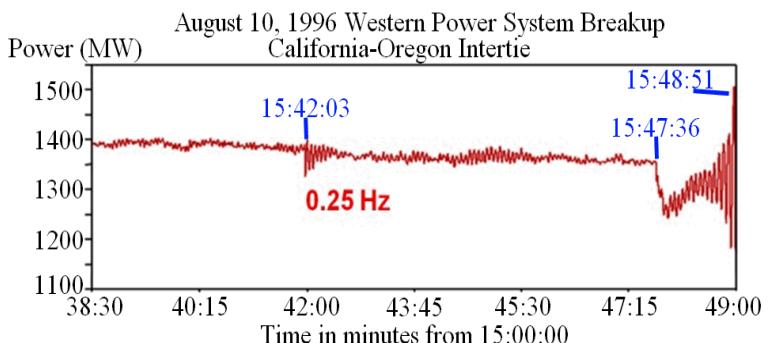


The Benefits of Energy Storage Combined with HVDC Transmission Power Modulation for Mitigating Inter-Area Oscillations

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Background:

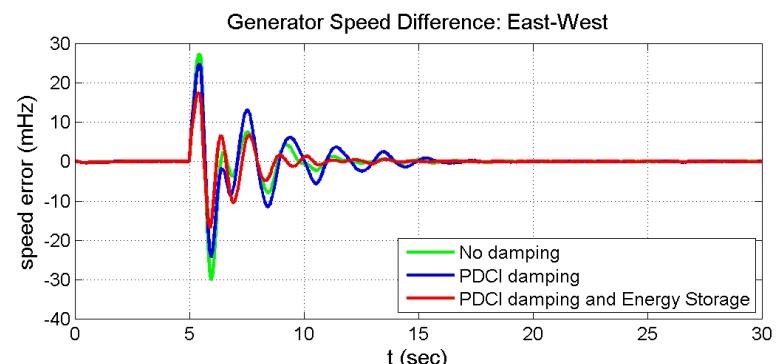
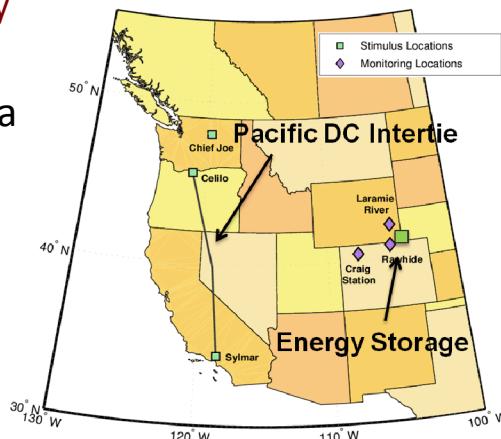
Low frequency oscillations caused by generators separated by long transmission lines, if not properly damped, can cause a system breakup:



Two-area damping implementations have been investigated using energy storage or High Voltage DC transmission

Multi-Area Damping:

Energy storage allows for a multi-area damping implementation, which improves damping of multiple mode shapes



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