Pennsylvania Public Utility Commission
Annual Winter Reliability
Assessment Meeting

Energy Association of Pennsylvania

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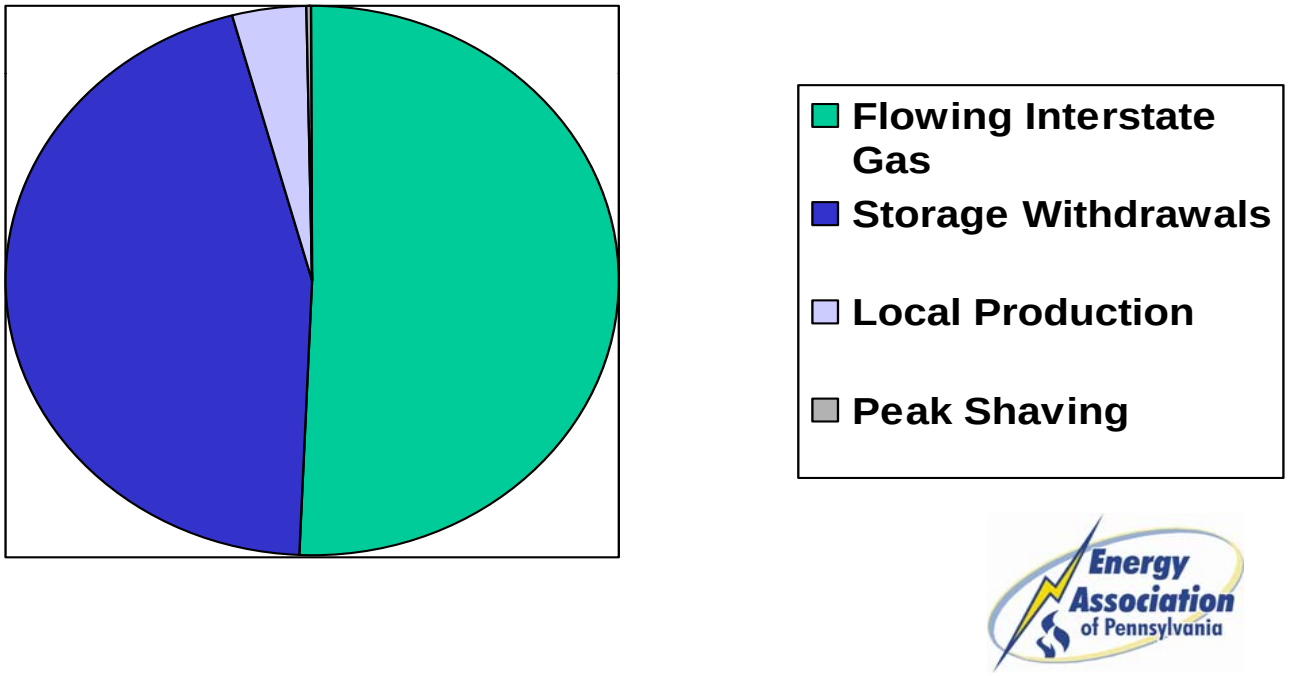
SUPPLY

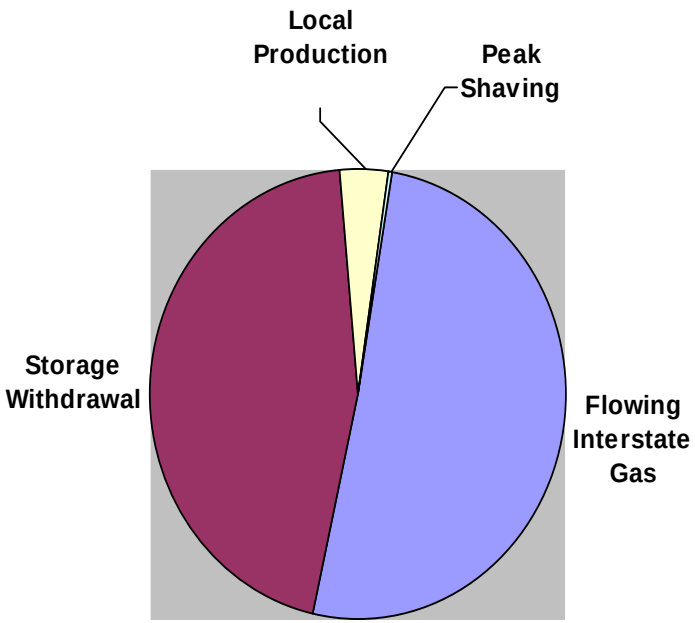
Winter 2010-2011 *(all natural gas volumes in billions of cubic feet)*

Expected Demand	**220.4** Bcf
Expected Supply	
Flowing Interstate Gas	111.2
Storage Withdrawals	99.8
Local Production	8.5
Peak Shaving	0.9
TOTAL	**220.4**

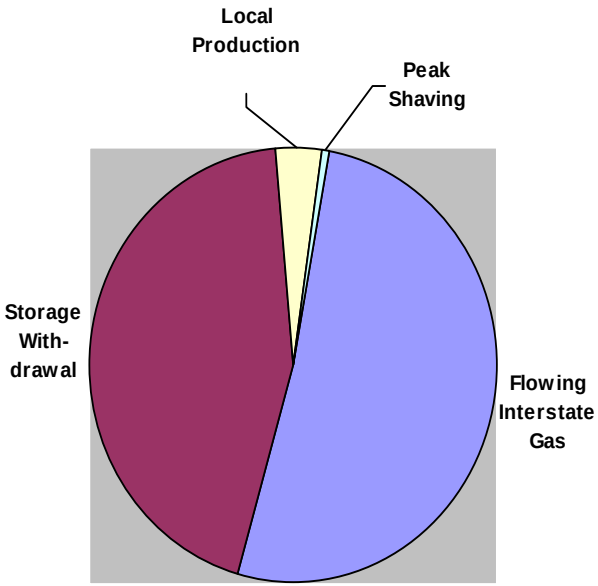
Winter 2010-2011: Supply Sources



Winter 2010-2011:
Supply Sources by Type
220.4 Bcf



Winter 2009-2010:
Supply Sources by Type
224.5 Bcf



System Planning Strategies

- ✓ Objective: To identify supply resources (including upstream transportation and storage capacity) that will be necessary to preserve service reliability at anticipated levels of firm demand

System Planning Strategies

- ✓ Capacity and Supply Assets: NGDCs commit to capacity and supply assets as necessary to meet firm customer needs, including operational swings. Commitments may include a reserve, but do not include service to interruptible customers. These assets include:
  - ✓ Pipeline deliveries per firm transportation agreements
  - ✓ Underground storage withdrawals (on-system, off-system)
  - ✓ Pennsylvania production (where available)
  - ✓ Peak shaving facilities

System Planning Strategies

- ✓ Proved reserves of natural gas have grown significantly over the past several years, indicating an expanding resource base.
- ✓ The Energy Information Administration projects that natural gas production from unconventional resources in the U.S. will increase 35% between 2007 and 2030. The largest increase is expected to come from the development of shale formations in the lower 48 states.
- ✓ Marketed production of natural gas averaged almost 60 Bcf per day last year, or a total of 21.9 trillion cubic feet (Tcf) over the year, the highest level since 1973.

(EIA's Natural Gas Year- In-Review 2009, released July 2010; Expansion of the U.S. Natural Gas Pipeline Network: Additions in 2008 and Projects through 2011 -EIA, September 2009)

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System Planning Strategies

- ✓ Additions to the national pipeline grid totaled close to 3,000 miles last year, representing 43 natural gas pipeline projects.

- ✓ EIA notes that the scale of natural gas pipeline projects was also exceptional in 2008, with nearly 3,900 miles of pipe adding 44.6 Bcf per day of cumulative capacity.

- ✓ More than 20,000 miles of new natural gas transmission pipeline, representing more than 97 billion cubic feet per day of capacity, were placed in service in the United States over the 1998 – 2008 time period.

(Natural Gas Year-In-Review 2009, US Energy Information Administration, Released: July 2010; Expansion of the U.S. Natural Gas Pipeline Network: Additions in 2008 and Projects through 2011, EIA, September 2009; Major Changes in Natural Gas Transportation Capacity 1998-2008, J. Tobin, Office of Oil & Gas, EIA)

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System Planning Strategies

- ✓ Price expectations for 2011 are $4.58 per MMBtu, which is 4 % lower than last month's forecast, primarily due to a stronger domestic production forecast.

- ✓ Factors that may contribute to a decline in natural gas prices include the weakened economy, reduced heating demand, as well as higher than usual production and storage levels.

- ✓ Natural gas prices nationally fell to their lowest level in seven years in 2009. The wellhead price averaged $3.71 per thousand cubic feet (Mcf) during 2009, compared with $7.96 per Mcf in 2008. Despite the reduction in prices, production remained strong throughout 2009, primarily as a result of increasing shale production and recent past investments.

(Short-Term Energy and Winter Fuels Outlook, US Energy Information Administration, October 13, 2010; Natural Gas Year-In-Review 2009, US EIA, Released: July 2010)

Storage Management

- ✓ Inventories must be maintained at the levels necessary to fulfill obligations per planning criteria. Aggregate projected storage levels on Nov. 1, 2010 are sufficient to meet anticipated winter demand
- ✓ Warmer than normal weather affects storage utilization, given the need to meet minimum turnover requirements for the integrity of fields and to comply with pipeline tariff provisions

Storage Management

- ✓ Where contractually and operationally permissible, an NGDC may leave gas in storage if projected replacement costs exceed current prices, or an NGDC may use storage in lieu of firm transportation if replacement costs are favorable
- ✓ Storage inventory is managed to prevent deliverability from being reduced before potential design day occurrence, and to prevent firm markets from going unserved for some part of the remainder of the season
- ✓ Nationally, storage positions remain very strong as working gas injections are at the second highest levels ever. Natural gas demand has continued to moderate and above average storage builds signal the likelihood of adequate levels of working gas available to meet peak and design winter season requirements this winter
- ✓ On October 1, 2010, working natural gas in storage was 3,499 billion cubic feet (Bcf). Current inventories are now 220 Bcf above the previous 5-year average (2005–2009)

(AGA Natural Gas Market Indicators – 10/1/10 and 10/15/10; Short-Term Energy and Winter Fuels Outlook, US Energy Information Administration, October 13, 2010)

Ability to contract for interstate pipeline capacity

- ✓ Firm capacity assets are used to transport supplies and manage storage to serve firm customers and operationally balance system requirements
- ✓ Members routinely review the interstate capacity market to try to obtain the optimum portfolio of assets to meet their needs
- ✓ The temperature sensitive loads of residential and human needs customers require dedicated, firm interstate transportation and storage services: There is no substitute
- ✓ Members do not report difficulty contracting for firm interstate capacity **when it is available**

Injections into LNG Facilities

- ✓ Two members inject into member-owned facilities
- ✓ Total volume injected: 4.3 Bcf
- ✓ PECO Energy anticipates using LNG to meet 1% of winter day requirements, PGW anticipates using LNG to meet 2% of winter requirements
- ✓ Management of LNG facilities is primarily a matter of preparedness

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Gas Price Volatility: Hedging

- ✓ Based on a weighted average of the members, **61.2%** of this winter's supplies are hedged

- ✓ Supplies are considered hedged if they are
  - ✓ Are already purchased and in storage
  - ✓ If they are contracted for delivery under:
    - ✓ Fixed-price contracts
    - ✓ Forward-priced contracts
    - ✓ Price caps

Conclusion: SUPPLY

- ✓ Members are well-prepared to accommodate the conditions forecasted in their winter season planning design

- ✓ Underground storage and peak shaving inventories will be adequate to handle design conditions

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