



SOK Workshop

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Background

- “Why SOK now?”
- The AIES has always used Alberta load as the basis for determining export capability
- In 2004, Calgary TMR requirements were re-defined using Calgary load.
- In May 2004, the Edmonton-Calgary 500kV studies identified the South of KEG (SOK) and North of Calgary (NOC) ‘cutplanes’ that limit the flow on the Alberta 240kV backbone
 - Constraints were expected as soon as summer of 2006
- Cutplane approach greatly simplifies analysis and operations
- Which one should we use?
- What are transition requirements?
 - operating studies, stakeholder consultation, OPPs, tools, training



Background

- In fall of 2004 a group of participants requested information on AESO plans to meet requirements of Transmission Regulation 8(1)(e)(g)
 - *ISO to make arrangements for the expansion or enhancement of the transmission system so that, under normal operating conditions, the transmission system interconnections with jurisdictions outside Alberta can import and export electricity on a continuous basis, at or near the transmission facility's path rating;*
- Participants expressed desire to increase export capability in both an operations context as well as a planning context
- 6 revisions of OPP 304 – Alberta-BC Interconnection Transfer Limits over the past ~1 year to increase export capability, most increasing south generation adders to account for export capacity that south generation creates
- The procedures and tools are getting very complex



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Background

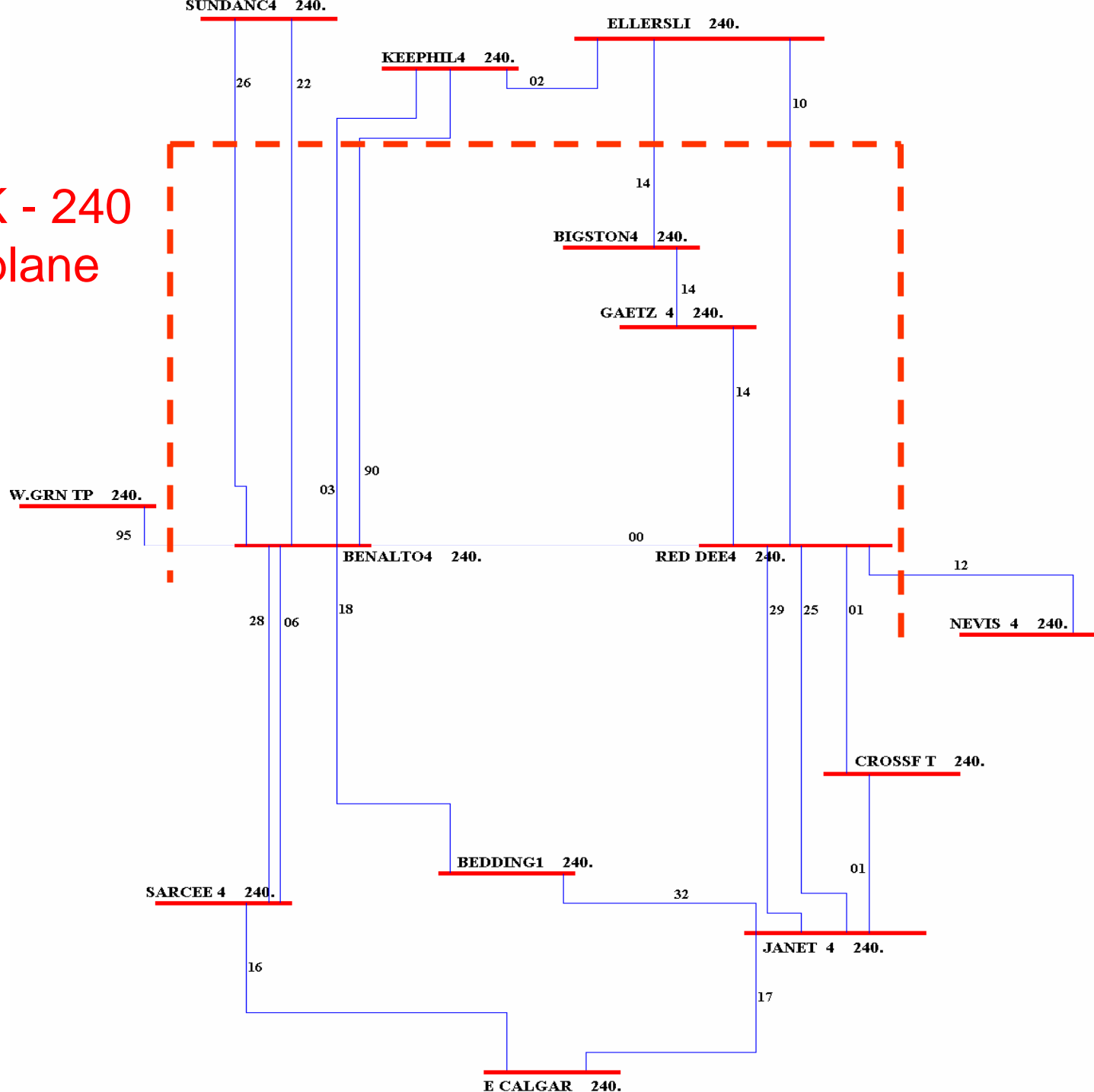
- The Calgary Area Reactive Power Supply Reinforcement Need application resulted in 520 MVars of capacitor banks to be installed in the Calgary area
- Operations Planning studies identified SOK - 240 as the recommended cutplane
 - Thermal loading limits are now the constraint
 - Voltage stability constraints are present at higher flows due to cap banks
 - Use of a cutplane will simplify operations and calculations
 - Maximize export capability due from contribution of south generation



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SOK - 240 Cutplane



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Market / Operation Impacts

- We have protocols in place for several local areas with generation surplus (Ft. Mac, Cold Lake, SW, Joffre, Brazeau, KEG)
- These protocols address unique local concerns but at some point all involve limits on generation output



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Proposed Constraints Protocol for SOK – 240

- Implementation May 1
- To be used until change proposed constraints rule can be implemented
 1. Directive to generators upstream of SOK – 240 to restate to STS levels
 2. Curtail opportunity exports
 3. Curtail opportunity loads – DOS
 4. Dispatch TMR south generation
 5. Direct TMR south generation

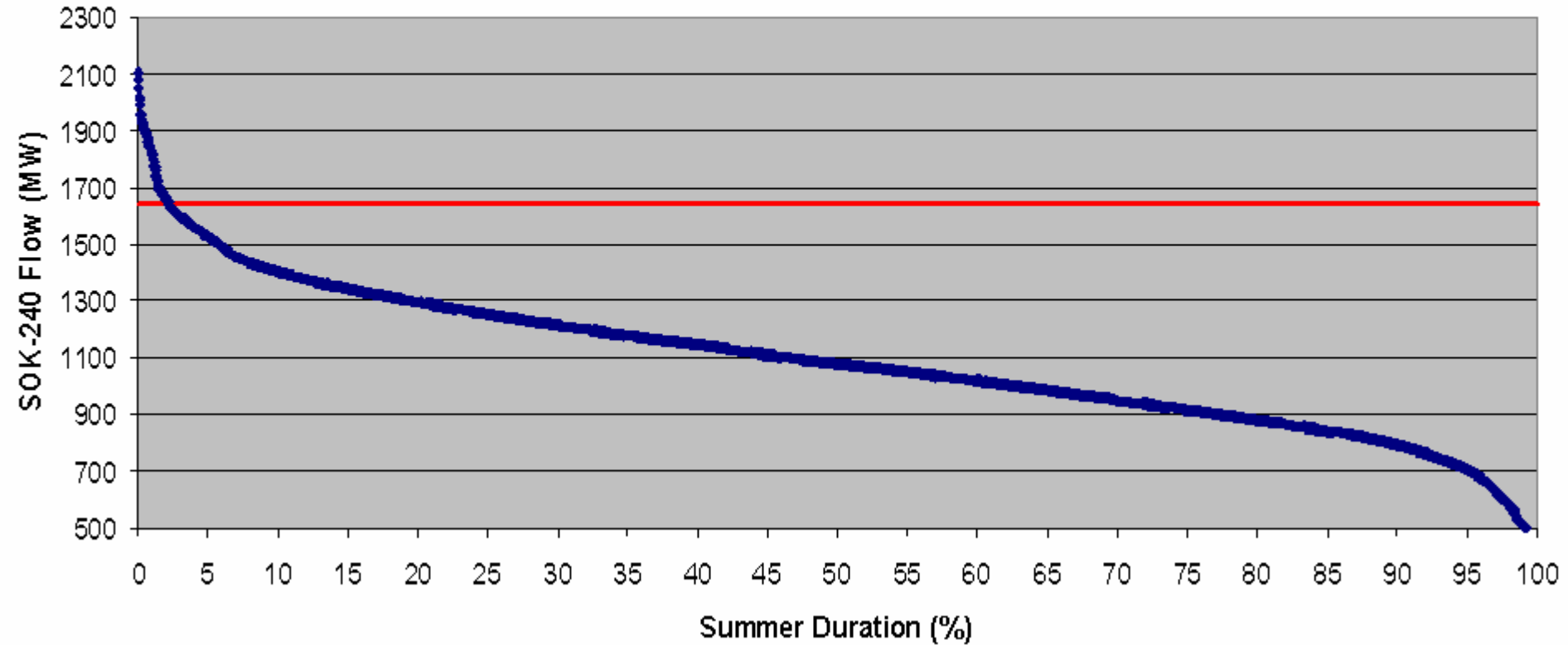


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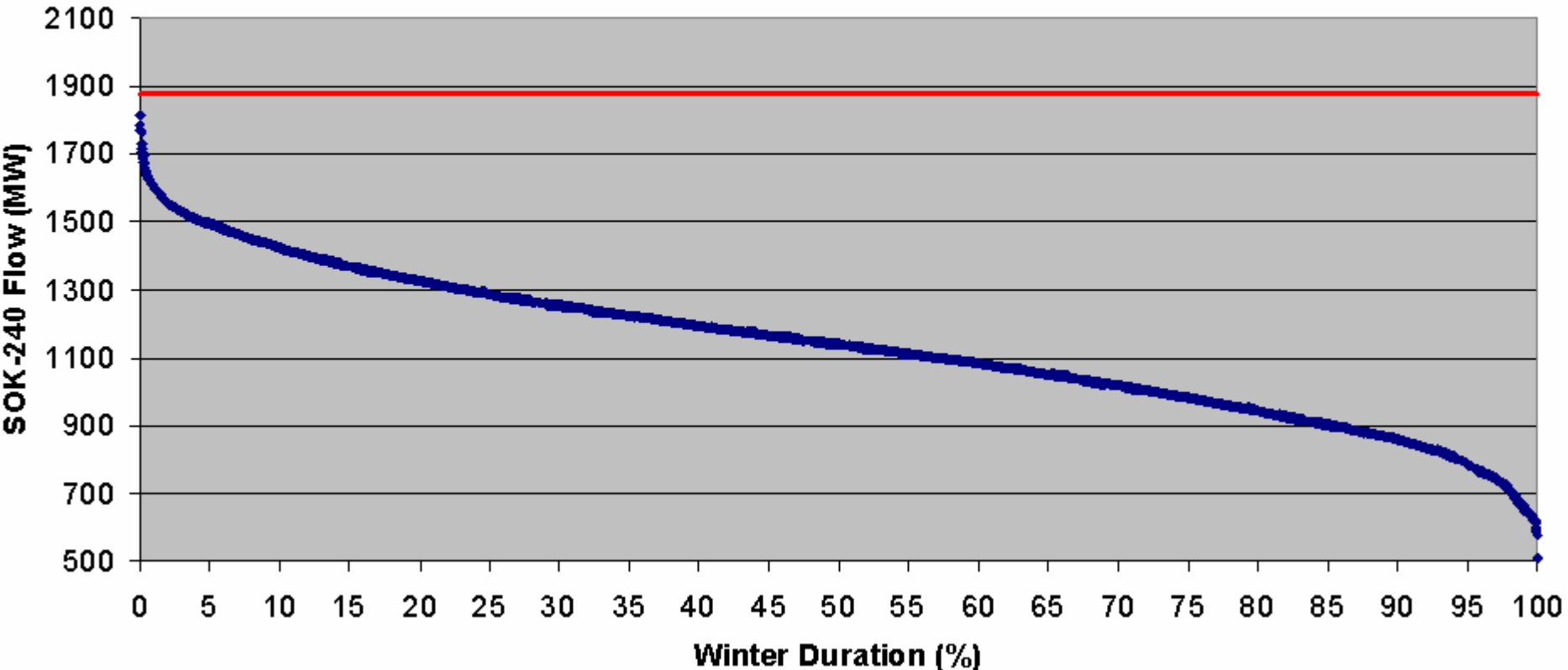
Summer '05 SOK-240 Flow - Duration

◆ SOK-240 Flow



Winter '04/05 SOK-240 Flow - Duration

◆ SOK-240 Flow — Winter Thermal Limit



Future Developments

- Possible increases to SOK-240 limits
 - Thermal upgrades
 - Mitigate N-2 contingencies
 - Other considerations
 - ~1 year
- Edmonton to Calgary 500kv line (2009)



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Operations Impact

- Limits on generation above SOK-240 cutplane may be required to;
 - maintain overall control area supply demand balance or
 - return SOK -240 flow below the SOK – 240 limit, esp. following contingencies (both transmission or south generation)
- Location of operating reserves
 - regulating reserves
 - contingency reserves
- Intermittent generation and loads



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Operations Impact

- Export /DOS curtailments and south generation on the margin
- Load loss following contingencies
- Market participant ramp rates
- Ancillary Services and Energy merit order changes at top of hour
- Restatements
- Price responsive loads



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