



System Needs: An Energy Planning Perspective

Randy Reimann

TOPICS

- ◆ BCUC 2006 IEP/LTAP Decision
- ◆ 2008 LTAP Workplan
- ◆ Resource Options Update
- ◆ System Planning and Criteria

BCUC IEP/LTAP DECISION

Key findings:

- ◆ Agreement to address new Energy Plan in next LTAP
- ◆ Need for new resources accepted
 - Need for further work on role of Burrard
- ◆ More work required on market risk and GHG risk
- ◆ Cost-effectiveness continues to be a critical test

2008 LTAP WORKPLAN

- ◆ BC Hydro is continuing to assess the implications of new Energy Plan and BCUC IEP/LTAP Decision

- ◆ Next LTAP expected to be filed in Spring 2008
 - Timing is consistent with BCUC Decision
 - Process will begin with targeted update of resource options information
 - To begin over Summer 07 and completed this fall
 - BC Hydro will be talking to intervenors & stakeholders about next LTAP beginning this fall

RESOURCE OPTIONS UPDATE

- ◆ Targeted update of key resources
 - Coal (with sequestration)
 - Gas – capital costs and GHG offsets
 - Wind – available supply/ costs/ diversity
 - Small Hydro – available supply/ costs / diversity
 - Bio-energy – costs and potential
 - Large Hydro – Site C
 - Waneta Expansion Project / Jordan River Pumped Storage
- ◆ Process
 - Scoping
 - IPP and Stakeholder input prior to LTAP analysis is important
 - Launching process over summer and to be completed in fall 2007

CAPACITY vs. ENERGY

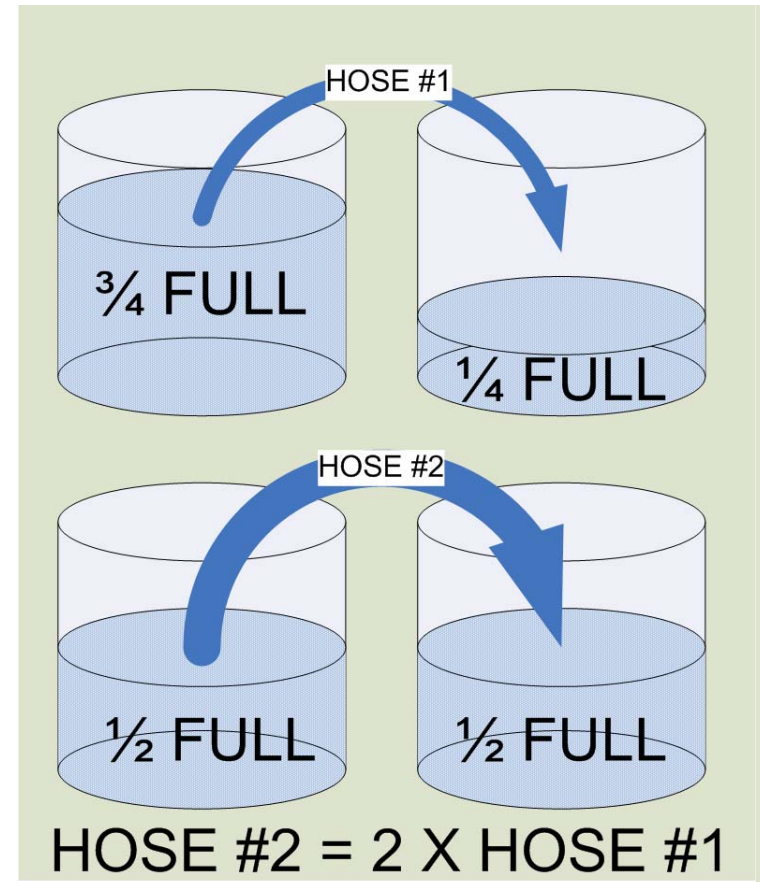
◆ Capacity

- The instantaneous power output of a power plant at any given time (MW)
- e.g. size of the hose

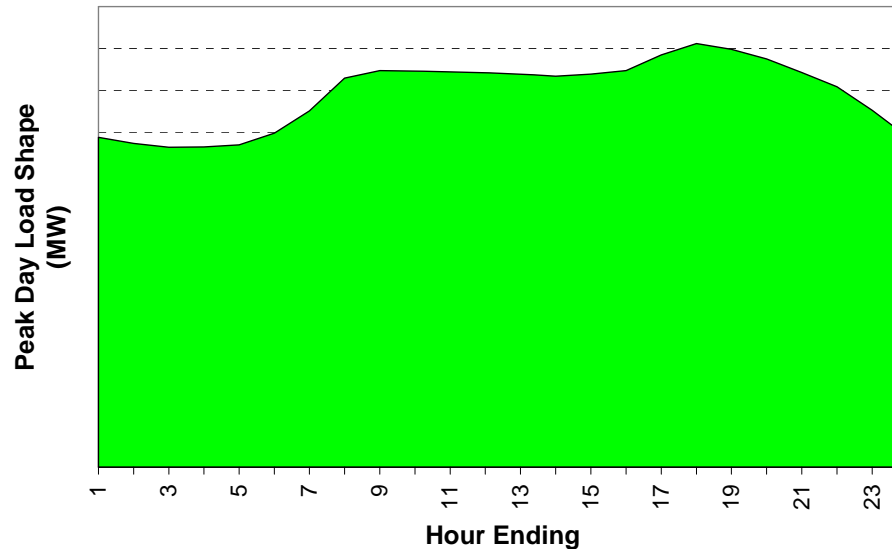
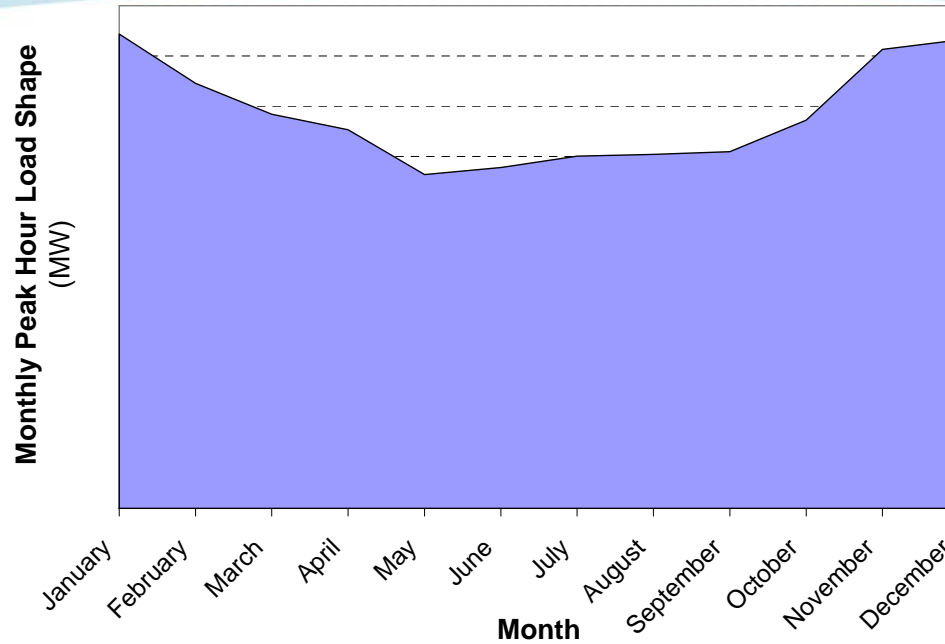
◆ Energy

- The total amount of electricity produced by a power plant over a given period of time (GWh)
- e.g. volume of water

- ◆ Both capacity and energy are required and used by BC Hydro



Monthly and Hourly Load Shapes



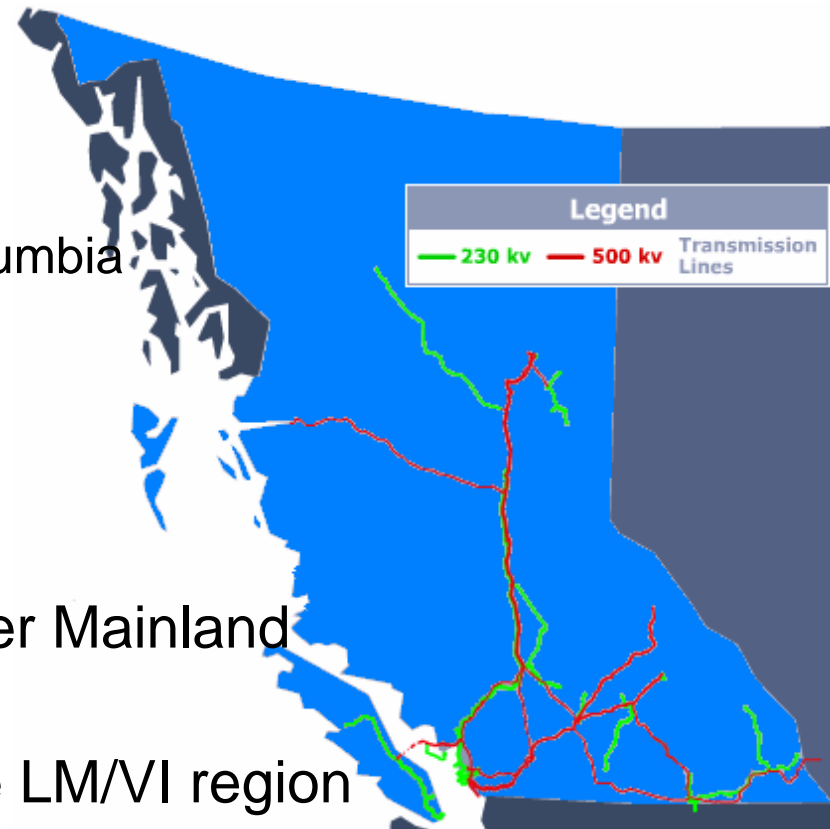
Reliable power, at low cost, for generations. Reliable power, at low cost, for generations. Reliable power, at low cost, for generations. Reliable power, at low cost, for generations.

GENERATION CAPACITY

- ◆ Installed Capacity - maximum identified by manufacturer (MW)
- ◆ Dependable Capacity maximum that can be reliably produced when required (MW)
- ◆ Capacity Reliability Planning Criteria
 - LOLE methodology
 - 1 day in 10 years \Rightarrow 14% planning reserve margin
- ◆ Dispatchability
- ◆ Long-term low cost resources at Mica and Revelstoke
- ◆ Key point - capacity has value

TRANSMISSION CAPACITY

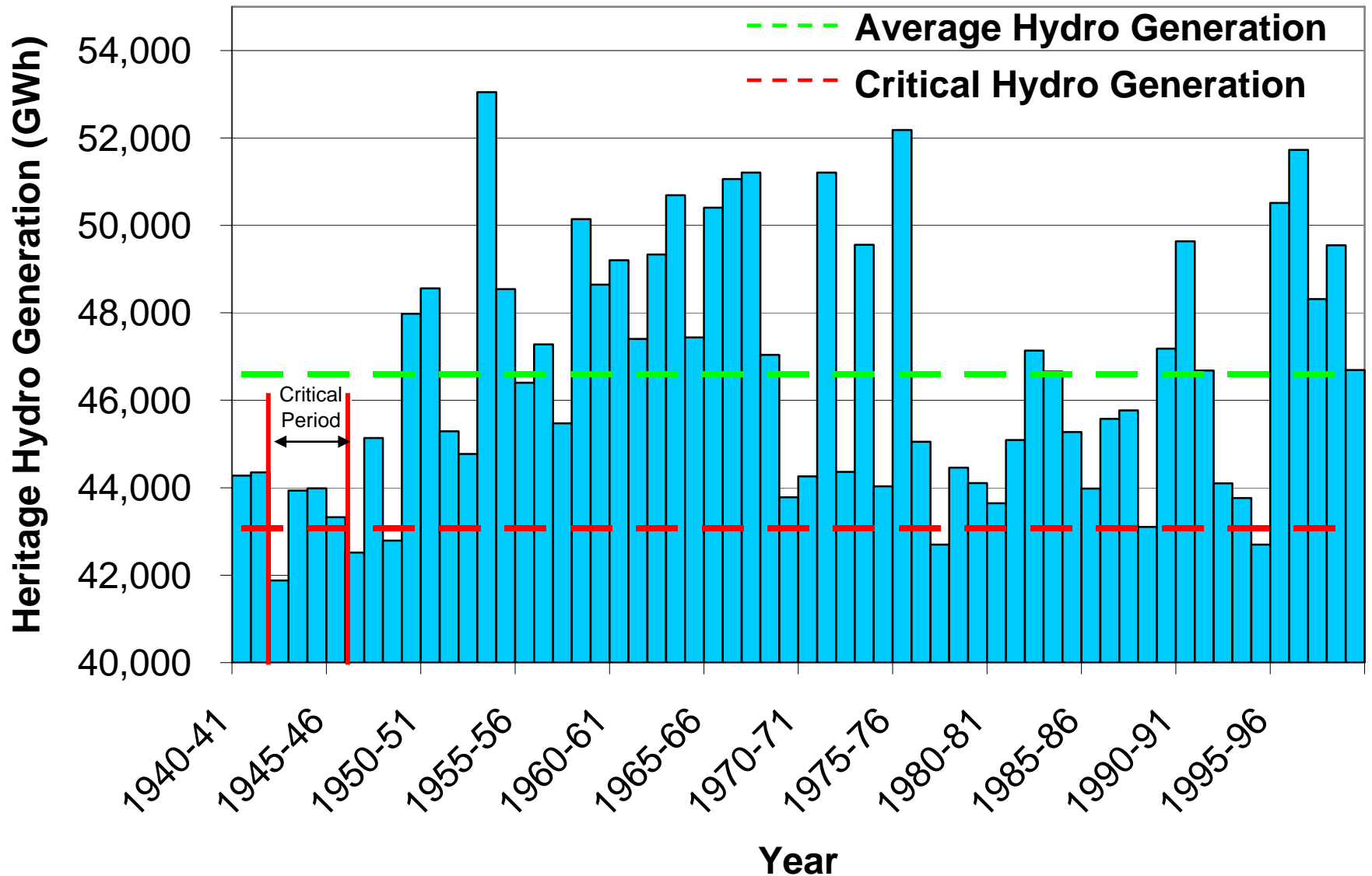
- ◆ BCTC uses generation capacity to determine the transmission plan required to reliably deliver electricity to BC Hydro customers
- ◆ Generation operations test:
 - Maximum Peace / Maximum Columbia
- ◆ Transmission Planning Criteria
 - N-1 criteria
- ◆ Next major line : Interior to Lower Mainland
- ◆ Key point – need capacity in the LM/VI region



ENERGY

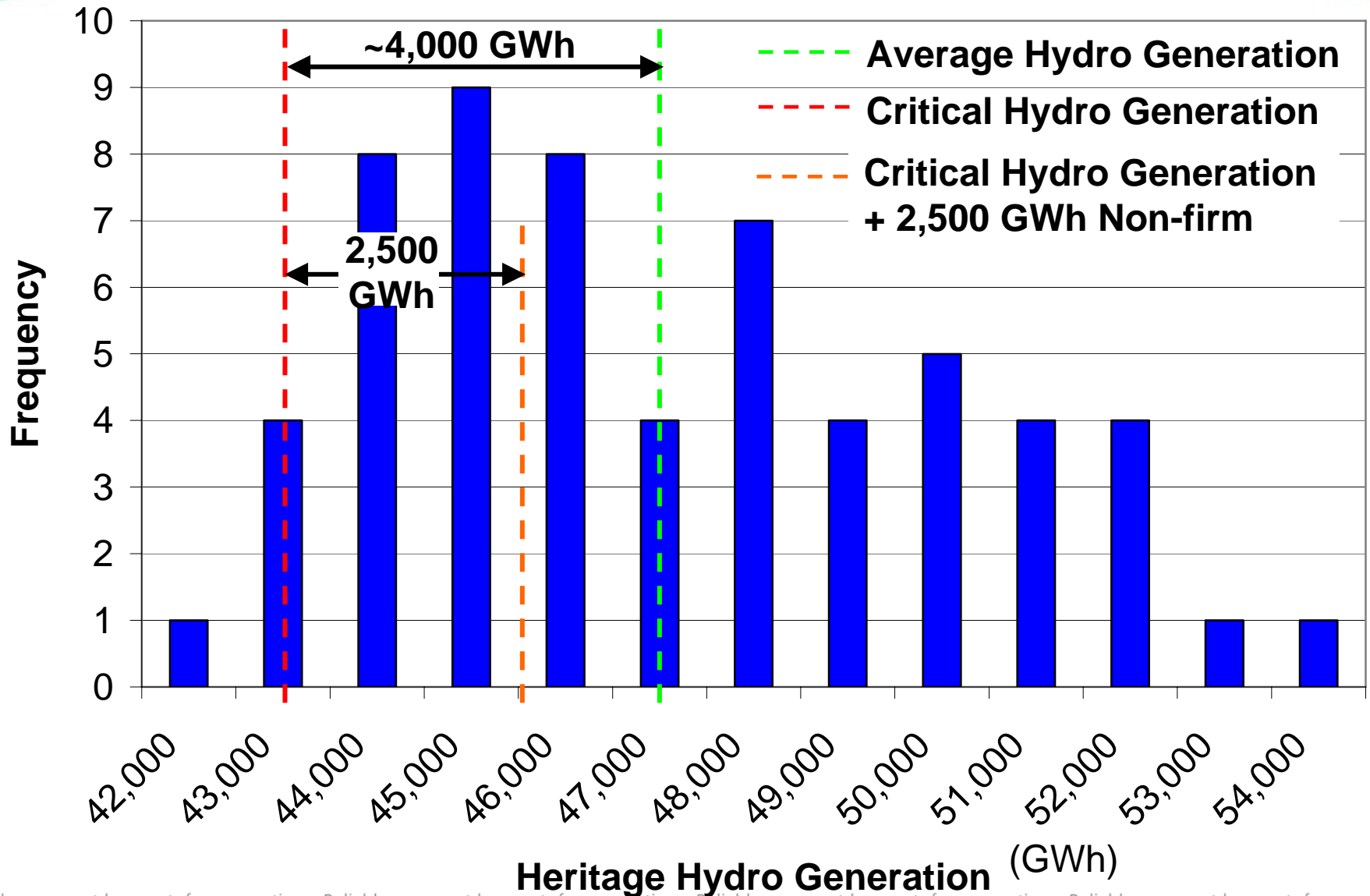
- ◆ BC Hydro system is energy constrained
- ◆ Average Energy – expected estimate of energy that could be expected over a given period (e.g. GWh/yr)
- ◆ Firm Energy - estimate of energy that could be expected on an assured basis over a given period (e.g. GWh/yr)
 - BC Hydro system limited by the critical water period (1942 – 1946) in 60-year historical inflow record

ENERGY – 60 Year Hydro Generation



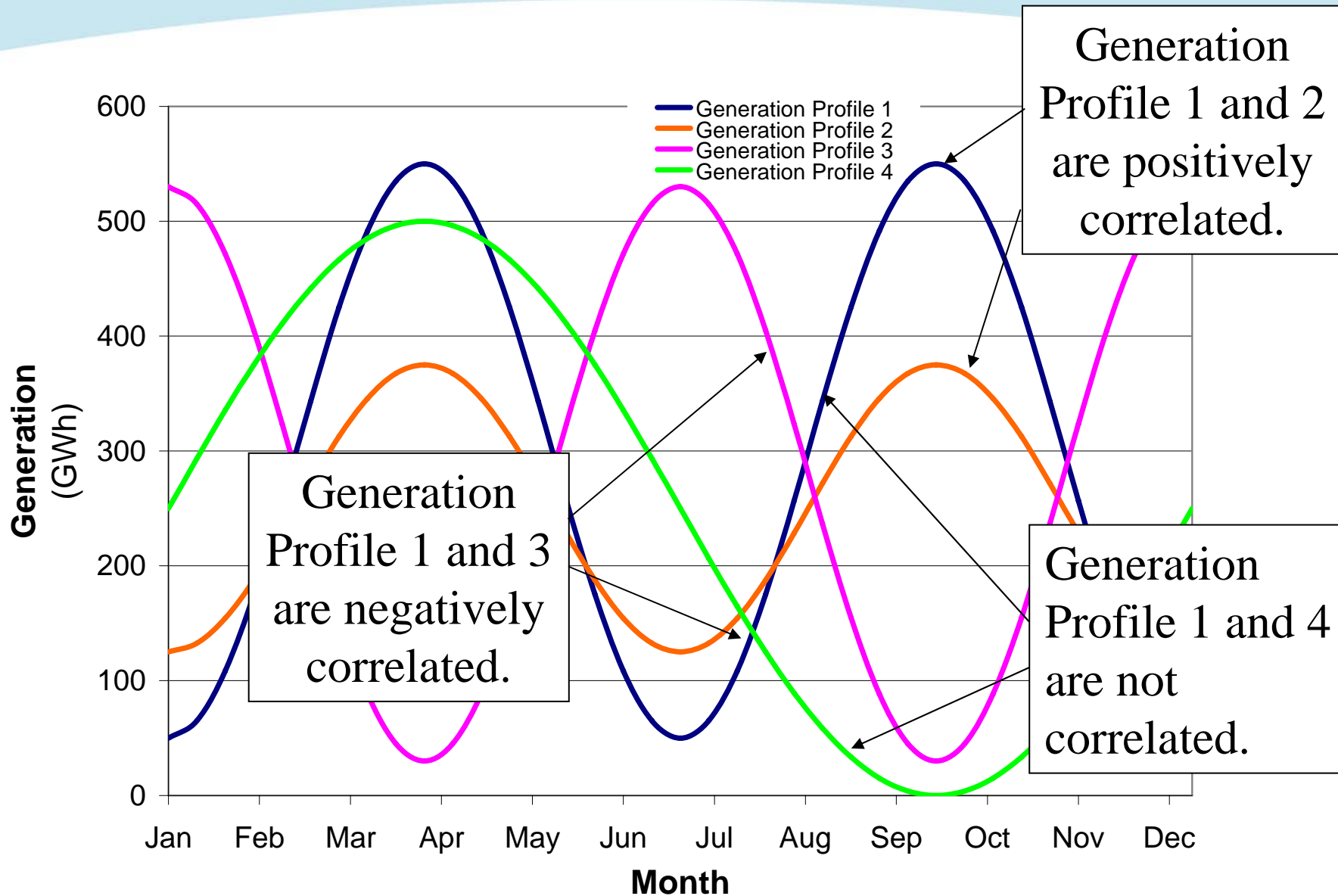
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ENERGY – 60 Year Hydro Gen Distribution



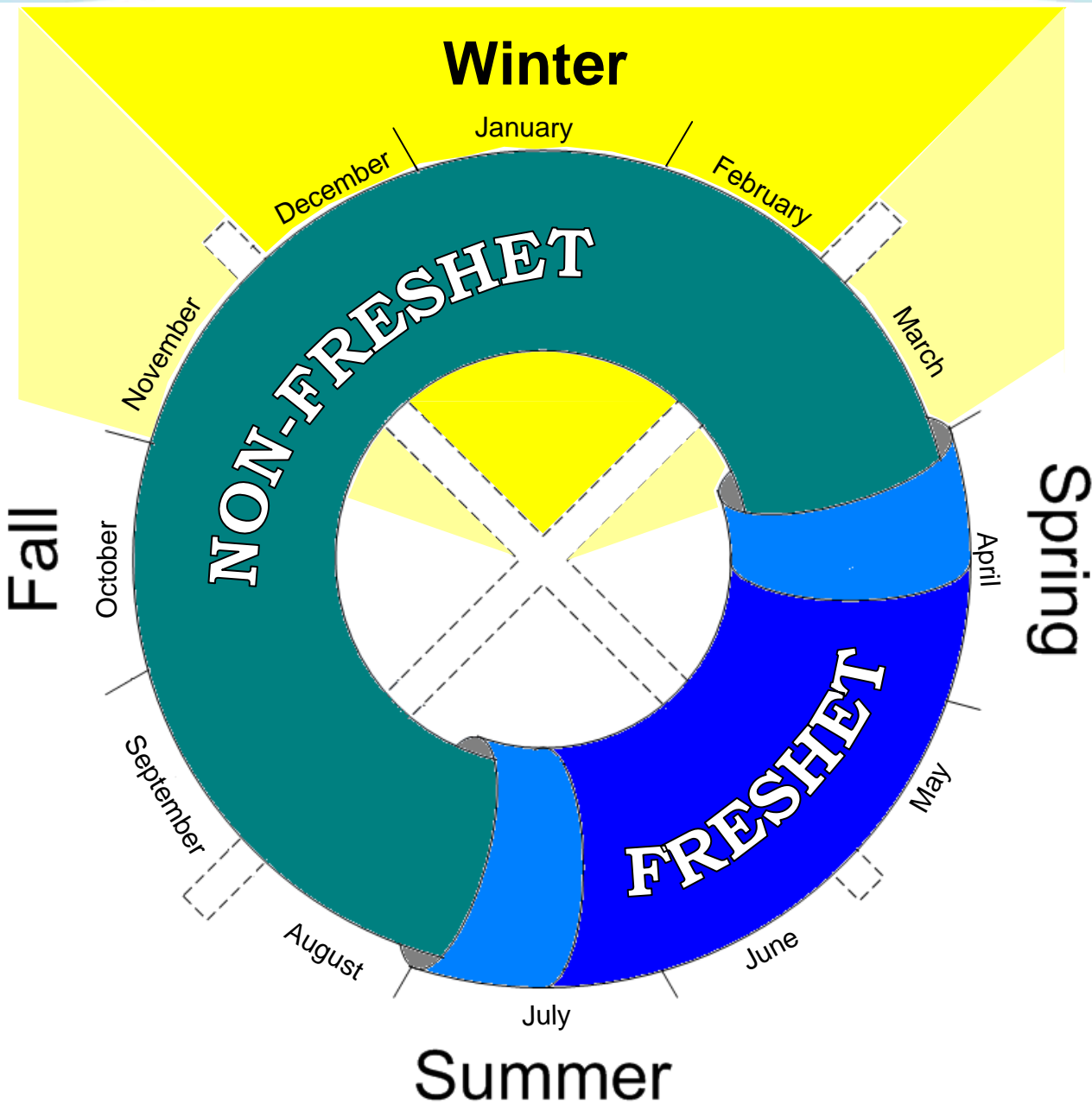
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Correlation



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Freshet and Non-Freshet



Firm and Non Firm Energy Considerations

	FRESHET	NON-FRESHET
NON-FIRM ENERGY	<p>Many Unknowns</p> <p>Correlation Issues</p>	<p>2,500 GWh Non-firm Allowance</p> <p>Heritage Hydro Non-firm</p> <p>Supported by IPP Non-firm/ Market</p> <p>Excess non-firm exported or spilled</p>
FIRM ENERGY	<p>Uncertain ability to Absorb Into System</p> <p>Surplus to Market or Spilled</p> <p>Low Market Prices</p>	<p>TARGETED PRODUCT</p>

Ability to absorb energy is contingent on water conditions.