

California Energy Commission

DOCKETED
13-IEP-1K

TN # 70483

APR. 26 2013

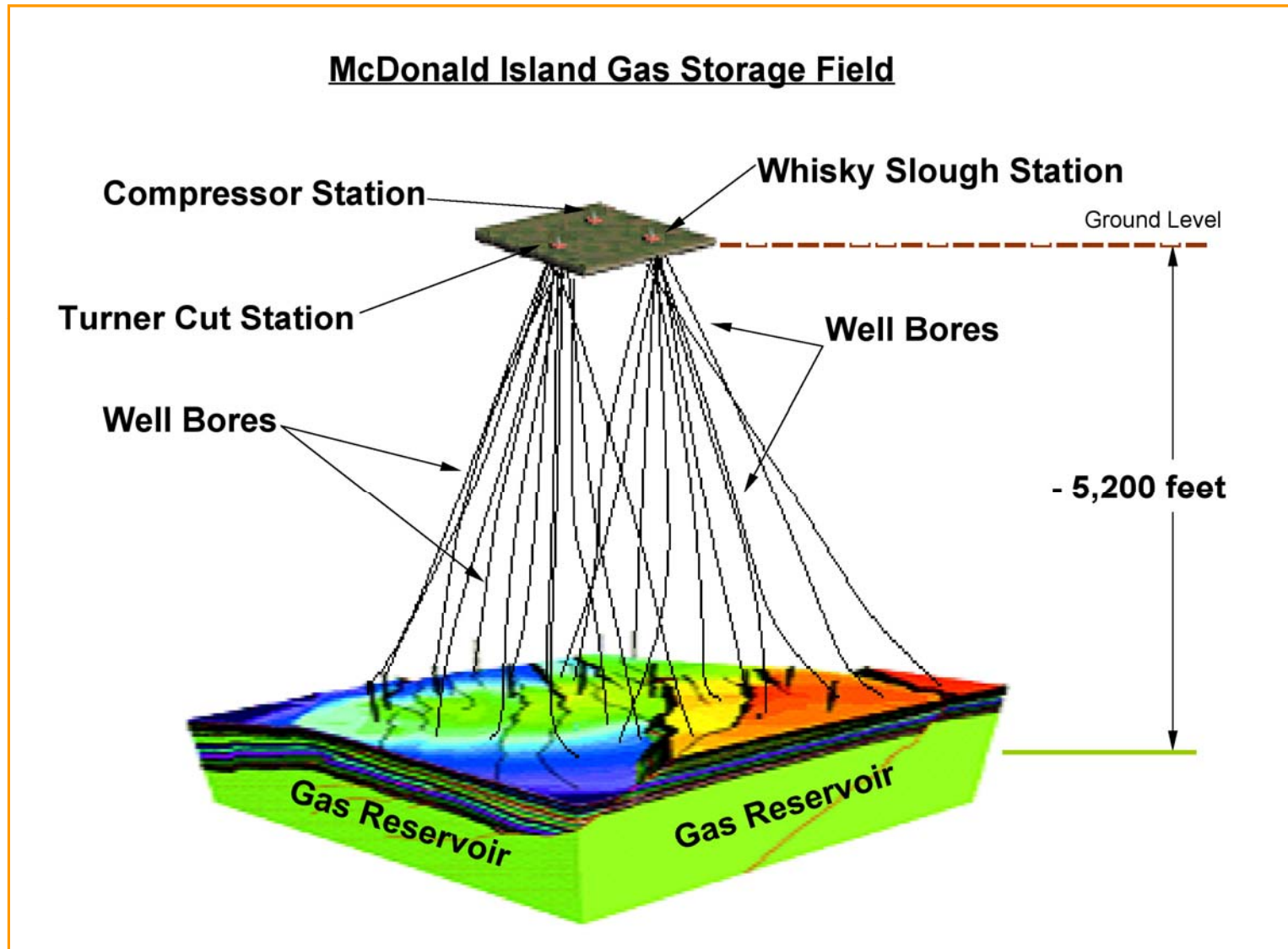


PG&E Gas Storage

Overview for California Energy Commission

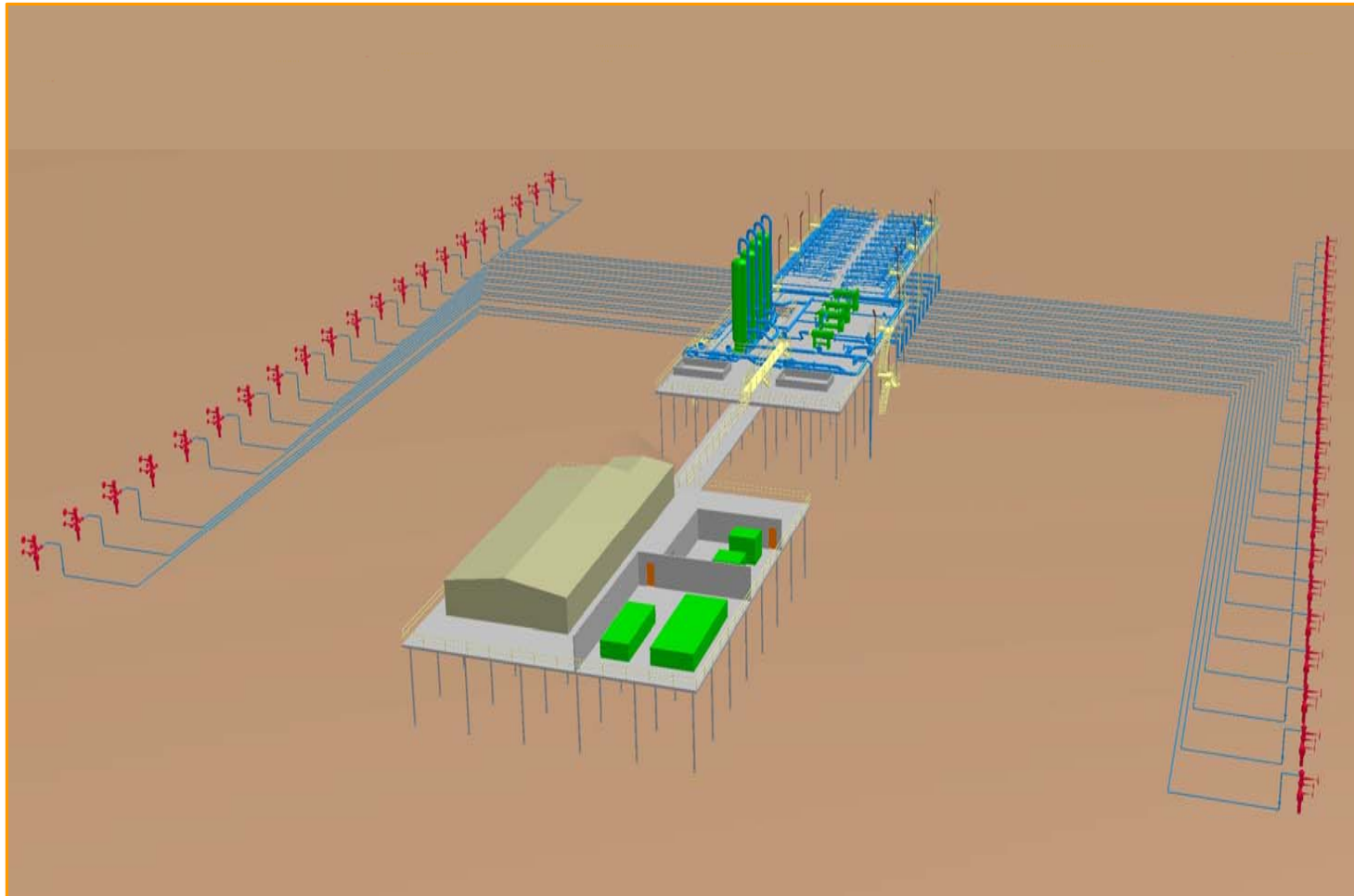
April 24, 2013

Overview of a Gas Storage Facility





Production Platform & Well Placement





Gas Storage Assets in Northern California

➤ PG&E – Facilities and Capacities

- McDonald Island, Los Medanos, Pleasant Creek and Gill Ranch
- Working Gas - 105 Bcf
- Injections – 635 MMcf/d
- Withdrawal – 2,180 MMcf/d

➤ Independent Storage Providers

- Wild Goose, Lodi, Gill Ranch and Central Valley
- Working Gas – 105 Bcf
- Injections – 1,840 MMcf/d
- Withdrawal – 2,740 MMcf/d



Gas Storage is used for three basic functions

1. Meet utility's obligation to all customers

- Residential and small commercial (Core)
- Electric generation (EG)
- Large commercial and industrial (Noncore)

2. Provide system balancing

- Matching supply and demand
- Operating imbalances
- Shrinkage imbalances

3. Provide market liquidity and seasonal price arbitrage

- Facilitate market transaction (parking/lending, firm storage)
- Summer vs. winter prices and daily vs. next month's prices

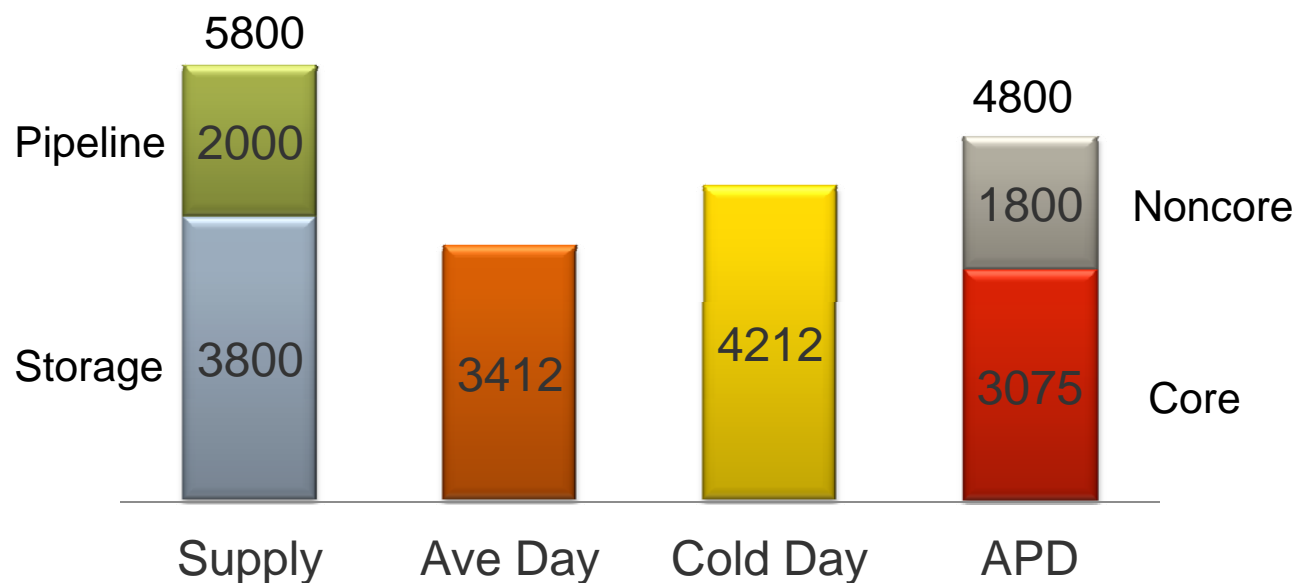


Utility Obligation to Serve

➤ Utility Obligation to meet all customer demands

☐ System Demand

- Average winter demand (Jan 2013) - 3,412 MMcf/d
- Cold day demand (Jan 14, 2013) – 4,212 MMcf/d
- Abnormal Peak Demand – 4,800 MMcf/d

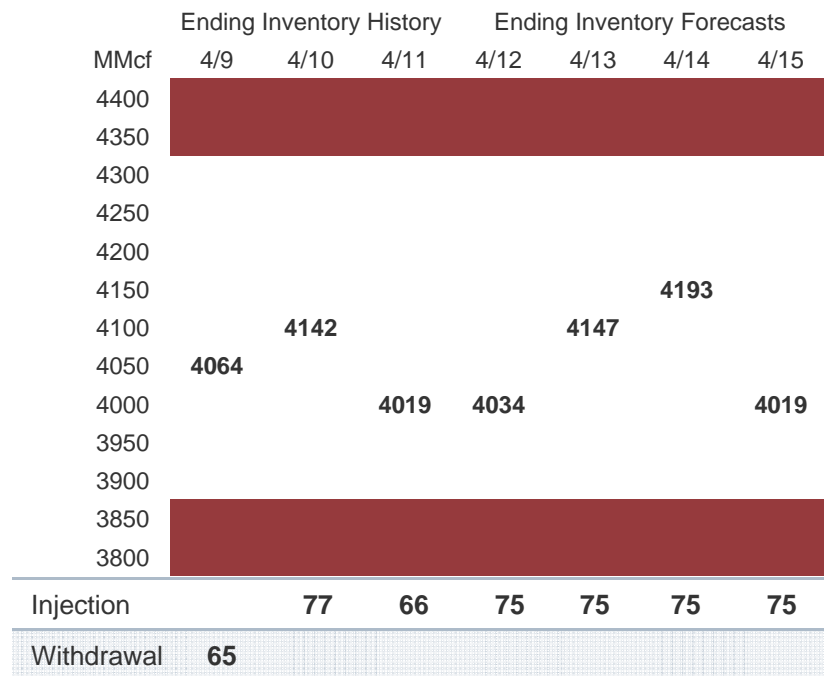




System Balancing

➤ System Balancing

- ☐ Matching supply and demand within the day
- ☐ Matching supply and demand over the gas day
- ☐ Monthly balancing
- ☐ System balancing needs likely to increase with additional renewable electric generation
- ☐ PG&E uses pipeline inventory swing and gas storage
 - Inventory swing 400 MMcf total
 - Storage 75 MMcf/d injection and withdrawal, 4 Bcf of inventory
 - Actual injection and withdrawal can go over 200 MMcf/d

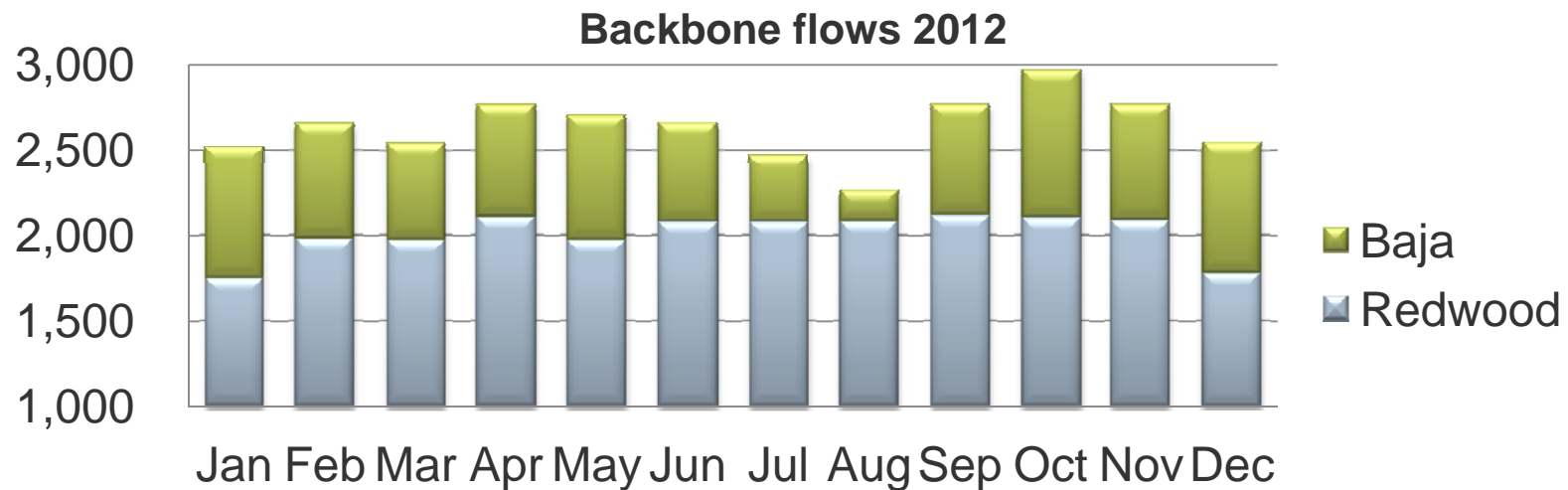




Market Liquidity

➤ Market liquidity and seasonal price arbitrage

- ❑ PG&E and ISP gas storage is connected to PG&E Citygate
 - PG&E Citygate is a very liquid trading point – 621 MMcf/d (Gas Daily 4/12/2013)
 - Liquid markets allow the trading of supplies between various sectors (Core, EG, Noncore) and between customers
 - Liquidity fosters gas-on-gas competition
 - Reduces price spikes during system maintenance, outages and other constraints
- ❑ PG&E backbone system has become a spring and fall peaking pipeline allowing for overall lower commodity prices





Conclusions

- **There is ample storage capacity in Northern California**
- **Gas storage provides essential operation and market functions**
 1. Meet utility's obligation to all customers
 2. Provide system balancing
 3. Provide market liquidity and seasonal price arbitrage