

# Washington UTC

*Northwest Natural Gas Hedging Practices Review*  
*February 28, 2013*

**Schneider**  
Electric

# Report Summary

## Report Summary

Washington Utilities and Transportation Commission (WUTC) has engaged Schneider Electric (formerly Summit Energy Services, Inc.) to provide expertise in the preparation of testimony, analysis and exhibits examining the inter-related activities of natural gas procurement, commodity price risk management and hedging strategies involving the following investor-owned utilities (IOUs) regulated by WUTC:

- Puget Sound Energy, Inc. (PSE)
- Avista Corp
- Northwest Natural Gas (NWN)
- Cascade Natural Gas Corporation

In support of this initiative, the material that follows will explore for Northwest Natural Gas (NWN) the market conditions and forces under which they must operate as well as provide a critique of the policies, procedures & strategies employed by them. Whenever possible, critical issues will be identified and potential improvement areas elevated.

Best Practice Risk  
Management Methodology

## Best Practice Risk Management Methodology

For context within the review of the risk management policies, strategies and procedures utilized by the NWN, the following areas of focus will be highlighted and used to categorize critiques and recommendations:

- **Objectives/Goals/Purpose Statements**

Has the entity translated general statements, i.e. reducing volatility, managing risks, maintaining price or rate stability, into defined numerical metrics? Are significant changes in these metrics met with adjustment in strategic parameters?

- **Exposure Quantification**

Has the entity defined the model(s) required to calculate the portfolio of 'risks' to which the risk management policy applies? Has it determined a methodology by which to calculate 'hedgeable' or partially 'hedgeable' risks within the portfolio or has it defined those risks within the portfolio for which a risk mitigation strategy will apply? Are examples given to show exposure quantification methodology?

- **Strategic Initiatives**

Has the entity created a blueprint for achieving goals? Is there an outline of empirical and statistical information and analysis required as input to enable strategic management? Have definitive reporting outputs necessary for management been outlined? Is the strategy creation and management enabled in policy with designated role-level accountabilities? Are there measures of performance defined on decisions deemed as discretionary or opportunistic; what is required to validate these types of transactions?

- **Oversight and Control**

Has the entity defined the governance structures and the functional oversight groups and key roles empowered to implement and manage risk management functions? Are proper mechanisms in place to ensure compliance within all risk management functions?

# NWN Policy Review

# Policy Review

Formal Risk Management Policy

Defined In Policy

Policy/Strategy Goals & Objectives

Governance Framework Defined

Delegation of Authority

Strategy Definition

Allowable Instrumentation

Hedge Procedure Outline

Deal Capture Process Outline

Trade Confirmation Process Outline

Counterparty Evaluation

Hedge Gain/Loss Tolerance Provision

Authorization Limits (In Policy or Procedure)

*Dollar Limits*

*Volume Limits*

*Price Limits*

*Term Limits*

*Hedge Time Horizon*

*Volume*

*Term*

NWN

3-Only applies to derivatives

4-Credit evaluation only

5-Covered by multiple policies

Northwest Natural Gas

- Objectives/Goals/Purpose Statements

- 

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- Exposure Quantification

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- Strategic Initiatives

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- Oversight and Control

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NWN's Regional  
Natural Gas  
Pricing Dynamic

## NWN's Regional Natural Gas Pricing Dynamics

### NWN Devilered Volume by Location (%)

<b>AECO</b>	40.03%
<b>SUMAS</b>	0.00%
<b>ROCKIES</b>	37.23%
<b>STN#2/OTHER</b>	22.74%

- The entity participate in a relatively small footprint of delivery points, but the exposure to those points varies significantly amongst them so market forces that effect only one point will not impact all entities equally.
- CME Nymex Henry Hub is also a relevant price point: It is utilized as a financial hedge vehicle as well as a component in formula pricing against physical contracts.
- High correlation of prices in all the entities portfolios with similar seasonal and technical price movement characteristics.
- Delivery points falling under the 'other' category are predominately daily, not first-of-month convention and have limited liquidity in forward market.

## Henry Hub (NYMEX) NG Market Summary

### **What is it?:**

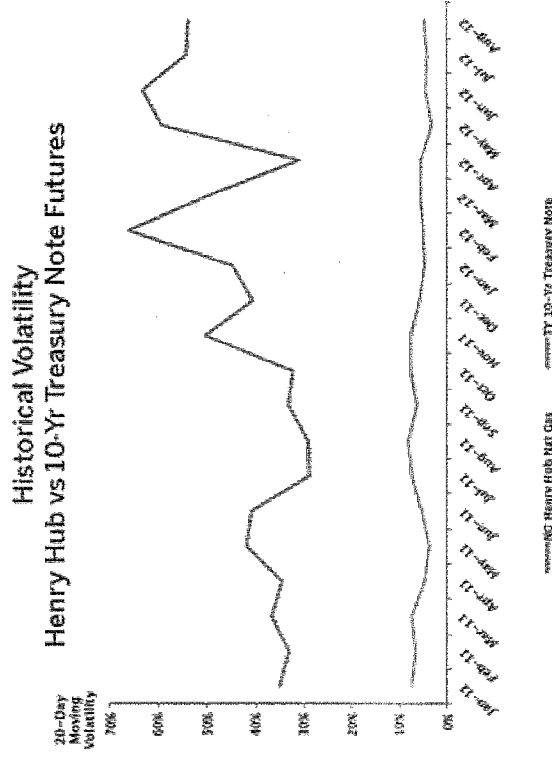
A distribution hub located in Erath, Louisiana on the Sabine Pipeline system. A dominant hub, it interconnects with nine interstate and four intrastate pipelines. It serves as the delivery point for physically settled futures contracts that trade on CME's New York Mercantile Exchange (Nymex).

### **Why does it matter?:**

It's a widely used national benchmark for natural gas pricing and is a component in a large percentage of formula-driven pricing in physical supply contracts across the US. Nymex futures contracts, physically delivered at Henry Hub, are the 3<sup>rd</sup> largest commodity futures contract in the world by volume.

### **Characteristics:**

- High volatility relative to other commodities
- High levels of liquidity
- Transparent forward price curve (12 years)
- New technologies have greatly increased US supply options pressuring prices to decade+ lows



## AECO (Alberta Hub) Market Summary

### **Provinces Served:**

Alberta, Saskatchewan, Manitoba, Ontario & Quebec (also the state of Montana)

### **Transport Options:**

Third party supply opportunities are available to all industrial customers based on volume requirements

### **Market Drivers:**

Storage, Demand, Production, Weather, Exports to US, Exchange rates, Oil Sands

### **Regional Nuances:**

Storage- LDC backed storage products are only available behind Enbridge for very large volume industrial customers (22,576 GJ/day)

## Sumas (Northwest Canadian Border) Market Summary

### **States Served:**

British Columbia, Idaho, Nevada, Oregon and Washington

### **Transport Options:**

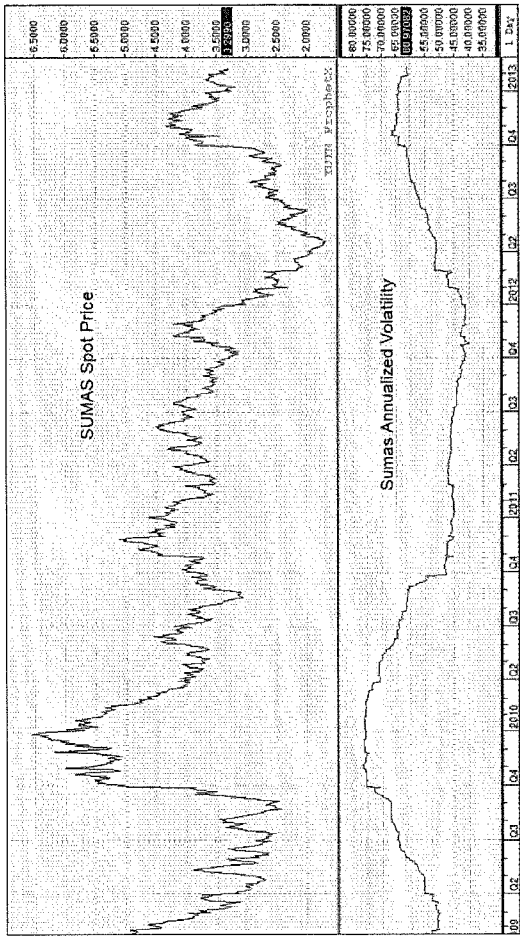
All industrial and commercial customers may transport in this area.

### **Market Drivers:**

NYMEX, Weather, Hydro, W. Canadian Gas Imports

### **Regional Nuances:**

Decreased Canadian production and an increase in the production of Canadian oil sands has reduced imports from Canada.



## CIG (Rockies) Market Summary

### **States Served:**

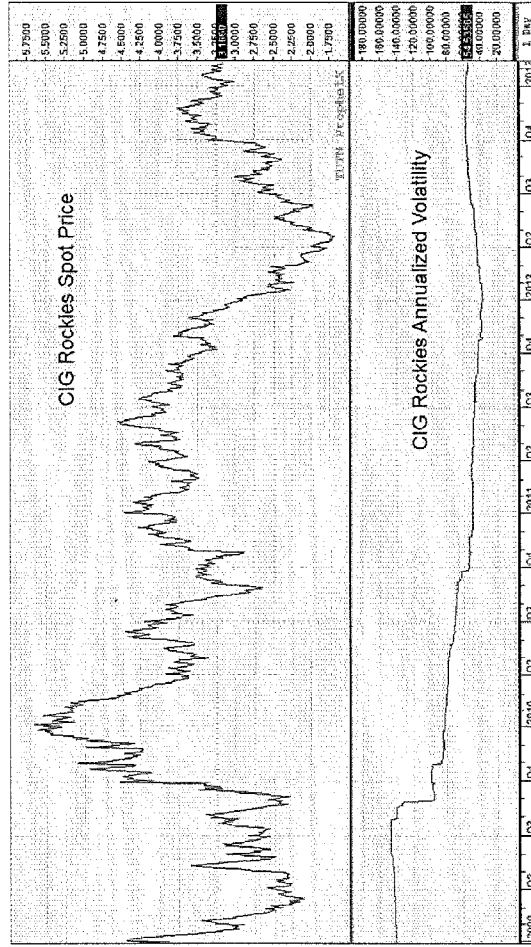
Colorado & Wyoming

### **Transport Options:**

Third party supply opportunities are available for all industrial and commercial customers in Colorado. No volume requirements are necessary. Wyoming also has a once-a-year "choice program" for natural gas selection behind SourceGas.

### **Market Drivers:**

NYMEX, Weather, Western Storage, Production Levels, Pipeline Expansions



# Delivery Point Correlations

36 Periods

Correlations	
NYMEX to CIG Rockies	96.60%
NYMEX Change to CIG Rockies Change	93.40%
NYMEX to NWPL-Sumas-Rockies	96.57%
NYMEX Change to NWPL-Sumas-Rock Change	93.98%
NYMEX to Questar Rockies	95.72%
NYMEX Change to Questar Rockies Change	93.72%
NYMEX to Spectra Westcoast #2	87.65%
NYMEX Change to Spectra/Westcoast #2 Change	14.93%
NYMEX to AECO 7A	94.85%
NYMEX Change to AECO 7A Change	79.73%
NYMEX to AECO 5A	85.75%
NYMEX Change to AECO 5A Change	3.95%

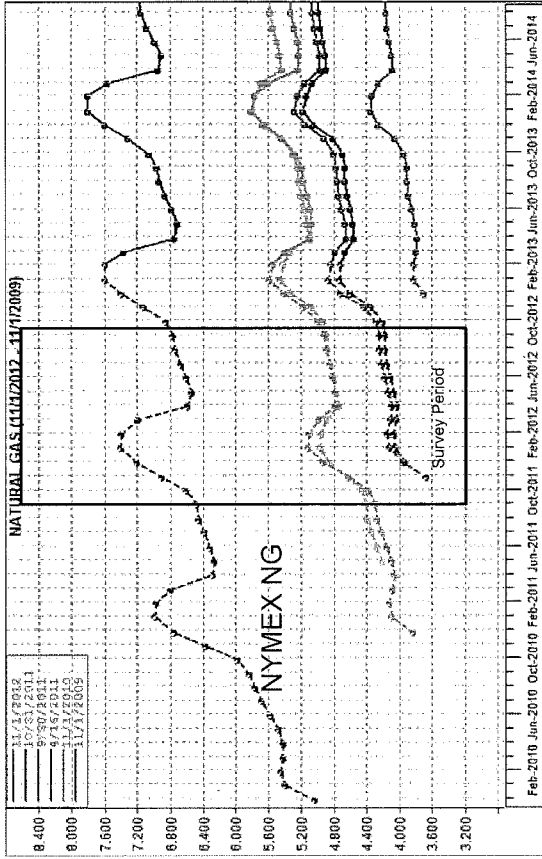
12 Periods

Correlations	
NYMEX to CIG Rockies	98.45%
NYMEX Change to CIG Rockies Change	93.39%
NYMEX to NWPL-Sumas-Rockies	97.95%
NYMEX Change to NWPL-Sumas-Rock Change	91.87%
NYMEX to Questar Rockies	97.72%
NYMEX Change to Questar Rockies Change	95.20%
NYMEX to Spectra Westcoast #2	84.66%
NYMEX Change to Spectra/Westcoast #2 Change	41.82%
NYMEX to AECO 7A	92.91%
NYMEX Change to AECO 7A Change	86.98%
NYMEX to AECO 5A	84.44%
NYMEX Change to AECO 5A Change	54.51%

R-Squareds	
NYMEX to CIG Rockies	93.32%
NYMEX Change to CIG Rockies Change	87.24%
NYMEX to NWPL-Sumas-Rockies	93.26%
NYMEX Change to NWPL-Sumas-Rock Change	88.32%
NYMEX to Questar Rockies	91.62%
NYMEX Change to Questar Rockies Change	87.84%
NYMEX to Spectra Westcoast #2	76.83%
NYMEX Change to Spectra/Westcoast #2 Change	2.23%
NYMEX to AECO 7A	89.97%
NYMEX Change to AECO 7A Change	63.56%
NYMEX to AECO 5A	73.53%
NYMEX Change to AECO 5A Change	0.16%

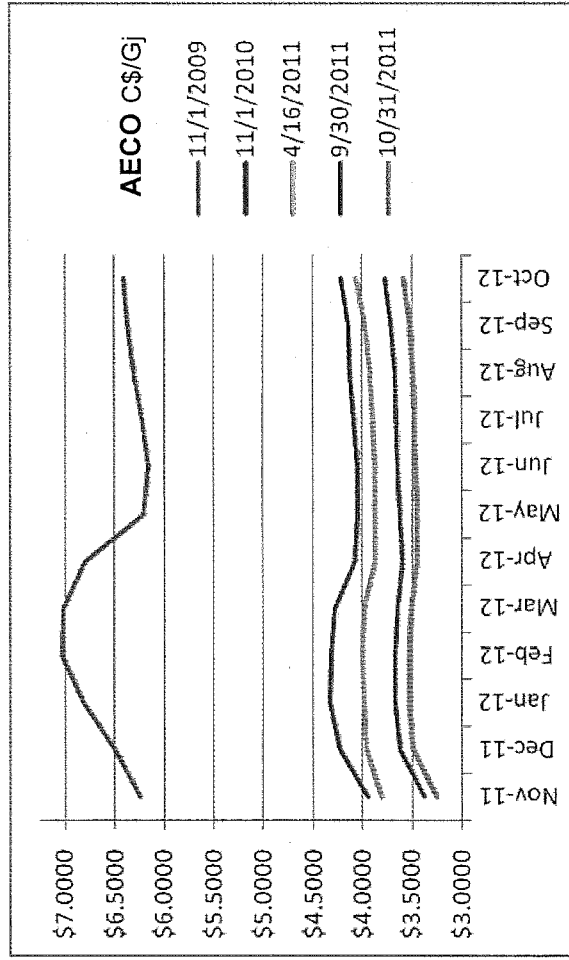
R-Squareds	
NYMEX to CIG Rockies	96.92%
NYMEX Change to CIG Rockies Change	87.21%
NYMEX to NWPL-Sumas-Rockies	95.95%
NYMEX Change to NWPL-Sumas-Rock Change	84.40%
NYMEX to Questar Rockies	95.50%
NYMEX Change to Questar Rockies Change	90.63%
NYMEX to Spectra Westcoast #2	71.67%
NYMEX Change to Spectra/Westcoast #2 Change	17.49%
NYMEX to AECO 7A	86.33%
NYMEX Change to AECO 7A Change	75.66%
NYMEX to AECO 5A	71.30%
NYMEX Change to AECO 5A Change	29.72%

# Natural Gas Dynamics – Forward Pricing Behavior Nov'09 - Nov'11



- Market conditions during this timeframe for each entities' portfolio fostered steadily declining prices.
- Term structure stayed largely contango other than for seasonal conditions.
- This made opportunistic buying difficult and monthly expirations in all the relevant markets experienced their lowest pricing predominantly in their final 90 days before expiration.

• Price is not always the key determinant for delivery point selection when contracting. All the entities have listed objectives around having a diversified supply base.



US\$/C\$ 12 Mo Avg. 1.12 During Survey Period

# Delivery Point Price Ranges (Nov'09 – Oct'12) \$/MmBtu

NYMEX		CIG Rockies		NWPL-Sumas-Rockies		Questar Rockies	
36 Month Historical		36 Month Historical		36 Month Historical		36 Month Historical	
Max	\$5.814	Max	\$5.540	Max	\$5.620	Max	\$5.550
Min	\$2.036	Min	\$1.750	Min	\$1.820	Min	\$1.750
Diff	\$3.778	Diff	\$3.790	Diff	\$3.800	Diff	\$3.800

Survey Period		Survey Period		Survey Period	
Max	\$3.524	Max	\$3.410	Max	\$3.440
Min	\$2.036	Min	\$1.750	Min	\$1.820
Diff	\$1.488	Diff	\$1.660	Diff	\$1.620

Spectra/West Coast #2		AECO 7A		AECO 5A	
36 Month Historical		36 Month Historical		36 Month Historical	
Max	\$5.229	Max	\$5.242	Max	\$6.264
Min	\$1.505	Min	\$1.671	Min	\$1.676
Diff	\$3.724	Diff	\$3.571	Diff	\$4.588

Survey Period		Survey Period		Survey Period	
Max	\$2.963	Max	\$3.325	Max	\$3.140
Min	\$1.505	Min	\$1.671	Min	\$1.676
Diff	\$1.458	Diff	\$1.654	Diff	\$1.464

Survey Period is the term Nov'11 – Oct'12



NWN's Survey  
Period Results

All position/pricing data from NWN marked as confidential

NWN WACOG - 2-Year Prior Through Survey Period

% Coverage of Forecast Load					
1 Day Adv	1 Mo Adv	6 Mo Adv	1 Yr Adv	2 Yr Adv	
31-Oct-11	01-Oct-11	01-May-11	01-Nov-10	01-Nov-09	

NW Nat

Forecast Load					
1 Day Adv	1 Mo Adv	6 Mo Adv	1 Yr Adv	2 Yr Adv	
31-Oct-11	01-Oct-11	01-May-11	01-Nov-10	01-Nov-09	

NW Nat

WACOG of Covered Forecast Load (\$/mmBtu)					
1 Day Adv	1 Mo Adv	6 Mo Adv	1 Yr Adv	2 Yr Adv	
31-Oct-11	01-Oct-11	01-May-11	01-Nov-10	01-Nov-09	

NW Nat

Waiting for response

## NWN Survey Period Results

Mkt	Forward - Start of survey period	End	MinPrice	MaxPrice	ActualLoad	FcastLoad	%Open	%Fix	FixVol	FixedAvg	Best Case	Worst Case	Realized
	Nov-11												
	Dec-11												
	Jan-12												
	Feb-12												
	Mar-12												
	Apr-12												
	May-12												
	Jun-12												
	Jul-12												
	Aug-12												
	Sep-12												
	Oct-12												

•Realized unit price an estimate as significant forecast to actual variance exists. Efforts to determine a reasonable reconciliation of this variance were unsuccessful due to IOU's ability to respond within analysis project timeline. Forecast accuracy performance is a critical issue in developing a hedge methodology as this purchase volume variance can add another dimension toward hedge performance and measurement.

## Recommendations

- **Instrumentation Criteria:** The entity has in policy a detail of allowable instrumentation to effect a hedge mechanism. What is lacking is a detail of parameters around the selection of the instrument. (Need specifics of why a financial hedge vs. a fixed price physical; why an option product vs. a swap, etc)
- **Hedge Designation:** it is not clear that all instances of fixed price engagement will have/should have a direct impact on rate payers. By documenting at the inception of all fixed price contractual obligations the rationale behind the action (i.e. how it ties to a particular strategic initiative or trade plan) then it is easier to follow the development of the final rate structure as well as gives a greater transparency in tying strategy outline to action and make the case the hedge decision was reasonable and prudent.
- **Aggregate Hedge Reporting Protocol:** Develop a standardized report matrix over the entire term of their hedge horizon (delivered monthly or quarterly) and track development over time of the entity's acquisition cost aggregation. Entity should also file an annual strategic plan outlining forecasted scenario best/worse case range and execution plan within that range. If entity has multi-method strategies (some mechanical, some with discretion, etc.) this plan outline needs to speak specifically to each component.