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2017 IEPR Commissioner Workshop

Natural Gas Market Trends and Outlook

October 9, 2017

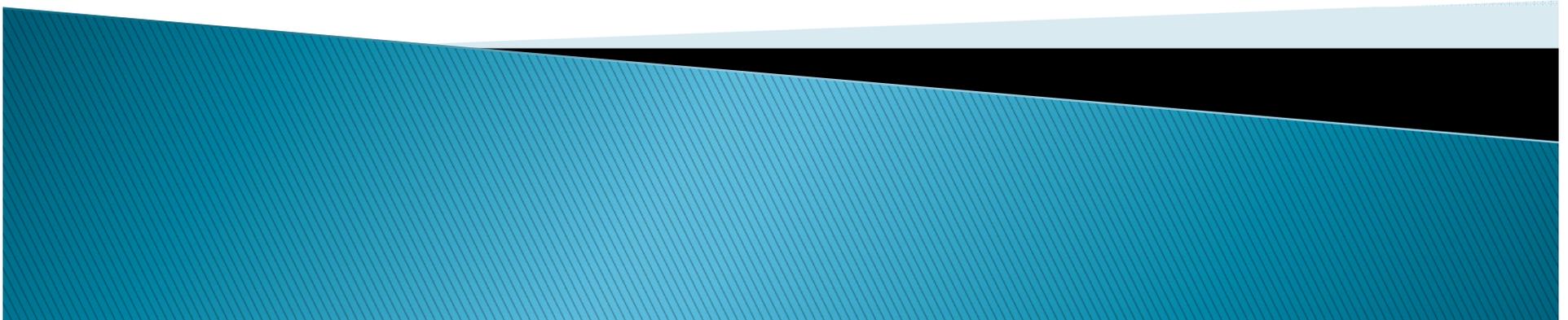
Independent Storage Providers – ISPs:

Central Valley Gas Storage, LLC

Gill Ranch Storage, LLC

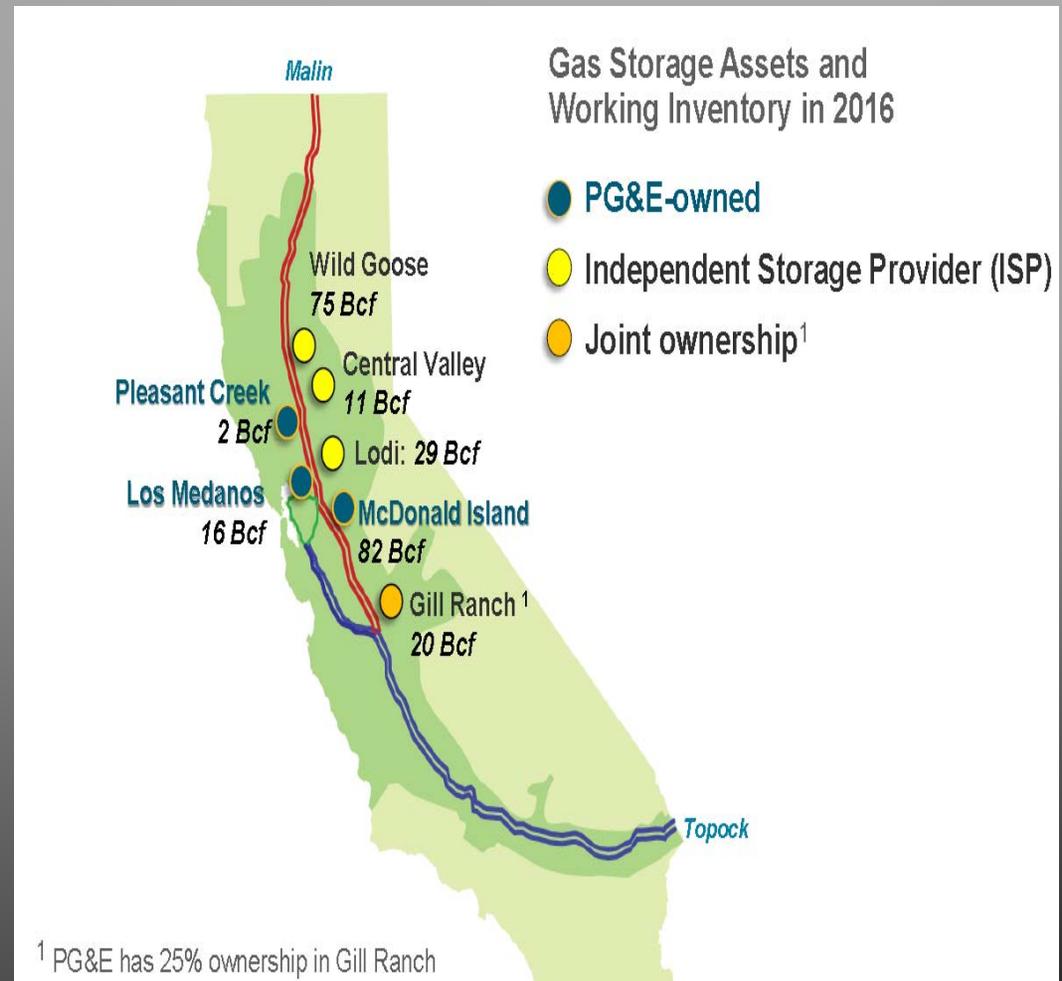
Lodi Gas Storage, LLC

Wild Goose Storage, LLC



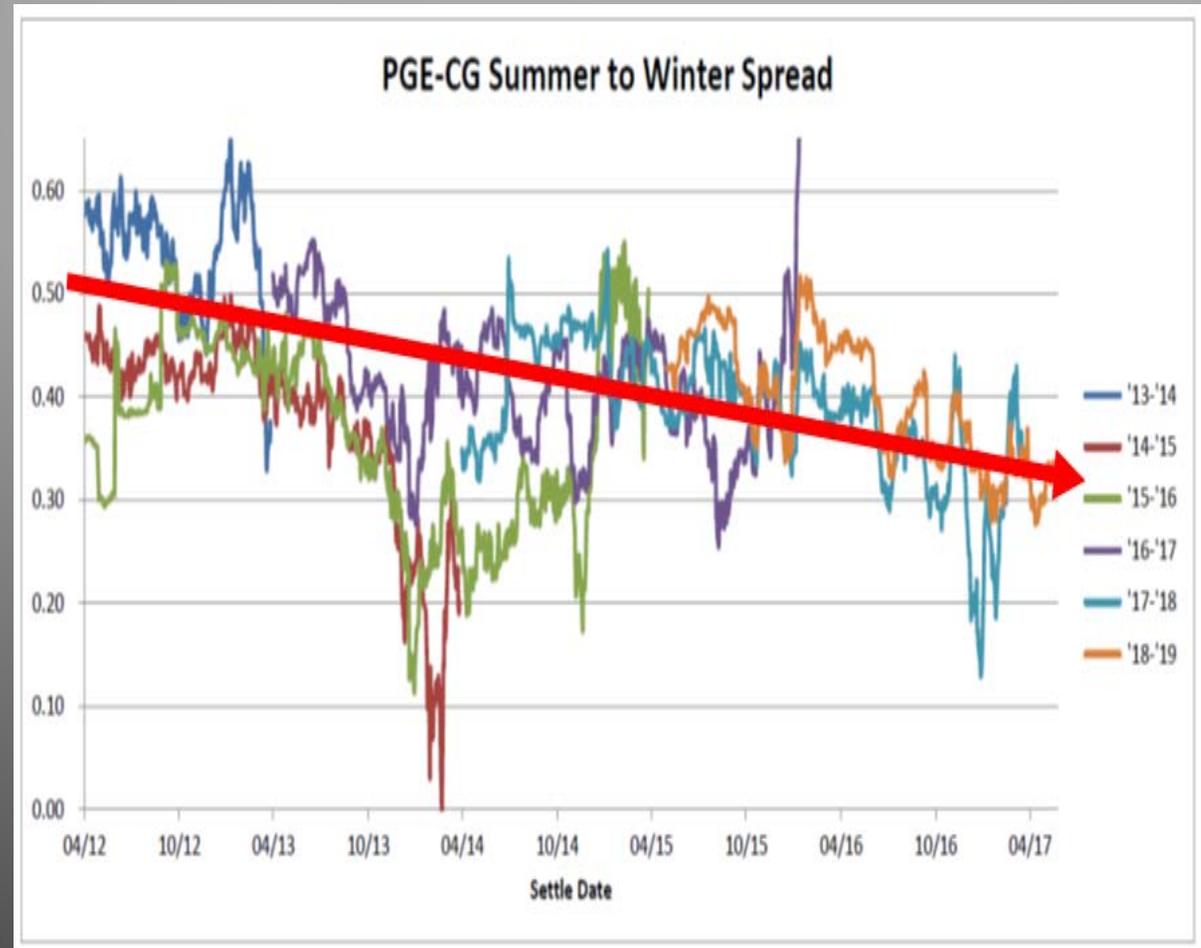
Northern California Gas Storage

- Current storage capacity of 235 Bcf with deliverability of 4.6 Bcf/d
- New ISP storage assets highly flexible depleted reservoir fields
- Wells purpose built for gas storage operations
- Built to modern safety standards
- Designed for long term operations



Forward Natural Gas Storage Spreads

- Traditional seasonal storage spreads remain low
- Today most storage value comes from operational capabilities
- Ability to quickly replace lost renewable generation sources
- Ability to respond to large temperature based demand swings
- Safe, modern, high deliverability, high availability gas storage wells



Natural Gas Storage Outlook

- PG&E and SoCal are both projecting significant decreases in demand for gas-fired power generation
 - Return of hydro to normal levels
 - Rapid pace of non-hydro renewable generation, particularly on SoCal's system
 - Natural gas storage best suited to balance the new load variability in the market
- Storage asset decommissioning and derates to decrease storage availability
 - PG&E proposing to decommission or sell Los Medanos and Pleasant Creek (18 Bcf capacity / 400 Mmcf/d deliverability)
 - Projections of up to 1.4 Bcf/d of deliverability reduction related to well compliance requirements
- New regulations will add compliance costs and impact storage deliverability
 - Well integrity tests to be performed
 - Tubing on packer well configuration
- Going forward natural gas and natural gas storage needs to be an integral part of California energy policy
 - Low emission bridge fuel for electric generation until energy storage viable
 - Natural gas transmission and storage infrastructure already in place
 - Lower emission alternative for home heating and non-renewable electric generation