AGENDA
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PACIFIC TRADING FORUM 2019

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PG&E UPDATE

NEW PG&E EXECUTIVE LEADERSHIP
• PG&E Corporation CEO Bill Johnson
• Utility CEO Andy Vesey
• Refresh of PG&E Board of Directors

BANKRUPTCY - PLAN OF REORGANIZATION
• Filed on September 9, 2019
• Expected Approval By June 30, 2020

2019 GT&S RATE CASE FINAL DECISION
• Adopted on September 12, 2019
GAS OPERATIONS UPDATE
OUR JOURNEY CONTINUES
GAS SAFETY EXCELLENCE

We will deliver Gas Safety Excellence by:
• Putting SAFETY and people at the heart of everything
• Investing in the RELIABILITY and integrity of our gas system
• Continuously improving the effectiveness and AFFORDABILITY of our processes
OUR PROGRESS SINCE 2011

RISK REDUCTION

Completed 11 of 12 NTSB Safety Recommendations

Strength Testing: 1,380 miles
ILI Upgrade: 1,071 miles
Pipe Replacement: 265 miles transmission pipeline replaced
Valve Automation: 337 valves automated
CONTINUOUS IMPROVEMENT
AREAS OF FOCUS

• Long-term planning
• Improve outage management process for all major maintenance types and emergent work streams
• Continue bundling work streams: Hydrostatic testing and ILI Upgrades
• Create solutions to mitigate impact to customers
BACKBONE PLANNING
ILLUSTRATIVE OVERVIEW OF ILI WORK ON BAJA PATH

- Goal to perform parallel inspections at least one year apart
- Forecast potential reductions 30-60 days after In-Line Inspection (ILI) runs
OUR PLANS FOR 2020

- **Strength Testing**: 109 miles
- **ILI Upgrade**: 681 miles
- **Pipe Replacement & Valve Automation**:
  - Replace 3.6 miles transmission pipeline
  - Automate 29 valves
- **Shallow/Exposed Pipe**: 2.1 miles
GAS STRATEGY
CALIFORNIA’S CLIMATE GOALS

Assembly Bill 32 (2006): Reduce to 1990 levels by 2020
Senate Bill 32 (2016): 40% below 1990 levels by 2030
Governor Schwarzenegger’s Executive Order (2006): 80% below 1990 levels by 2050
Governor Brown’s Executive Order (2018): Net-zero by 2045
Throughput on the gas delivery system will likely decline over time as California works to meet its GHG emissions reduction goals, even under high Renewable Natural Gas scenarios.

Illustrative PG&E Annual Gas System Throughput Forecast

Source: External consultant, Energy and Environmental Economics (E3)
GAS STRATEGY
PG&E’S REVENUE AND THROUGHPUT COMPARISON

2018 Direct Use Revenue ($)

Residential 61.0%
Industrial 9.7%
Commercial 17.7%
EG 5.1%
Wholesale 0.1%
Unbundled* 6.4%

*Storage and Backbone services sold into the market.

2017 Direct Use Throughput (Therms)

Residential customers represent a substantially larger portion of revenue than throughput

Residential 25.6%
Industrial 28.9%
Commercial 12.3%
EG 32.7%
Wholesale 0.5%

PG&E is focused on developing implementation plans on each of the solutions identified to minimize impacts to rates as throughput decline.

1. **Reduce Costs**
2. **Increase Revenue**
3. **Allocate Remaining “Gap”**
NATURAL GAS STORAGE STRATEGY (NGSS)
NGSS ADOPTED IN 2019 GT&S RATE CASE FINAL DECISION

- DOGGR Regulations Compliance and Capacity Impacts
- New and Modified Storages Services
- Timeline of Implementation
- Rates
SB 887 - new regulations in response to the leak at Aliso Canyon

DOGGR issued regulations in September of 2017. Seven year implementation window, first 10% of wells modified, effective October 2019

- Well design and construction:
  - No single point of failure- Modify wells with tubing on packers (double liner)

- Well and facility maintenance:
  - Continuous monitoring for leaks and leak repair
  - Regular mechanical integrity testing (every 2 to 5 years)

- Costs to maintain and operate gas storage facilities are increasing and withdrawal capacity is decreasing ~ 40%
Adequate resources are needed to meet a 1-in-10 demand (supply standard adopted)

Additional inventory management and reserve capacities to support transportation system and possible loss of other supply sources.

Off-System is firm service for delivery into the SoCal Gas System (obligation ends in 2023).

Industrial¹ average daily winter demand.

EGEN¹,² demand under 1 in 10 cold and dry conditions.

Core¹ demand under a 1 in 10 year cold temperature event.

GHG policies are expected to decrease future demand.

1. Demand derived from the 2016 Cal Gas Report
2. EGEN demand includes SMUD

Demand

Supply

Some amount of supply may be required from PG&E, ISPs or both to meet the 1 in 10 cold event demand. The amount of supply required will depend on the outcome of the pending DOGGR regulations.

Transportation and estimated storage capacities after pending DOGGR regulations are implemented.

Assumes continued operation of independent storage providers.

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ADEQUATE RESOURCES ARE NEEDED TO MEET A 1-IN-10 DEMAND (SUPPLY STANDARD ADOPTED)

McDonald Island provides withdrawal between the Pipe Constraints

Supply Standard = 4,616
Pipe Constraint = 3,860
McDonald Is. = 756

Legend
- Storage Field
- Station / Terminal
- MMcfd Withdrawal Capacity
## MODIFIED STORAGE SERVICES

<table>
<thead>
<tr>
<th>Storage Services</th>
<th>Injection (mmscf/d)</th>
<th>Inventory (bcf)</th>
<th>Withdrawal (mmscf/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Service</td>
<td>24</td>
<td>5</td>
<td>307</td>
</tr>
<tr>
<td>Inventory Management</td>
<td>200</td>
<td>5</td>
<td>300</td>
</tr>
<tr>
<td>Reserve Capacity</td>
<td>25</td>
<td>1</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>249</strong></td>
<td><strong>11</strong></td>
<td><strong>857</strong></td>
</tr>
</tbody>
</table>
**250/D RESERVE CAPACITY COVERS MEDIUM TO HIGH PROBABILITY**

<table>
<thead>
<tr>
<th>Outage Scenario</th>
<th>Impact (MMcf/d)</th>
<th>Relative Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>McDonald Island, Well or Processing Outage</td>
<td>20 - 100</td>
<td>High</td>
</tr>
<tr>
<td>Kettleman, Compressor Single Unit Outage</td>
<td>0 - 200</td>
<td>High</td>
</tr>
<tr>
<td>Delevan, Compressor Single Unit Outage</td>
<td>0 - 200</td>
<td>High</td>
</tr>
<tr>
<td>L400/401, Pipeline Outage South of Delevan</td>
<td>0 - 200</td>
<td>Med</td>
</tr>
<tr>
<td>L300, Pipeline Outage North of Panoche</td>
<td>0 - 250</td>
<td>Med</td>
</tr>
<tr>
<td>Delevan, Compressor Station Outage</td>
<td>350 - 500</td>
<td>Low</td>
</tr>
<tr>
<td>McDonald Island, Platform Outage</td>
<td>300 - 600</td>
<td>Low</td>
</tr>
<tr>
<td>Kettleman, Compressor Station Outage</td>
<td>400 - 600</td>
<td>Low</td>
</tr>
<tr>
<td>McDonald Island, Storage Field Outage</td>
<td>900 - 1,100</td>
<td>Low</td>
</tr>
</tbody>
</table>
Currently, Gas Control meets peak-hour needs by using pipeline inventory and unscheduled core withdrawal capacity in PG&E fields.

With reduced PG&E storage capacity, less unscheduled withdrawal capacity will be available for peak hour needs. Relatively more supply will come from interstate pipelines and ISPs, which deliver at a constant rate.

A storage withdrawal rate of 12.5 MMcf / hour (300 MMcf / day) will provide a reasonable, but minimal, capability to manage pipeline inventory and meet the morning peak.
Effective April 1, 2020, there will change the way we determine if an OFO is needed
• Today PG&E uses the 75 MMcf/d of injection and withdrawal in our next-day forecast daily plans
• With NGSS implementation, PG&E will only plan to use the balancing resources during the current day
• No changes to current balancing rules for daily and monthly imbalances
CGT TO SELL OR DECOMMISSION TWO GAS STORAGE FIELDS

- Pleasant Creek (2 bcf) and Los Medanos (11 Bcf)
- By January 31, 2020 file with CPUC a plan to market the assets for sale
- Sale of Pleasant Creek will proceed shortly after the filing with the CPUC
- Sale of Los Medanos will not proceed until after PG&E files with the CPUC in 2022 that McDonald Island does have adequate capacity
# IMPLEMENTATION TIMELINE

<table>
<thead>
<tr>
<th>MILESTONES</th>
<th>EVENT TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPUC APPROVED FINAL DECISION</td>
<td>9/12/2019</td>
</tr>
<tr>
<td>2019 GT&amp;S RATE CASE FINAL DECISION - EFFECTIVE DATE for Final Rates</td>
<td>10/1/2019</td>
</tr>
<tr>
<td>CONVERT LM AND PC INTO PRODUCTION FIELD</td>
<td>11/1/2019</td>
</tr>
<tr>
<td>MODIFIED STORAGE SERVICES EFFECTIVE DATE</td>
<td>4/1/2020</td>
</tr>
<tr>
<td>EXPLORE LM AND PC DECOMMISSIONING</td>
<td>1/1/2022</td>
</tr>
<tr>
<td>DOGGR COMPLIANCE COMPLETE</td>
<td>10/1/2025</td>
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</tbody>
</table>
# BACKBONE RATES

<table>
<thead>
<tr>
<th>Path</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncore Redwood Annual</td>
<td>$0.4508</td>
<td>$0.4905</td>
<td>$0.6611</td>
<td>$0.7294</td>
<td>$0.7518</td>
</tr>
<tr>
<td>Noncore Baja Annual</td>
<td>$0.4908</td>
<td>$0.5905</td>
<td>$0.7961</td>
<td>$0.8994</td>
<td>$0.9318</td>
</tr>
<tr>
<td>Noncore Redwood Seasonal</td>
<td>$0.5409</td>
<td>$0.5886</td>
<td>$0.7933</td>
<td>$0.8753</td>
<td>$0.9022</td>
</tr>
<tr>
<td>Noncore Baja Seasonal</td>
<td>$0.5889</td>
<td>$0.7086</td>
<td>$0.9553</td>
<td>$1.0793</td>
<td>$1.1182</td>
</tr>
<tr>
<td>Core Redwood Annual</td>
<td>$0.3898</td>
<td>$0.4538</td>
<td>$0.6092</td>
<td>$0.6875</td>
<td>$0.7180</td>
</tr>
<tr>
<td>Core Baja Annual</td>
<td>$0.4298</td>
<td>$0.5538</td>
<td>$0.7442</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Core Redwood-Seasonal (new - 4/1/2020)</td>
<td>--</td>
<td>--</td>
<td>$0.7311</td>
<td>$0.8250</td>
<td>$0.8616</td>
</tr>
<tr>
<td>Core Baja - Seasonal (Expires - 3/31/2020)</td>
<td>$0.5157</td>
<td>$0.6645</td>
<td>$0.8931</td>
<td>$1.0290</td>
<td>$1.0776</td>
</tr>
<tr>
<td>Silverado/Mission Annual</td>
<td>$0.2829</td>
<td>$0.3376</td>
<td>$0.5023</td>
<td>$0.5731</td>
<td>$0.5919</td>
</tr>
</tbody>
</table>

Note: Redwood/Baja (Redwood vs Baja) path differentials will be $0.10/Dth in 2019, $0.135/Dth in 2020, $0.17/Dth in 2021 and $0.18/dth in 2022
HOW TO STAY INFORMED?
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