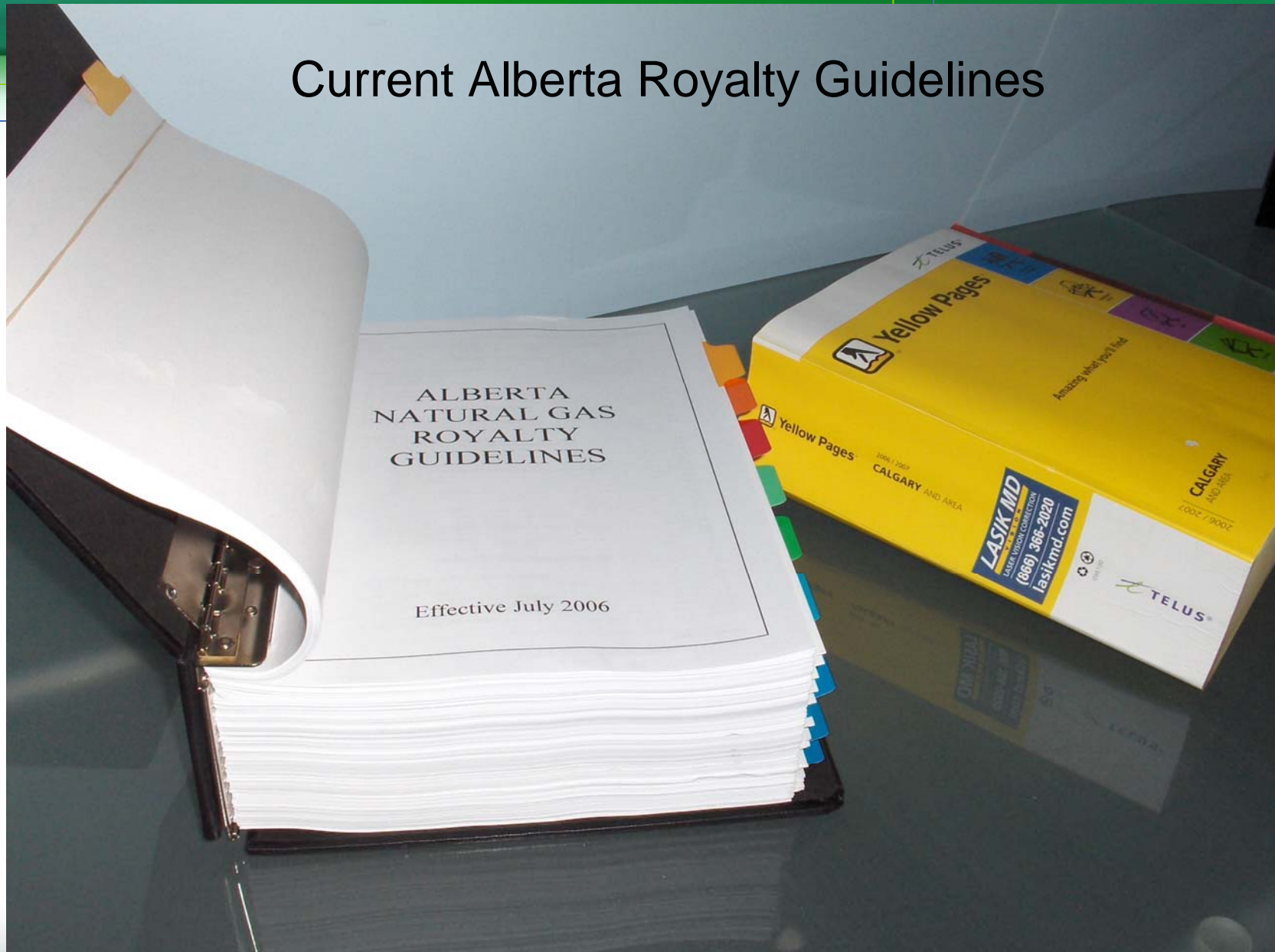


# Royalty Review

Ed Poth, P. Eng.  
Pandell Technologies Corp.  
Calgary, May 23, 2007

# Current Alberta Royalty Guidelines



# Oil and Gas Economics

- Establish budgets and cash flows.
- Estimate the asset value of a company.
- Determine the value and profitability of future development projects.

# Corporate Budget Workflow Economics

Third Quarter of Year



Call for Ideas, Projects, Concepts.



Each Team Lists Proposals

**Must Do Projects**  
Regulatory, Capital Committed, Research etc.

**Facilities Projects**  
Equipment to enhance or bring on new product.

**Geologic Plays**  
New concepts developed or the past year or old ones no completed.

**Scoping Projects**  
Purchase of data or information of future project development.

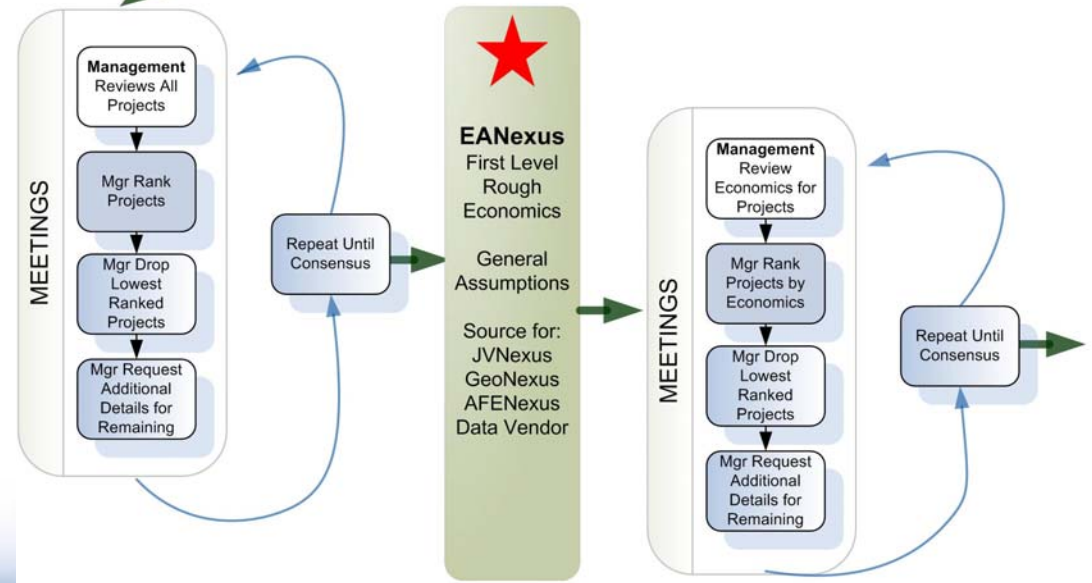
**Miscellaneous Projects**  
Other projects requiring capital over the next two years

**Production Forecasts**

Team Petroleum Engineer forecasts product for existing producing entities

Red Star Shows Location of Economics

Continued next Side  
Page 1 of 2



# Corporate Budget Workflow Economics

**Request**  
AFE Quality Economic for all Remaining Projects

## EANexus

Data Gather for Economics

Geological Parameters

Land

Operating Costs

Capital Costs

**Geologist**  
(Person)

**Data Vendor**  
(External Data Source)

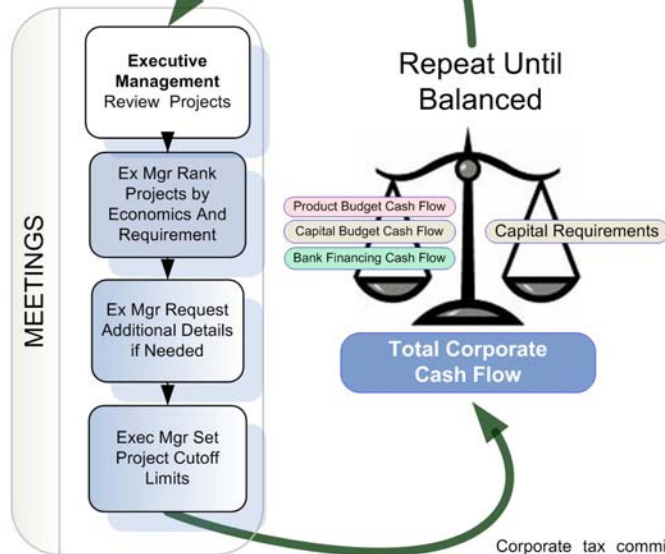
**GeoNexus/Landman**  
(Internal System)

**JVNexus/Prod Eng**  
(Internal System/Person)

**Production Eng**  
(Person)



**Corporate Level Project Consolidation**



Corporate tax commitments may effect the amount of capital available for future projects, it however can't be readily determined.

**CAPITAL BUDGET FINALIZED**  
Reviewed Quarterly

# Corporate Reserves Workflow

## Reserves Report

An independent evaluation of the quantity, quality and value of oil and gas assets held by a company.

## User Of Reserves

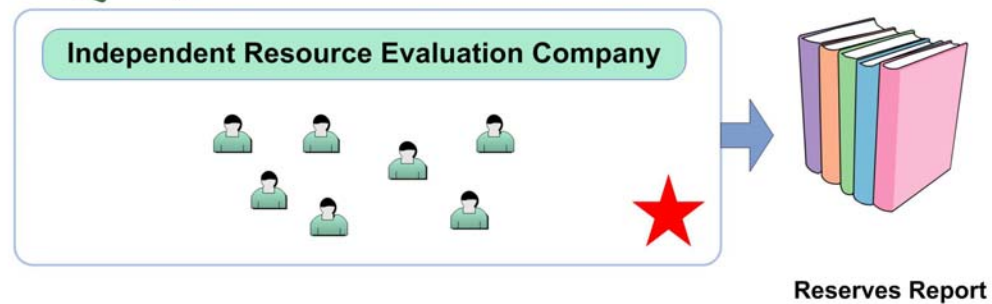
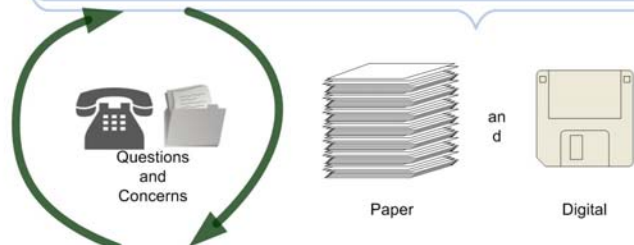
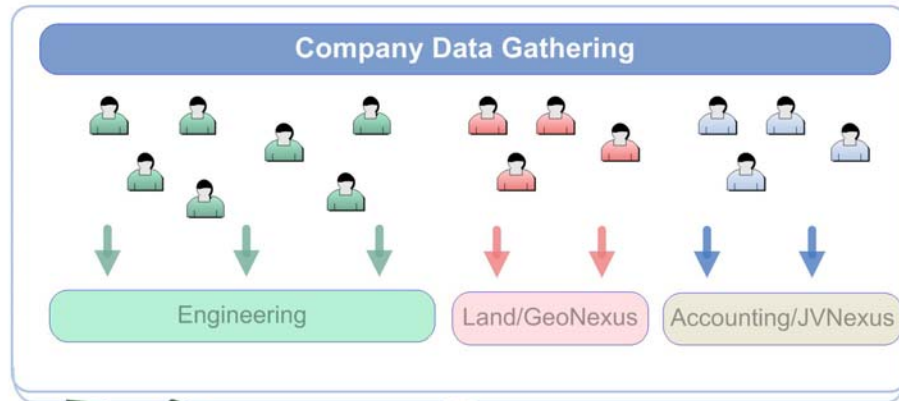
- Oil and Gas Companies
- Financial Institutions
- Investors
- Lenders
- Securities Commissions
- Lawyers

## Evaluator Selection

Select Independence Petroleum Consultants to Perform Annual Reserves Report Evaluation.

- Timing
- Size of Job
- Reputation
- Cost
- Revisions
- Dead Lines

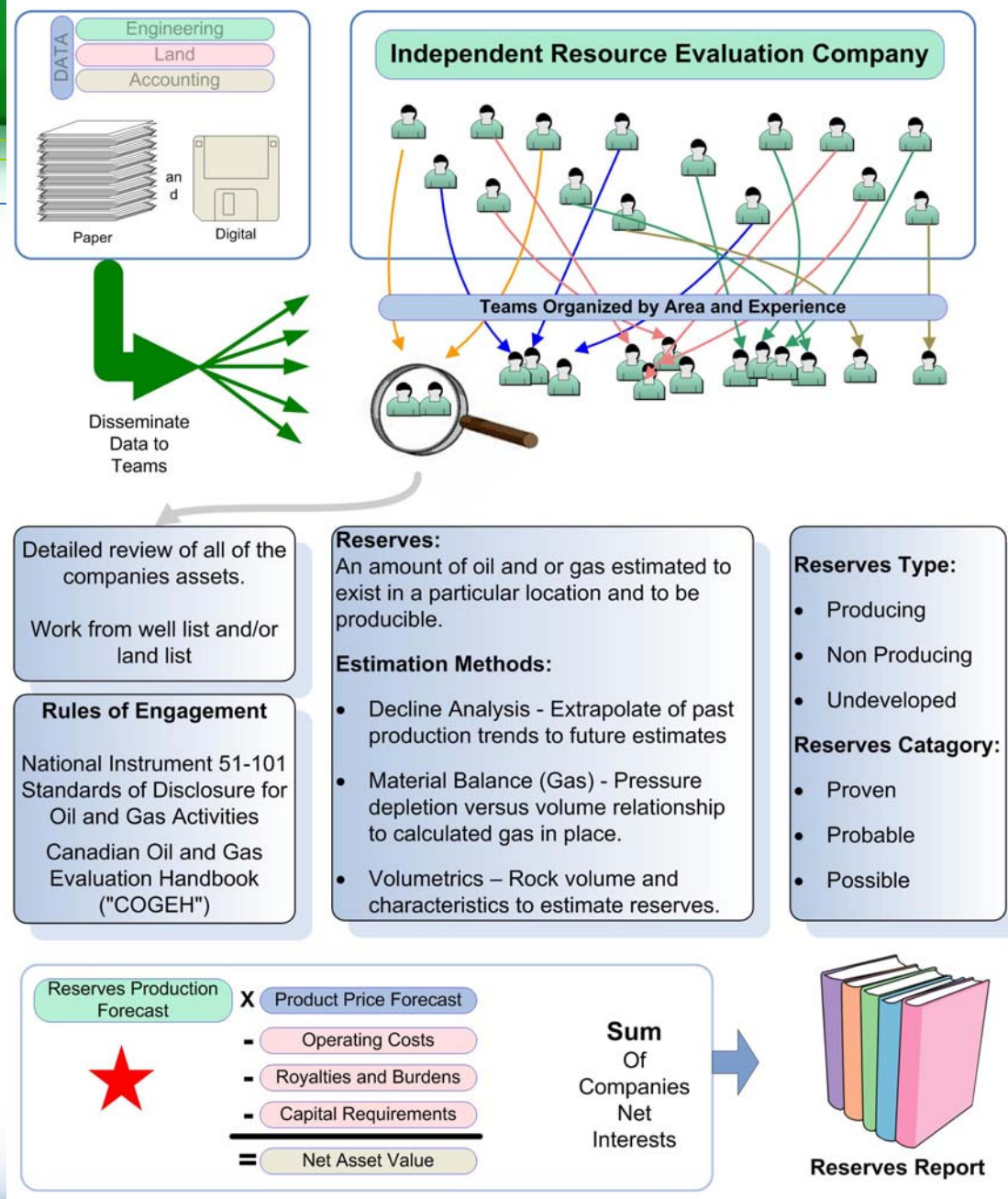
Process Starts Within a Month of a Companies Year End



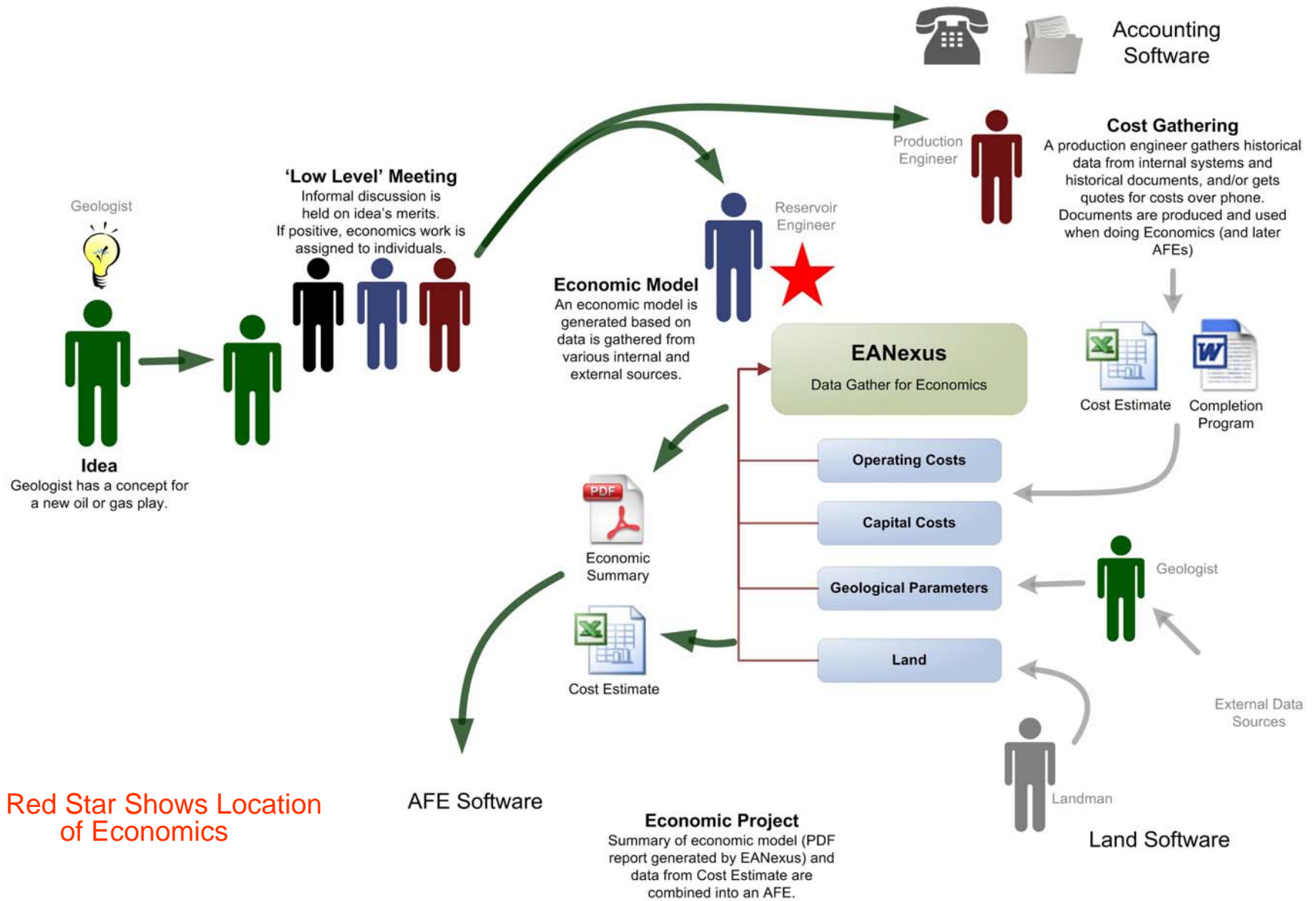
Red Star Shows Location of Economics

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Page 1 of 2

# Corporate Reserves Workflow



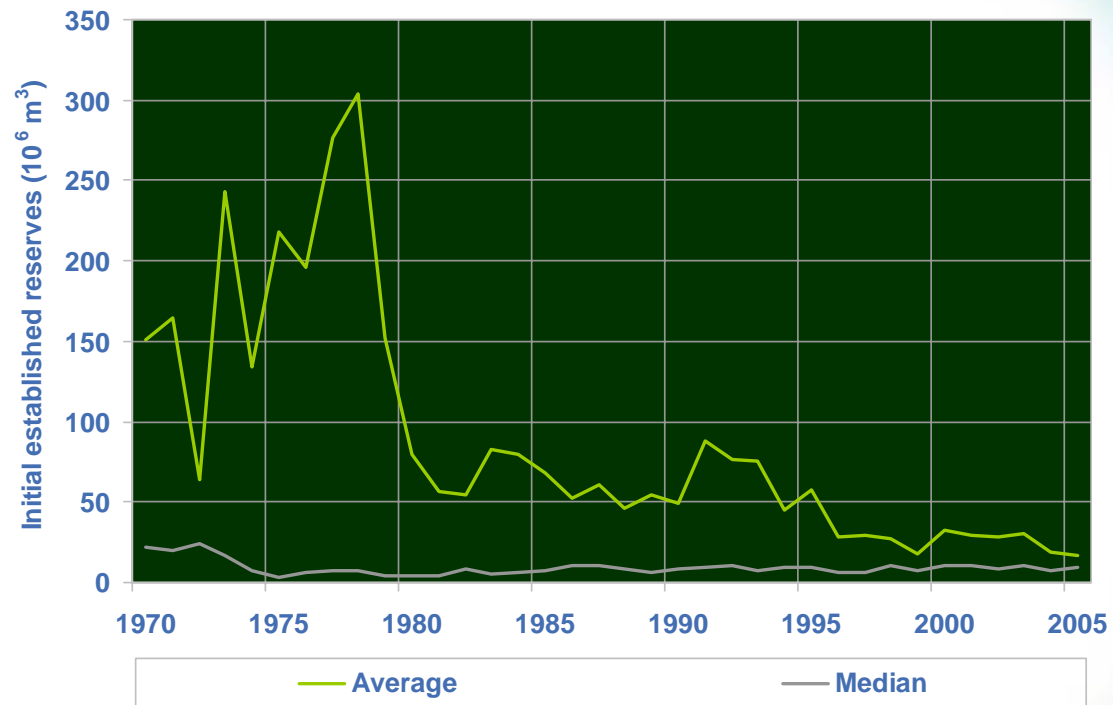
# Single Project Workflow Economics



## Royalty Changes

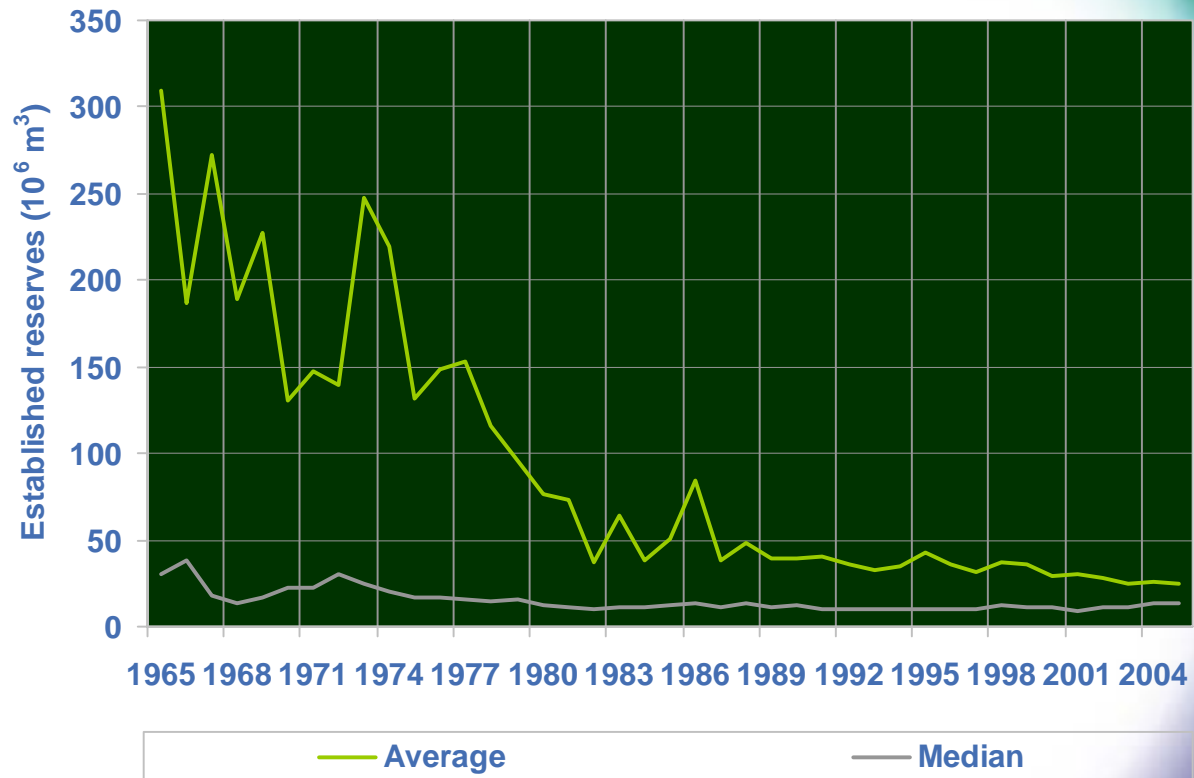
- Any changes easy to implement and understand.
- Budgets will be reduced to offset the uncertainty.
- In-Stream Components (ISCs), example of a non predictable calculation, impact was small (Royalty change 2002).

# Oil pool size by discovery year



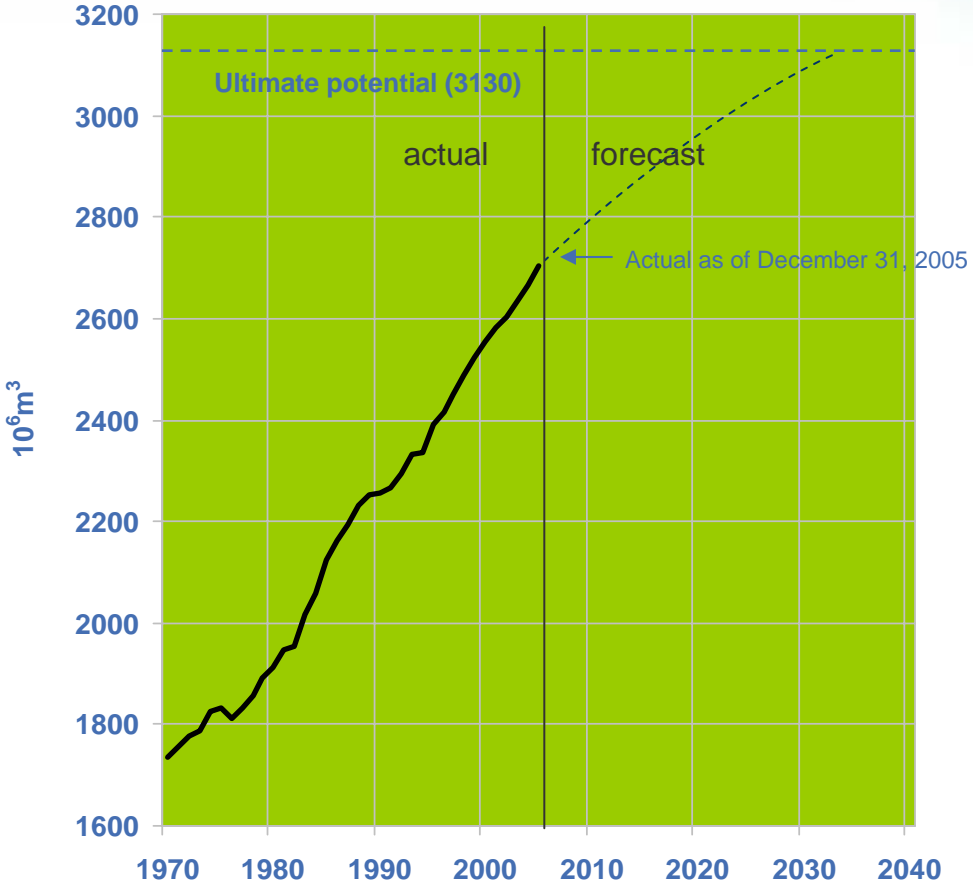
From EUB ST98 Figure 3.5.

## Conventional gas pools by size and discovery year



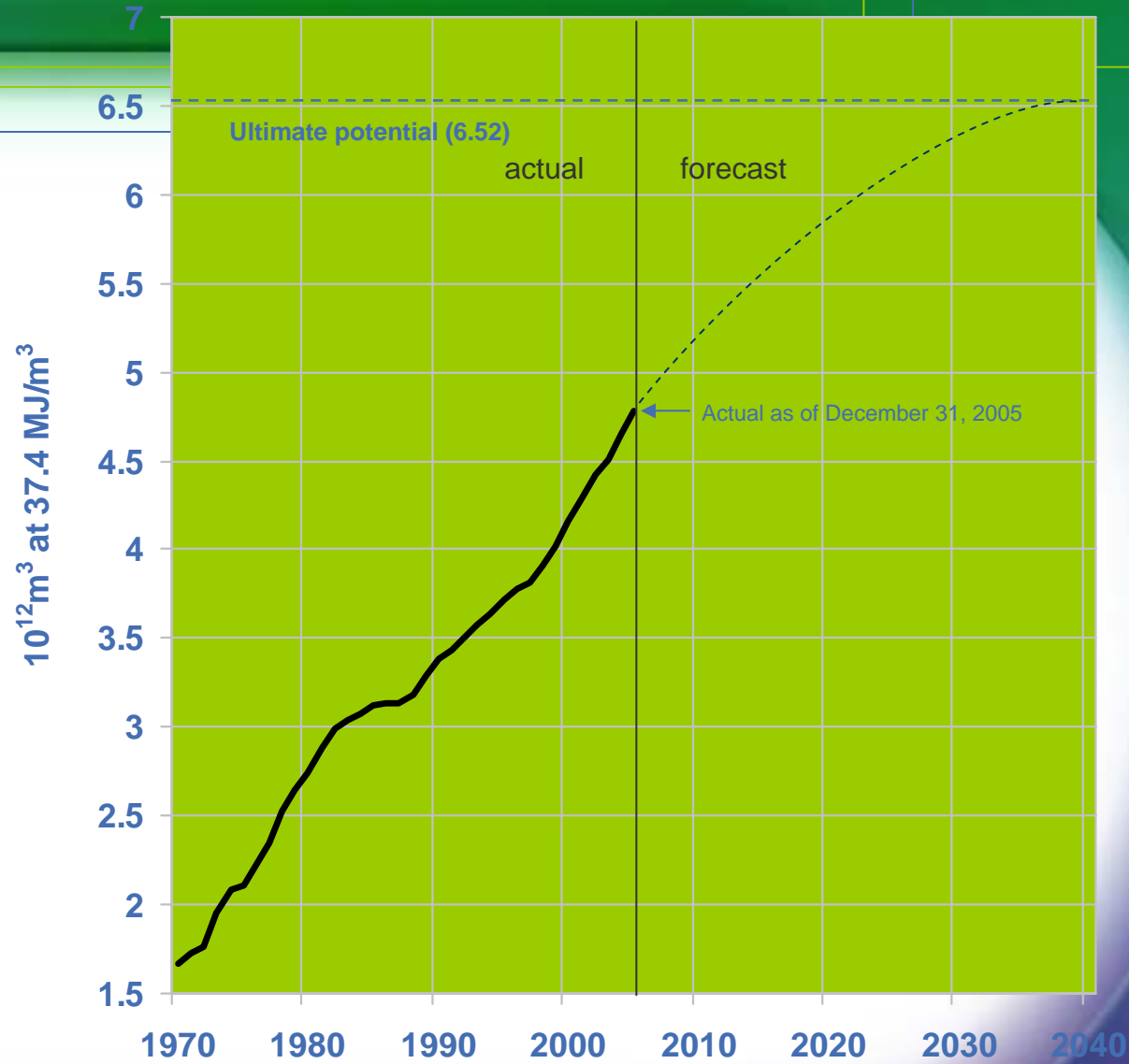
From EUB ST98 Figure 5.6.

# Growth in initial established reserves of crude oil



From EUB ST98 Figure 3.10.

# Growth in initial established reserves of conventional marketable gas



From EUB ST98 Figure 5.10.

# Resource Income for Alberta

Year	2003		2004		2005		2006(est)	
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>
Natural Gas Product Royalty	\$5,450	67.7%	\$6,439	63.4%	\$8,388	56.7%	\$7,407	45.4%
Oil Royalty	\$981	12.2%	\$1,273	12.5%	\$1,463	9.9%	\$1,813	11.1%
Crown Leases Sales Bonuses	\$967	12.0%	\$1,252	12.3%	\$3,490	23.6%	\$3,245	19.9%
Rentals And Fees	\$154	1.9%	\$153	1.5%	\$155	1.0%	\$225	1.4%
Freehold Mineral Tax	\$288	3.6%	\$306	3.0%	\$334	2.3%	\$420	2.6%
Oil Sands Royalty	\$197	2.4%	\$718	7.1%	\$950	6.4%	\$3,192	19.6%
Coal Royalty	\$9	0.1%	\$11	0.1%	\$11	0.1%	\$21	0.1%
Total Revenue	<u>\$8,046</u>		<u>\$10,152</u>		<u>\$14,791</u>		<u>\$16,324</u>	

All values \$ in Millions  
Data from [www.capp.ca](http://www.capp.ca)

# Change in Profitability

	(boe/d)
Baytax	34,292
Advantage	23,754
High Pine	11,779
RSX	997
Defient	908
E4	860
Grand Banks	852

			Difference		Change
	<u>2005</u>	<u>2006</u>	<u>2005</u>	<u>2006</u>	<u>%</u>
Production (boe/d)	9,169	10,492			
Revenue (\$/boe)	\$57.24	\$51.20			-10.5%
Royalties (\$/boe)	\$11.50	\$9.83	20.1%	19.2%	-14.5%
Operating costs (\$/boe)	\$9.14	\$10.32	16.0%	20.2%	12.8%
Netback (\$/boe)	\$36.59	\$31.05			
General and administrative	\$4.01	\$3.84	7.0%	7.5%	6.6%
Total Netback (\$/boe)	\$32.58	\$27.21			

Data from corporate annual reports of randomly selected companies then averaged.

# Effect of Cost Increase on Recovery

Years	Oil Production					Operating Cost from Company Averages						Operating Cost from Company Averages Halved					
	Rate BBL/D	Volume MSTB	Price \$/BBL	Revenue M\$	Crown Royalties M\$	Variable \$/BBL	Fixed \$/W/M	Total \$/boe	Total M\$	Before Tax Cashflow M\$	Netback Profit \$/boe	Variable \$/BBL	Fixed \$/W/M	Total \$/boe	Total M\$	Before Tax Cashflow M\$	Netback Profit \$/boe
2007	100	36.5	\$51.20	1,868.8	544.8	7.22	9,417	10.32	376.5	947.4	25.96	3.61	4,809	5.19	189.5	1,134.5	31.08
2008	80	29.2	\$51.20	1,495.0	415.4	7.22	9,417	11.09	323.8	755.8	25.88	3.61	4,809	5.59	163.1	916.5	31.39
2009	60	21.9	\$51.20	1,121.3	286.1	7.22	9,417	12.38	271.1	564.1	25.76	3.61	4,809	6.25	136.8	698.4	31.89
2010	40	14.6	\$51.20	747.5	156.7	7.22	9,417	14.96	218.4	372.4	25.51	3.61	4,809	7.56	110.4	480.4	32.90
2011	20	7.3	\$51.20	373.8	39.4	7.22	9,417	22.70	165.7	168.7	23.11	3.61	4,809	11.52	84.1	250.3	34.29
2012	10	3.7	\$51.20	189.4	10.1	7.22	9,417	37.76	139.7	39.6	10.70	3.61	4,809	19.22	71.1	108.3	29.27
2013	9	3.3	\$51.20	169.0	8.0	7.22	9,417	41.45	136.8	24.1	7.30	3.61	4,809	21.09	69.6	91.3	27.67
2014	8	2.9	\$51.20	148.5	6.2	7.22	9,417	46.17	133.9	8.3	2.86	3.61	4,809	23.52	68.2	74.1	25.55
2015	7	2.6	\$51.20	133.1	5.0							3.61	4,809	25.81	67.1	61.0	23.46
2016	6	2.2	\$51.20	112.6	3.6							3.61	4,809	29.86	65.7	43.4	19.73
2017	5	1.8	\$51.20	92.2	2.4							3.61	4,809	35.67	64.2	25.6	14.22
2018	4	1.5	\$51.20	76.8	1.7							3.61	4,809	42.07	63.1	12.0	8.00
2019	3	1.1	\$51.20	0.1	0.4												

## Assumptions:

New Oil Crown Royalty Rate

Price \$51.20 per Barrel from Averaged Corporate Data

Operating Cost \$10.32 per Barrel from Averaged Corporate Data

Operating Cost split 70% Variable and 30% Fixed

# Production Distribution By Company

## Conventional Oil and Gas Production

<u>Average Rate boe/d*</u>	<u>Alberta Companies</u>	<u>Percent</u>	<u>Production Per Group boe/d</u>	<u>Percent</u>
>100,000	10	0.85%	2,070,599	54.54%
10,000 to 100,000	45	3.82%	1,282,776	33.79%
1,000 to 10,000	114	9.69%	345,404	9.10%
100 to 1,000	252	21.41%	80,248	2.11%
10 to 100	405	34.41%	15,655	0.41%
<u>0 to 10</u>	<u>351</u>	<u>29.82%</u>	<u>1,849</u>	<u>0.05%</u>
Total	1177	100.00%	3,796,531	100.00%

\*Gas Conversion to Barrels oil Equivalent 6 to 1  
Data from Public Data Sources for Fourth Quarter 2005

## Comment

- Small producers return the majority of their profits back into development and exploration.
- Alberta oil and gas sector economy is cooling.
- An increase on costs without a corresponding increase in price will reduce the potential recoverable reserves.
- ARTC removal had the largest negative impact on the small producers.
- Cancellation of certain royalty holidays removed project safety nets on expensive high risk projects.
- 350 boe's per day is an average break even point (three person company, office overhead and field expense)
- The negative impact of royalty's increases in will affect the smaller producers the greatest.

## Comment

- Large multi nationals cannot grow with small development projects.
- Large development projects bring infrastructure to a new area.
- Small projects can't support the cost of new infrastructure.
- Produce now or strand the reserves.

## Comment

- The profitability of a single producing well may not reflect the total capital (risked exploration costs) to obtain that production.