

# CBA TSG Meeting #5

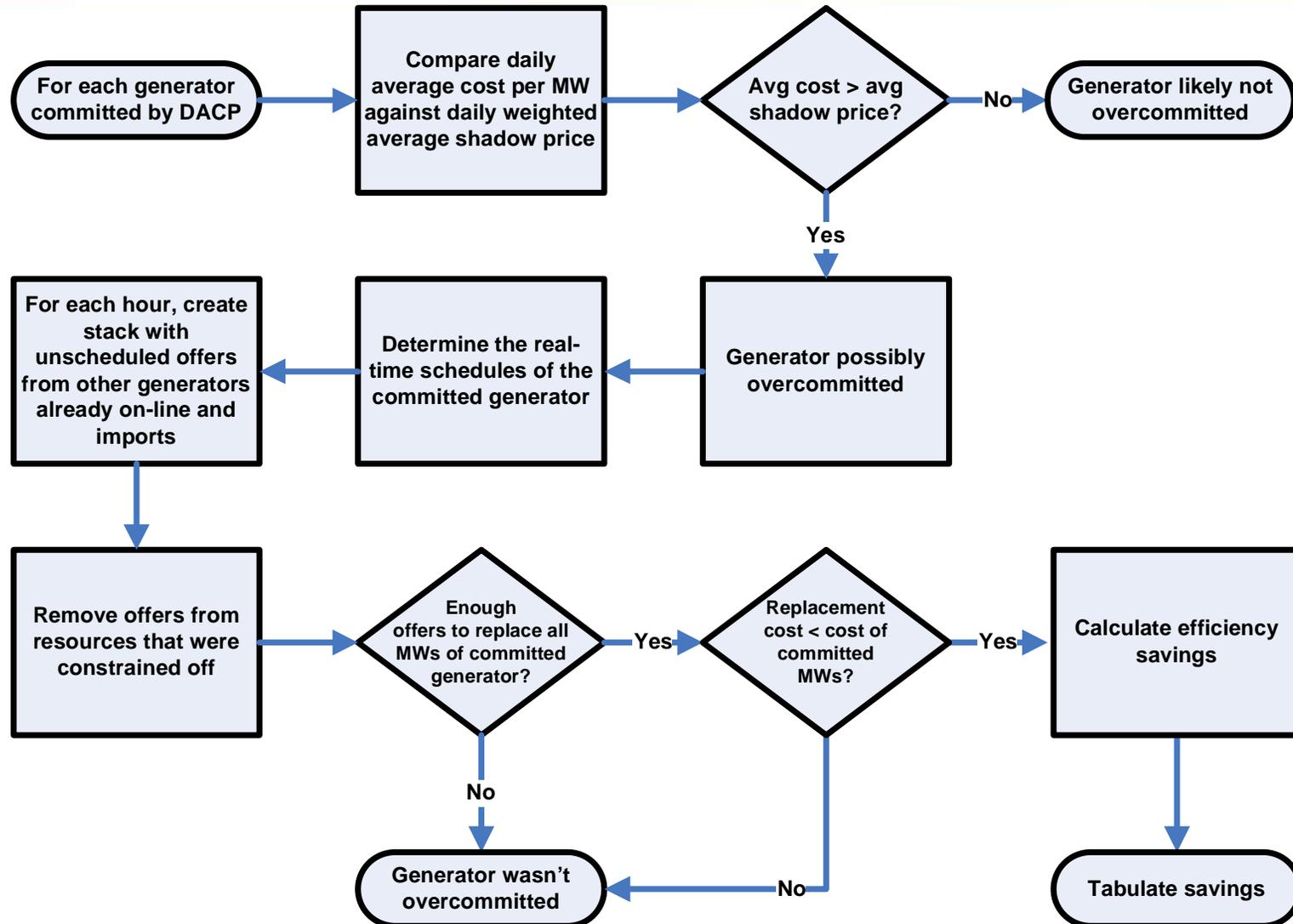
February 19, 2008



- **Review notes from last meeting**
- **Update of Deal and Mountain work**
- **Efficiency gains from 24-hour optimization**
- **Efficiency gains from gas-fired generators with a DAM**
- **DAM Costs**

- **Previous analysis did not consider less expensive imports as replacement for MWs from overcommitted generation**
- **By including these imports, the estimated efficiency improvement is just over \$6M**
- **Only one over-committed generator was considered per day**

# Estimate of Savings from 24-Hour Optimisation



# Efficiency Gains from Gas-Fired Generators With a DAM - Background

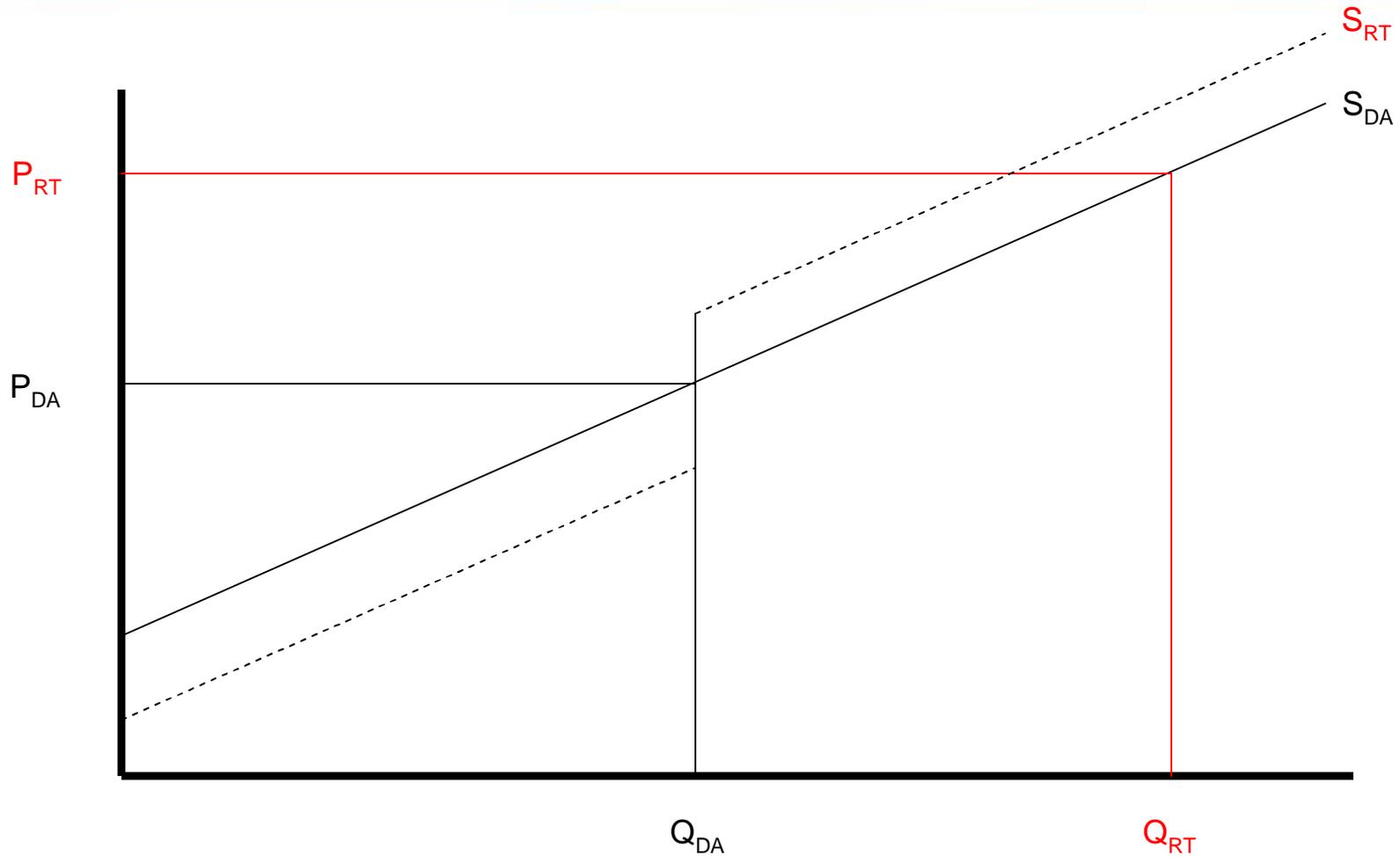
- **Gas purchase and delivery system historically set up for consumers that understood their next days gas needs**
  - Requires projection of hourly gas needs by roughly noon the previous day
- **Electricity generators have much more variability in their RT gas requirements and it is difficult to project a day in advance**
  - They require much more flexibility in their real-time gas delivery to meet increases or decreases in electricity production
- **This flexibility in gas delivery is costly**
- **A DAM that provides more accurate information to generators about their next day's production levels would reduce these costs – these cost savings would represent efficiency gains**

# Two Approaches to Managing RT Variability

- **Union, Enbridge and TransCanada have started selling new services to generators that require more flexibility to manage their gas purchase and delivery in RT. There are two polar approaches that a generator can take**
- **Approach 1: Don't purchase the services. Generator has very little flexibility from deviating from its day-ahead output projection. If it does want to deviate, it must incur significant cost to do so.**
  - Improved information from the DAM would allow these generators to make better decisions day ahead, and operate more efficiently relative to other generators in real-time and/or reduce their variable costs from changing production levels from their day ahead levels.
- **Approach 2: Purchase the services. This would allow much more flexibility to change production levels in RT and operate efficiently in RT. This would also avoid the costs incurred from changing production in RT. However, these services are costly and include fixed annual (multi-year) charges and some variable charges.**
  - Improved certainty from the DAM would allow gas-fired generators to reduce the amount of the services required and their overall variable cost of operation.
- **The approach taken will depend on the operation of the generator and their tolerance for risk.**
- **Either way, there will be efficiency improvements from a more accurate projection of RT production requirements day-ahead.**
- **Question – how best to estimate these efficiency gains?**

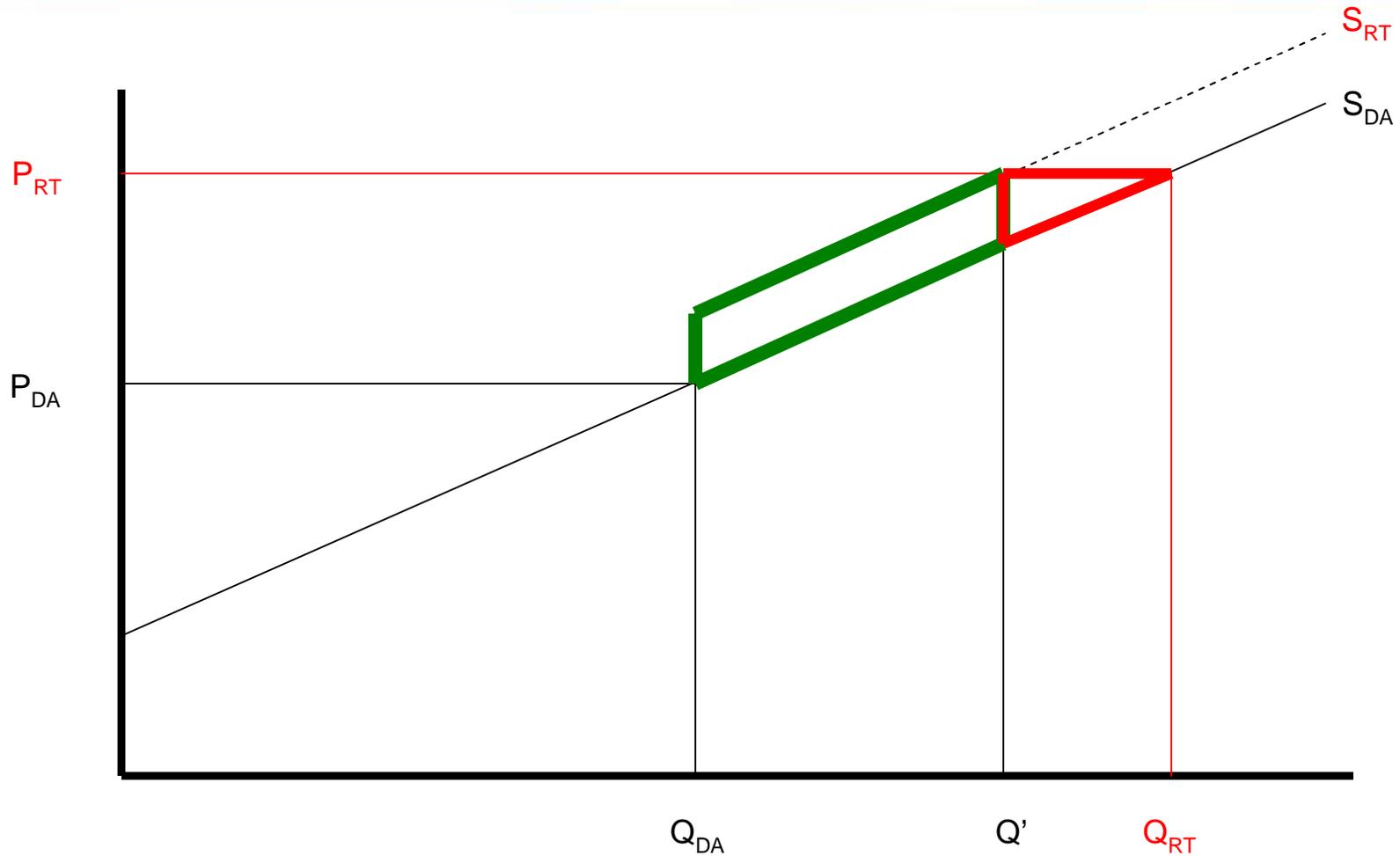
- **Fixed Costs**
  - **Transportation and Storage**
    - Capacity charges
    - Commodity charges
  - **High Delivery Services**
    - Firm Injection and Withdrawal privileges
- **Variable**
  - **Fuel/Fuel ratio**
  - **Storage injection/withdrawal**

- **For gas-fired generators who choose Approach 1, using improved information from the DAM, could reduce their variable costs from incremental balancing charges and any changes to fuel prices between day-ahead and real-time**
- **To achieve these savings, the generator would have to modify their real-time offers accordingly for the real-time market**

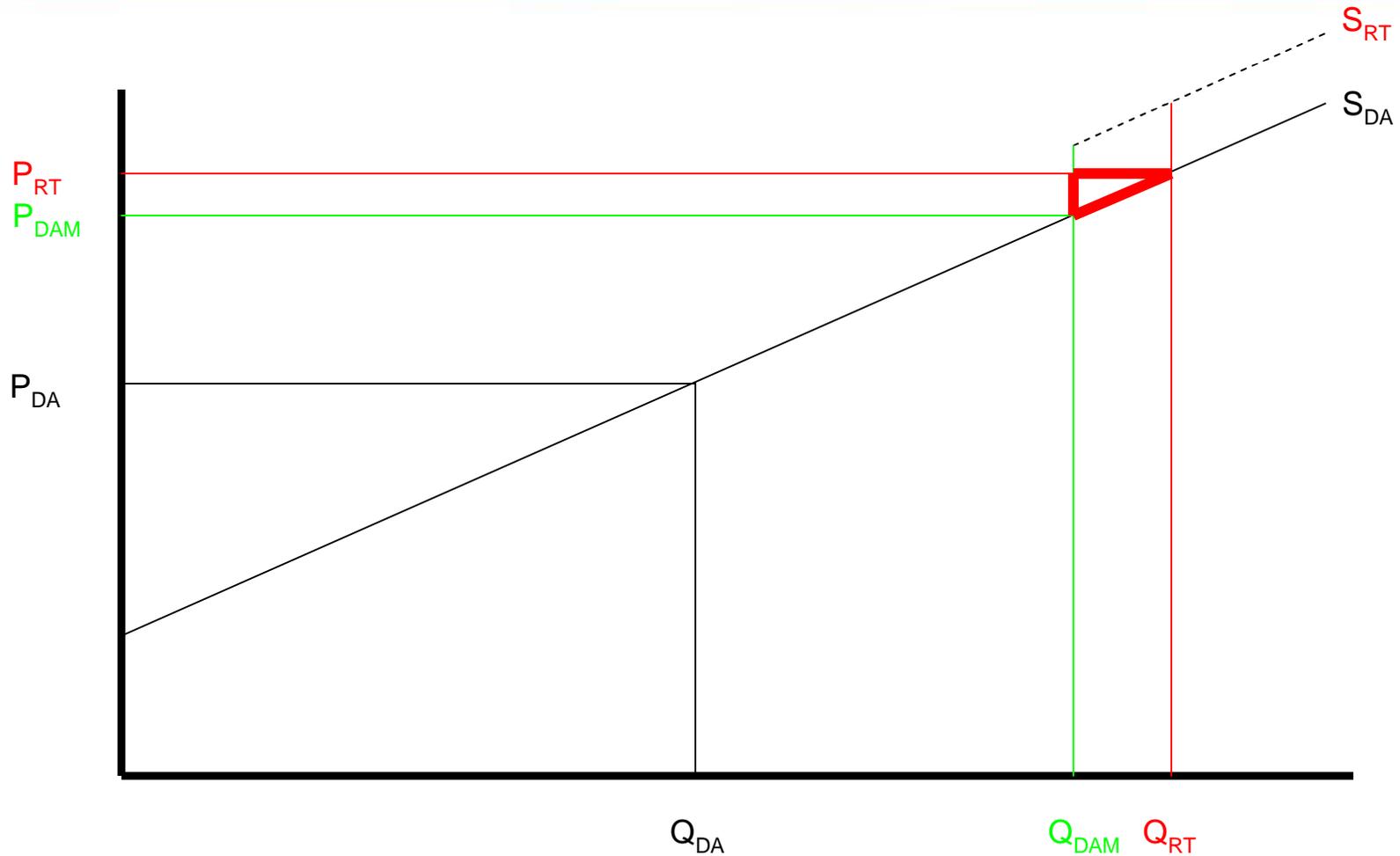


- The day-ahead offer curve is represented by  $S_{DA}$
- Based on a day-ahead price of  $P_{DA}$ , the generator is expected to generate  $Q_{DA}$
- However, in real-time, the generator would modify its offer curve to  $S_{RT}$  to account for the additional costs of withdrawing more fuel beyond the amount nominated for delivery

# Example of Inefficiency From Different DA and RT Schedules

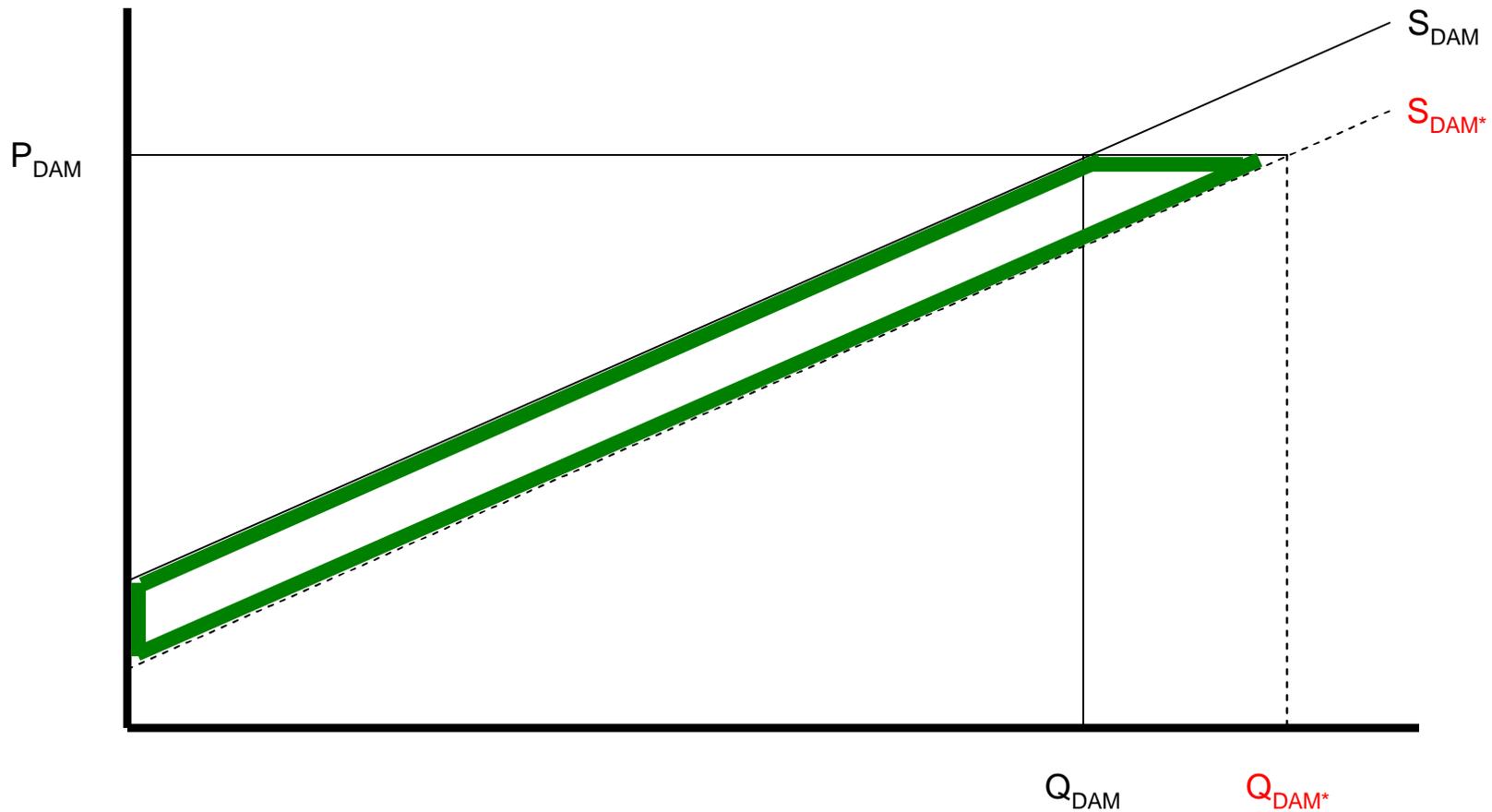


# Inefficiency Reduction From Better DAM Schedules



- **For those that use Approach 2, the DAM would provide better certainty on schedules for generators**
- **Over time, gas-fired generators could discover that they may not need as many balancing/storage services**
- **In the long term these savings would translate into efficiency savings**

# Efficiency Gains From Reduction in Variable Costs



- **Baden Energy Consulting Limited (BECL) will modify their approach to estimate the change in contracted services that could come about from a DAM**
- **BECL to present details on inputs/assumptions and perform analysis**
- **Seek feedback from key stakeholders if this is sufficient to capture all efficiencies**

- **Procurement scope for IESO DAM hardware and software currently being drafted**
- **Will survey CBA TSG for participant costs including:**
  1. **What are your business' one time costs of implementing the IESO proposed UDAM? Factors you may need to consider include:**
    - **Development cost for software/computers upgrades (e.g. interface costs For bid/offers, interface for settlement)**
    - **Development cost for new/modified modeling (e.g. market pricing, risk management etc.)**
    - **Upfront training cost to train staff on new interface and new market design**
  2. **What are the on-going costs to your business if the IESO implements the proposed UDAM? Factors you may need to consider include:**
    - **Incremental operating costs (increase over current operating costs for participation, not energy costs) for energy bids/offers and market settlement**
  3. **Is there any significant change to the above numbers if the IESO implements an improved DACP which includes 24 hour optimization, and 3 part competitive bids?**