 and 9 of terms and conditions
  - Rider C/DAR
  - CIP Standards cost recovery
- Application Preview
  - Early 2017

# 2017 ISO Tariff Application Schedule

**2016**

- Jul 7 — 2nd general consultation session
- Jul – ? — 2015 DAR Regulatory Process
- Q3 — File 2017 Tariff Update Application
- Q4 — Specific topic consultation

**2017**

- Q1 — Application preview
- Q1 — File 2017 Tariff Application
- Q2 — File 2016 DAR Application
- Q2 – Q3 — Regulatory review process
- Q4 — Compliance filing

# Next Steps

- The AESO will invite participants to respond to this presentation through a comment matrix in the next few weeks. To allow transparency, the AESO will post all comments on AESO's website following the receipt of participants' input.

- For more information:
  Contact LaRhonda Papworth - Manager, Tariff Design
  403-539-2555 or larhonda.papworth@aeso.ca

- All consultation documents can be found on AESO website at www.aeso.ca by following the path Tariff ► Current Consultations ► 2017 Tariff

# Discussion

- Questions?

Public