

Tehachapi Transmission Plan

Consideration of Regional Benefits and Existing Projects in the ISO Queue

May 10, 2004 IEPR Meeting on
Tehachapi

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ISO Grid Planning

Regional Planning Considerations

- During the development of the long-term transmission plan for the Tehachapi area one should consider costs and benefits for all users of the ISO Controlled Grid.
- In addition to transmission upgrade alternatives that are dedicated to Tehachapi wind generation, Transmission alternatives should be considered that can accommodate Tehachapi wind generation and
 - increase the Path 26 transfer capability
 - increase the ability to deliver energy to the Helms Pump Storage facility—increasing the ability to store energy should increase the value of the planned intermittent Tehachapi resources
 - meet the long-term reliability needs of the San Joaquin Valley load

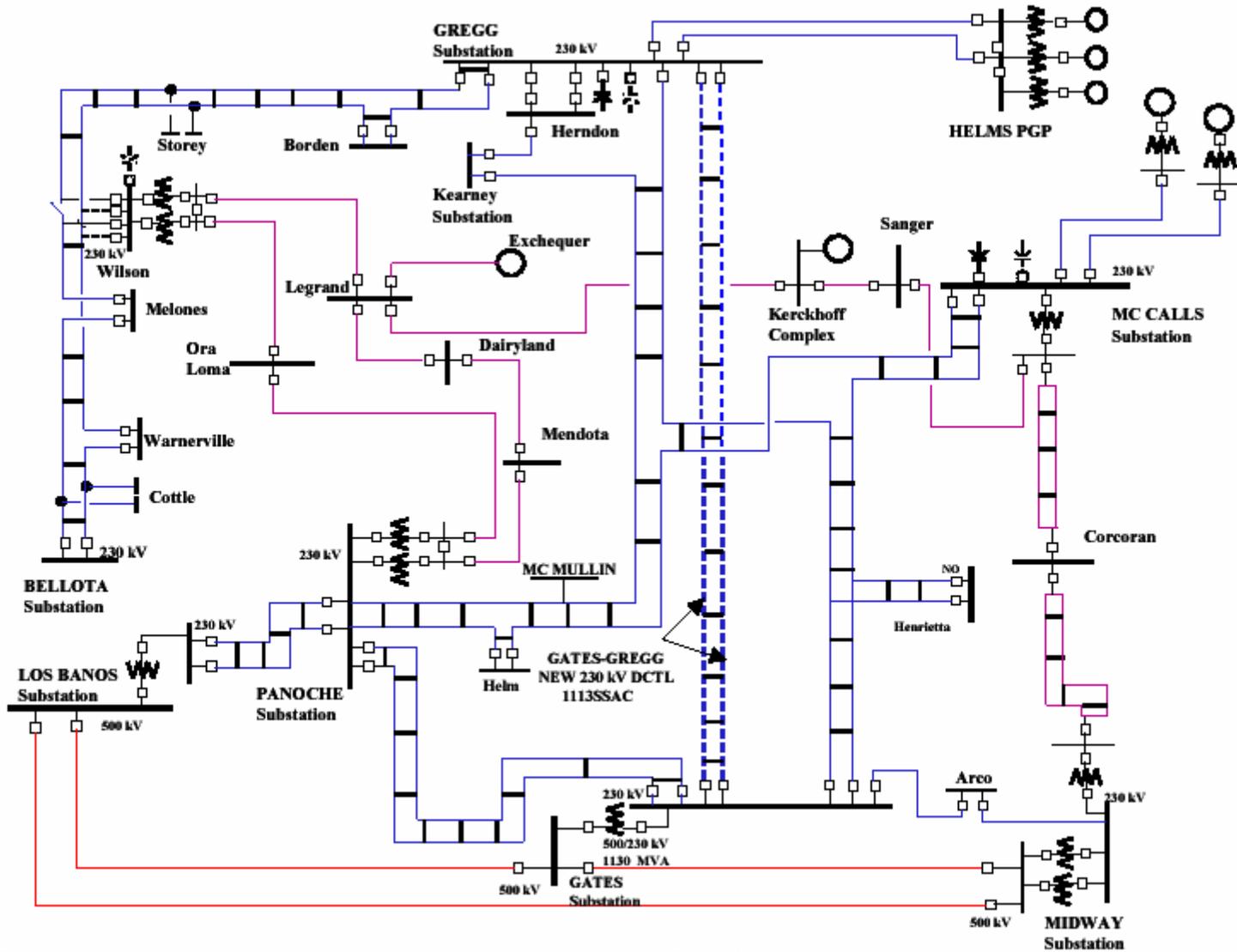
Midway-Tehachapi-Vincent 500 kV Line Alternative

- Transmission alternatives should be considered that can accommodate Tehachapi wind generation and increase the Path 26 transfer capability
- Transmission dedicated to only collecting Tehachapi wind generation would have a utilization factor of about 35%.
- A transmission expansion plan that ultimately resulted in another 500 kV path between Midway and Vincent but looped into a Tehachapi collector station would allow better utilization of the Transmission assets.

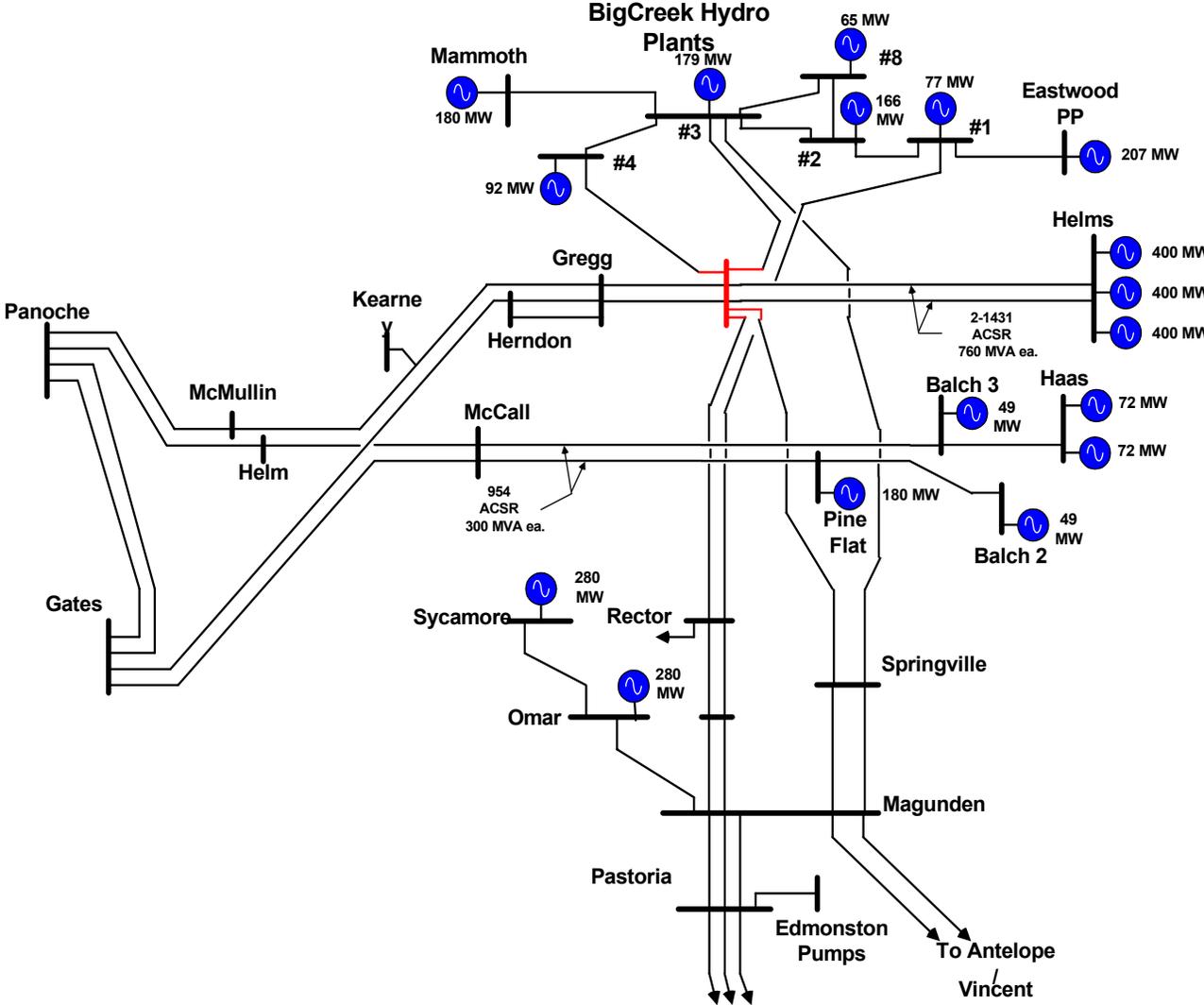
Fresno Long-Term Plan

- Need more Helms Pumping Capability
 - Need more load serving capability in 5-10 years
 - Gates-Gregg 230 kV DCTL
 - preferred project
 - Interconnection with SCE at Big Creek
 - alternative project
- * PG&E Transmission Expansion Plan

Gates-Gregg 230 kV DCTL Project



SCE-PG&E Tie at Big Creek



SCE-PG&E Tie at Big Creek

- Would allow 300 MW more Tehachapi wind generation to interconnect
- Would allow 300 MW more Helms Pumping capability
- Would increase Fresno load serving capability
 - about 10 years of load growth

SCE-PG&E Tie at Big Creek

preliminary feasibility review

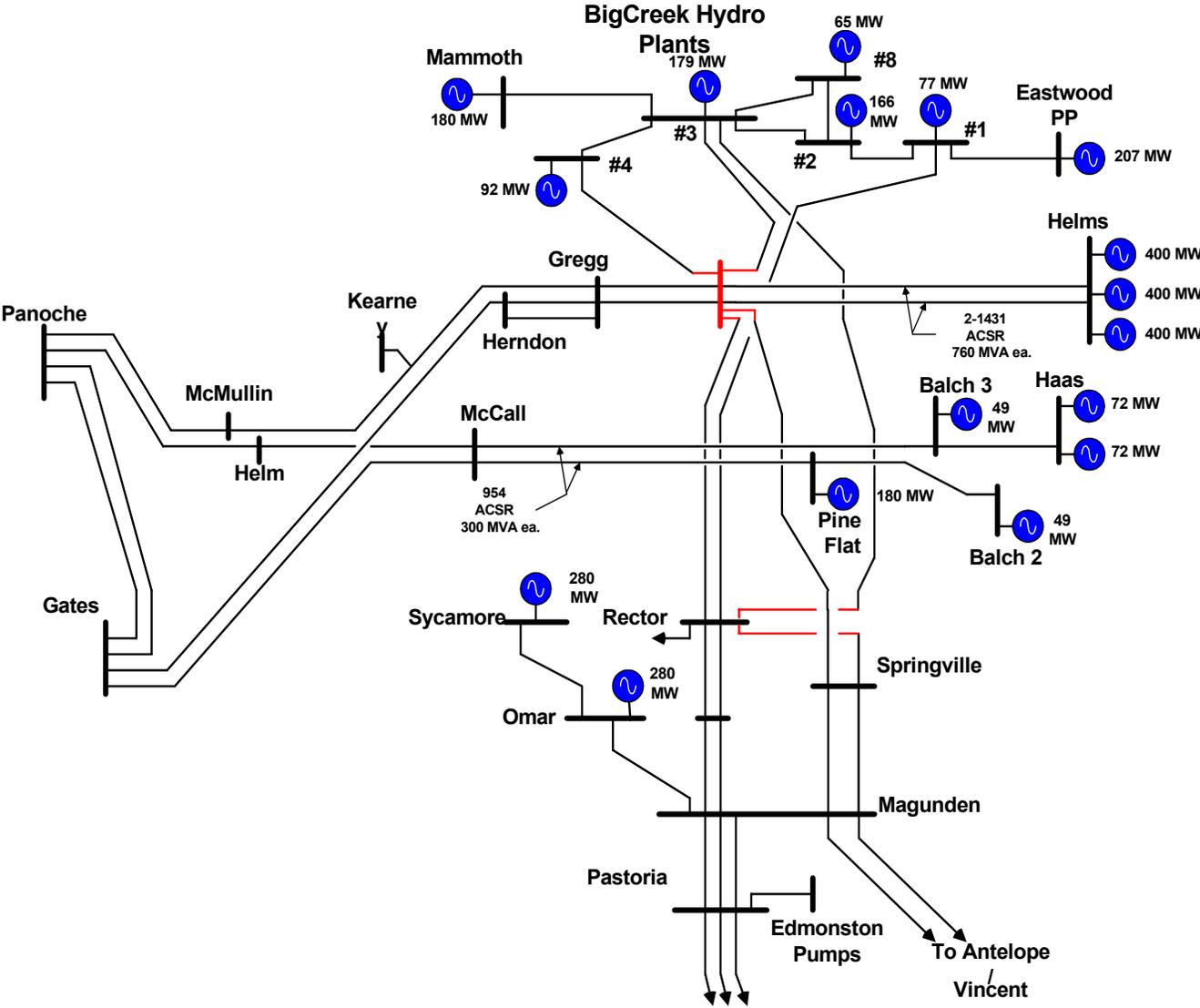
- Would need to fix existing overloads with reconductoring projects
 - Greg-Wilson 230 kV, Wilson-Le Grand 115 kV
- Would need to trip new tie-line for some contingencies in the scenarios checked
 - Magunden/Rector/Springville, off-peak, low hydro conditions
 - 4 N-1, 4 N-2
 - Helms/Gregg, peak, high hydro conditions
 - 2 N-1, 1 N-2

SCE-PG&E Tie at Big Creek

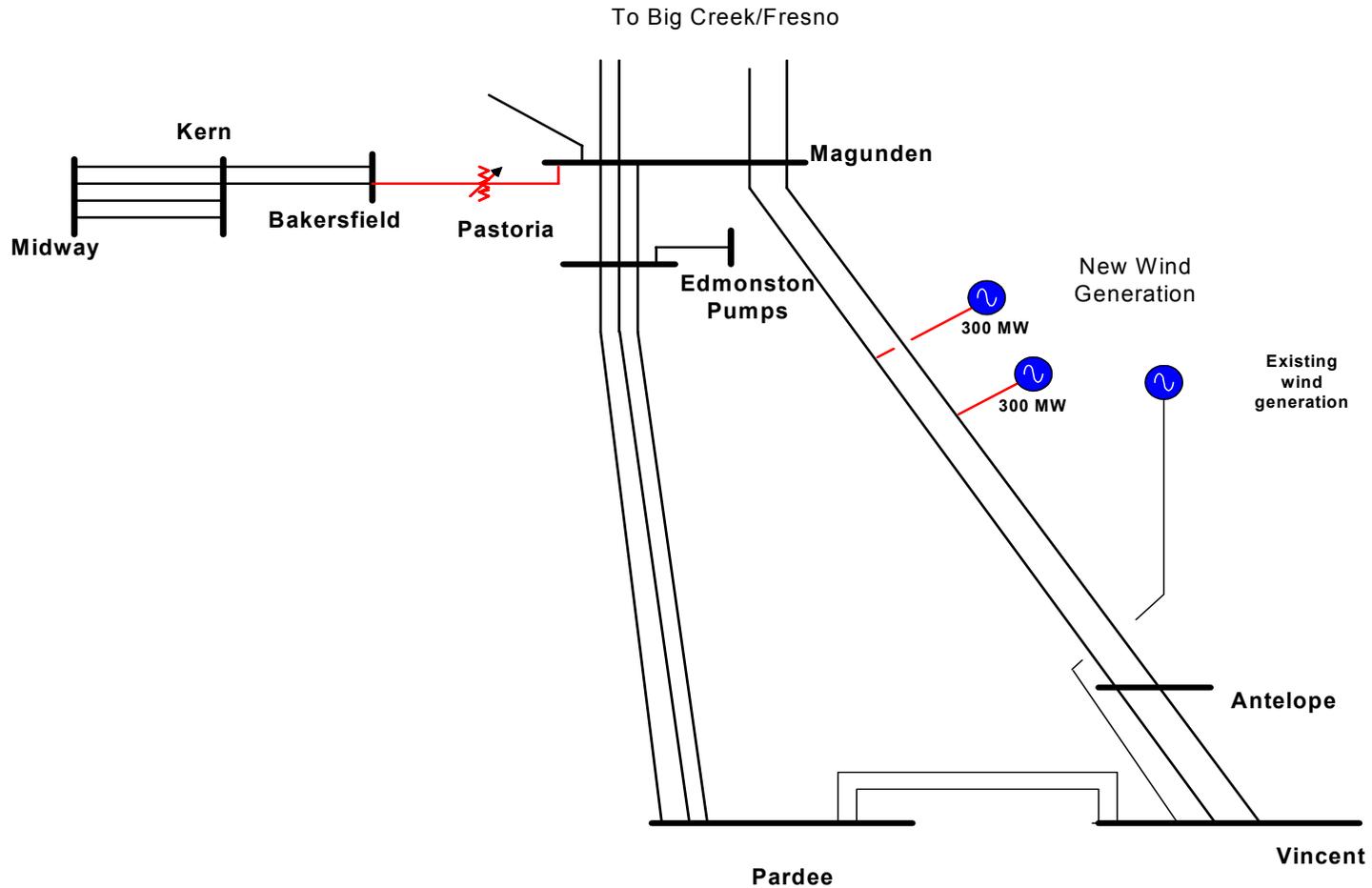
preliminary feasibility review

- Would need to build SCE's proposed project to loop Springville-Big Creek #3 230 kV line into Rector.

SCE-PG&E Tie at Big Creek



SCE-PG&E Tie at Magunden



SCE-PG&E Interconnection at Magunden

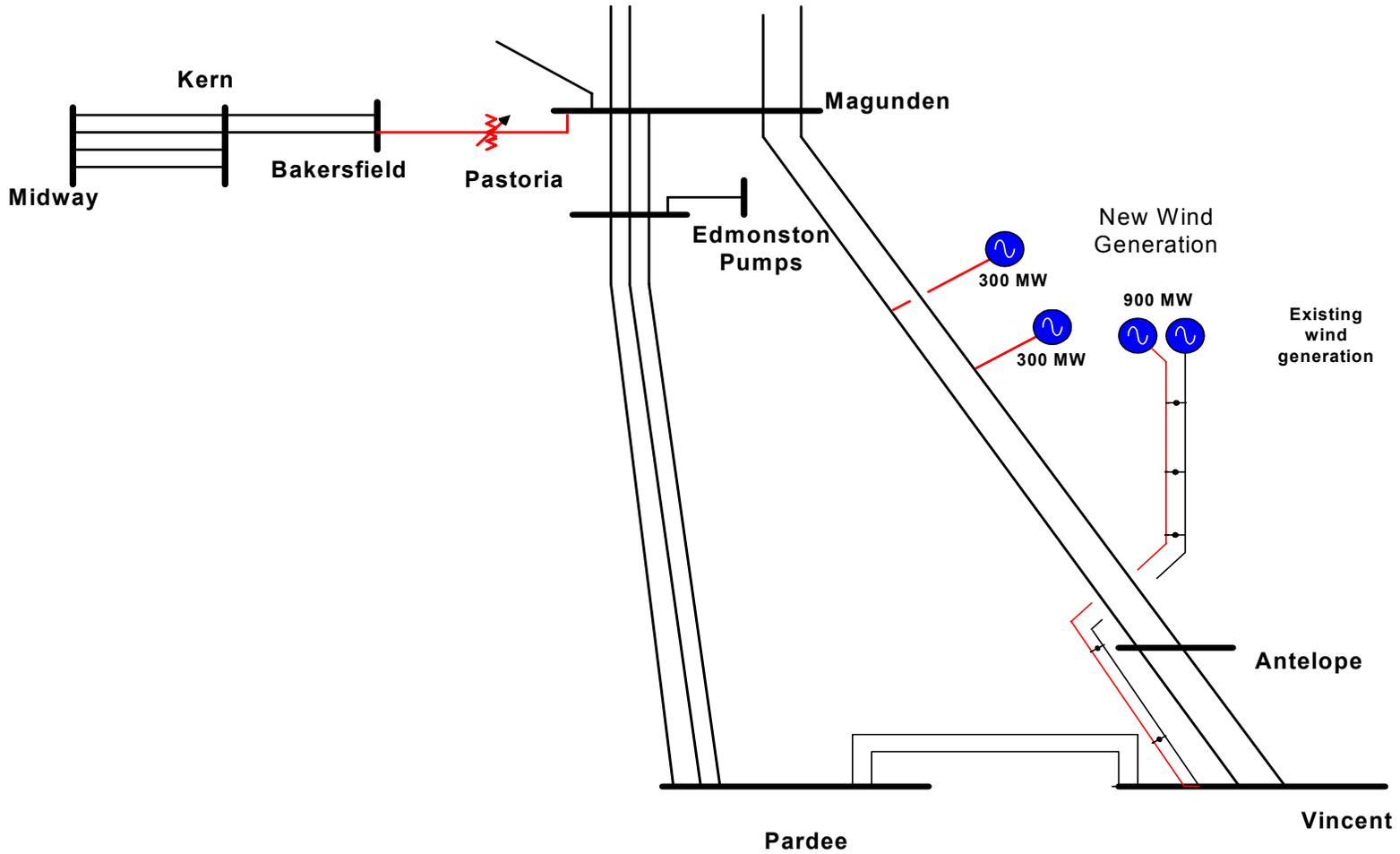
preliminary feasibility review

- Would allow 300 MW more Tehachapi wind generation to interconnect
- Would need to trip new wind generation for some contingencies south of Magunden.
- No significant impacts identified on PG&E system

Add 2nd circuit to Sagebrush 230 kV QF
owned line

- Would increase the Tehachapi generation interconnection capability by over 900 MW

To Big Creek/Fresno



Existing ISO Interconnection Queue

- Several wind generation projects proposed to be located in the Tehachapi area have submitted interconnection requests to the ISO.
- The ISO is responsible for ensuring that these requests are processed according to the ISO Tariff
- ISO is working with SCE and the generation developers to attempt to coordinate interconnection plans with the development of an overall Tehachapi transmission long-term plan

Existing ISO Interconnection Queue

- Could build new lines needed for interconnection using
 - 500 kV design (initially energized at 230 kV) so the line could eventually be used to create Midway-Tehachapi-Vincent 500 kV line.
 - Double circuit towers so an additional circuit could be added later
- Need to identify short-term upgrades that are compatible with long-term plan in a timely manner to allow projects in the ISO interconnection queue to move forward and, at the same time, not conflict with the long-term plan

March 2, 2004 CPUC Proposed Decision on Transmission Needs in Tehachapi

- Included ISO and Commission staff role to coordinate a study group to develop a Tehachapi Transmission plan
- ISO is ready to fill that role
- At this time, the ISO does not have any preconceived notions regarding the best option for Tehachapi