F I S C A L I M P A C T R E P O R T

SPONSOR Altamirano **ORIGINAL DATE** 2/12/07 **LAST UPDATED** 2/28/07 **HB**

SHORT TITLE Hedging of Oil & Gas Revenues **SB** 763

ANALYST Francis

APPROPRIATION (dollars in thousands)

Appropriation		Recurring or Non-Rec	Fund Affected
FY07	**FY08**		
	*See Narrative		

(Parenthesis ( ) Indicate Expenditure Decreases)

REVENUE (dollars in thousands)

Estimated Revenue			Recurring or Non-Rec	Fund Affected
FY07	**FY08**	**FY09**		
	*See Narrative			

(Parenthesis ( ) Indicate Revenue Decreases)

ESTIMATED ADDITIONAL OPERATING BUDGET IMPACT (dollars in thousands)

	FY07	FY08	FY09	3 Year Total Cost	Recurring or Non-Rec	Fund Affected
Total		*See Administrative Impact				

(Parenthesis ( ) Indicate Expenditure Decreases)

Duplicates HB 601

SOURCES OF INFORMATION
LFC Files
Taxation and Revenue Department (TRD)
Alaska Department of Revenue (ADR)

Responses Received From
Board of Finance (BOF)

SUMMARY

Synopsis of Bill

Senate Bill 763 would allow the Board of Finance (BOF) to invest 10 percent of severance tax revenues distributed to the severance tax bonding fund or the general fund in oil and natural gas price hedging contracts. The contracts can only be with qualified counterparties, a top rated entity, for no more than five years in duration. The contract must be with a publicly traded index such as the Henry Hub natural gas contract and the West Texas Intermediate (WTI) crude oil contract, both traded on the New York Mercantile Exchange (NYMEX). Hedging contracts are derivatives of the price of a particular commodity and include swap agreements, futures, options, forward rate transactions, cap transactions, floor transactions, and collar transactions.

BOF can only enter into contracts with the lesser of 10 percent of the oil and gas volume subject to severance taxes in the current fiscal year as defined by the consensus revenue estimating group or 10 percent of prior year volume.

SB 763 also appropriates to BOF the amount necessary if a net payment is required to the counterparty. The appropriation is from the severance tax revenues to be deposited in either the general fund or the severance tax bonding fund. Revenues resulting in net payments to BOF will be deposited in the appropriate fund as though they were derived from oil and gas severance.

BOF staff must report monthly on the status of any hedging contract to the board and annually to the legislature. There is no effective date indicated so it will be effective June 15, 2007 by default.

FISCAL IMPLICATIONS

Depending on the structure, hedging contracts necessarily imply no fiscal impact because they will be designed to generate revenues already projected by the consensus revenue estimating group. In other words, they will be designed to protect the projected revenues rather than generate additional revenue. Due to the risk in trading derivatives, there is bound to be periods where there is a positive impact on revenues and periods where there is a negative impact. Some types of derivatives will have higher commissions, fees and/or premiums than others and these will have to be paid regardless of the success or failure of the transaction.

Types of Oil and Gas Derivatives
SB 763 allows BOF to engage in several types of derivatives. The most common and the ones likely to be considered are the floor, the swap and the collar. However, derivatives can be as complicated as one wants and as they get more complex, the greater the danger of overexposure.

The examples below use actual data and relate to natural gas only and the oil and gas emergency school tax. Adding in the other general fund taxes and doing the same analysis for oil production and also for severance taxes increases the impacts.

Floor. The floor is probably the most obvious since it is essentially "insurance" against the price falling below a certain price. Much like auto insurance, the state will likely pay the insurance without any benefit. If the price is above the insured floor, the state pays the premium.

When the price falls below the floor (or when a driver gets into an accident), the insurance kicks in. A floor is an option to sell at a guaranteed price. The price is set by the distance from the current market average. For example, if the current price is $7.00, a floor of $6.00 would cost less than a floor of $6.50. Setting a floor protects downside risk and the only loss is the premium to buy the option. In Table 1, there are examples how a floor would work. Using the same strike price, the price at which the option is exercise, for a floor option as BOF analysis of $6.30/mcf, the cost of the premium is $2.5 million at $0.51/mcf.[1] If the price meets or exceeds the estimate of $6.30, the cost is $2.5 million or the premium. If the price is below the strike price by more than $0.51/mcf, the option is exercised and the state receives additional revenues. To recoup the premium the price has to fall below $5.79/mcf. As table 1 indicates, a price of $5.00/mcf would generate $3.9 million net of the premium. The column "Unhedged" is the revenue that would have been generated at each price level with no hedging. The column "Hedged" is 90 percent of the revenue unhedged plus 10 percent hedged net of the premium. If the price had dropped to $2.00 per mcf, the hedge would have saved $18.8 million. If the price increased to $9.00, the hedge would have cost the amount of the premium or $2.5 million.

Table 1: Hedging at Work – Floor Option

	Net Revenue		
$/MCF	Unhedged	Hedged*	Difference
2.00	89,268,480	108,064,454	18,795,974
3.00	133,902,720	147,739,334	13,836,614
4.00	178,536,960	187,414,214	8,877,254
5.00	223,171,200	227,089,094	3,917,894
5.79	258,432,250	258,432,250	-
6.00	267,805,440	266,763,974	(1,041,466)
6.30	281,195,712	278,666,438	(2,529,274)
7.00	312,439,680	309,910,406	(2,529,274)
8.00	357,073,920	354,544,646	(2,529,274)
9.00	401,708,160	399,178,886	(2,529,274)

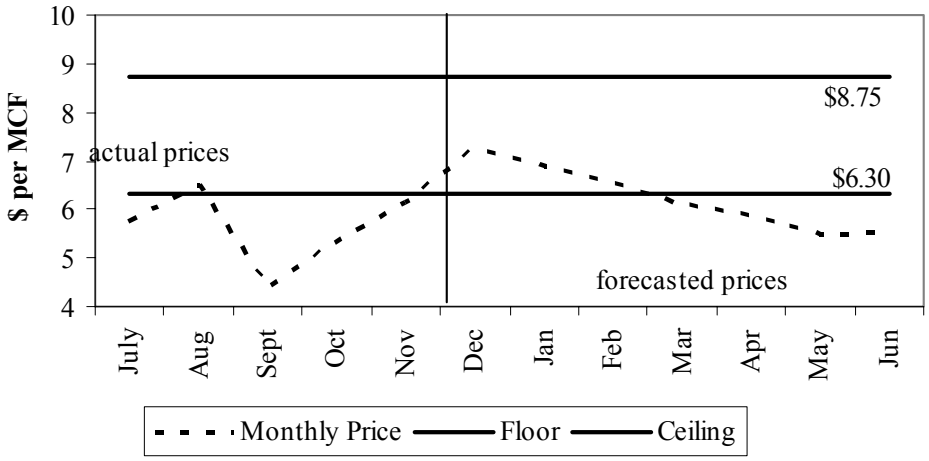
* includes $2.5 million premium at $0.51/mcf

Collar. A collar is a matched set of options. One option, a put, is an option to sell at a certain price or a floor. The other option is the call, an option to buy at a certain price, a ceiling. The two matched create a "safe haven" for the price and the two options can be matched in such a way that the price the state pays for the put equals the price the state receives for the call. For example, if the BOF can purchase an option to sell at $6.30 for $0.51/mcf, there exists a companion "option to buy" that is priced at $0.51/mcf that BOF can enter into. This means there exists a counterparty (trader) who is willing to pay BOF a premium for a certain price. BOF reports that $8.75 call can be sold at a price that would offset the cost of a $6.30 put (Figure 1).

The area between the floor of $6.30 and the ceiling of $8.75 is the safe haven.

[1] The premium is based on the distance a desired strike price is from the current price. For example, if the price is $7.00/mcf, a floor of $5.00 will be less expensive than a floor of $6.00. A premium of $0.51/mcf means that the price of the option to sell a natural gas contract at $6.30 is $0.51 for every mcf in the contract.

Figure 1: Example of Costless collar



Swap. This is a written contract to guarantee a price. With a swap, if the price is lower, the counterparty pays the state the difference. If the price is higher, the state pays the difference. The appropriation language in SB763 gives BOF the authority to enter into these transactions and pay them off if required. Using the July 2005 forecast of FY06 prices as the basis for the swap, the state would have lost $267 million in FY06. Using the July 2006 forecast of FY07 prices as the basis for the FY07 swap, the state is, as of December 2006, on track to earn $17 million.

Table 2: Swap Example Using FY06 and FY07 Data

Assumptions:

Production Volume (Billions MCF)	**1,510**
Taxable Volume (82% discount)	**1,238**
10 percent of Taxable	**124**
Oil and Gas Emergency School Tax Rate	**4%**
ANNUAL HEDGE VOLUME (MCF)	**4,952,800**

FISCAL YEAR 2006 EXAMPLE

	Actual Price	Swap Price	Hedged Volume (MCF)	Actual Revenue	Swap Revenue	Net Impact
July	6.63	5.70	412,733	2,736,230	2,352,580	(383,650)
August	8.00	5.70	412,733	3,302,973	2,352,580	(950,393)
Septembe	9.53	5.70	412,733	3,932,924	2,352,580	(1,580,344)
October	10.59	5.70	412,733	4,372,072	2,352,580	(2,019,492)
Novembe	7.56	5.70	412,733	3,120,821	2,352,580	(768,241)
Decembe	10.96	5.70	412,733	4,521,824	2,352,580	(2,169,244)
January	7.34	5.70	412,733	3,030,356	2,352,580	(677,776)
February	6.52	5.70	412,733	2,691,936	2,352,580	(339,356)
March	5.76	5.70	412,733	2,378,272	2,352,580	(25,692)
April	5.90	5.70	412,733	2,433,630	2,352,580	(81,050)
May	5.26	5.70	412,733	2,171,953	2,352,580	180,627
June	5.58	5.70	412,733	2,303,120	2,352,580	49,460
			4,952,800	**36,996,111**	**28,230,960**	**(8,765,151)**

FISCAL YEAR 2007 EXAMPLE

	Actual Price	Swap Price	Hedged Volume (MCF)	Actual Revenue	Swap Revenue	Net Impact
July	5.75	6.10	412,733	2,374,779	2,517,673	142,895
August	6.48	6.10	412,733	2,673,751	2,517,673	(156,078)
Septembe	4.41	6.10	412,733	1,821,064	2,517,673	696,609
October	5.31	6.10	412,733	2,190,141	2,517,673	327,532
Novembe	6.15	6.10	412,733	2,539,749	2,517,673	(22,076)
Decembe	7.24	6.10	412,733	2,989,395	2,517,673	(471,721)
January	6.90	6.10	412,733	2,849,346	2,517,673	(331,673)
February	6.55	6.10	412,733	2,705,080	2,517,673	(187,407)
March	6.11	6.10	412,733	2,519,902	2,517,673	(2,229)
April	5.89	6.10	412,733	2,430,849	2,517,673	86,825
May	5.50	6.10	412,733	2,270,772	2,517,673	246,901
June	5.53	6.10	412,733	2,283,773	2,517,673	233,900
			4,952,800	**29,648,601**	**30,212,080**	**563,479**

SIGNIFICANT ISSUES

The use of energy hedging can more accurately be described as hedging against "information asymmetry." Information asymmetry occurs when information is not perfect. In the energy markets, information asymmetry occurs when one side of the transaction has better or more complete information about where oil and gas prices are headed than the other. This is important to note since oil and gas prices are extremely difficult to predict. Table 3 shows the performance of oil and natural gas prices over the last two years, the consensus revenue group's forecast and the subscribed energy service forecast.

Table 3: Natural Gas Price Forecast ($ per thousand cubic feet)

	FY04	**FY05**	**FY06**
Actual Price	4.68	5.80	7.46
Consensus Forecast			
6 months out	4.50 *Jan04*	5.20 *Feb05*	7.50 *Jan06*
18 months out	3.45 *Feb03*	4.00 *Jan04*	4.80 *Feb05*
Energy Service*			
6 months out	4.61 *Jan04*	5.38 *Feb05*	7.48 *Jan06*
18 months out	3.72 *Feb03*	4.22 *Jan04*	5.58 *Feb05*

* Cambridge Energy Resources was the consensus energy service until Fall 2005 when PIRA became the energy service.

The six month out prediction is much more reliable because six months of the fiscal year are already known. The eighteen month prediction, however, is much more error-prone. This has been a period of rising prices and so the error is on the downside; in eras of falling prices, the error is likely to be on the upside.

Table 4: Natural Gas Price Forecast Error

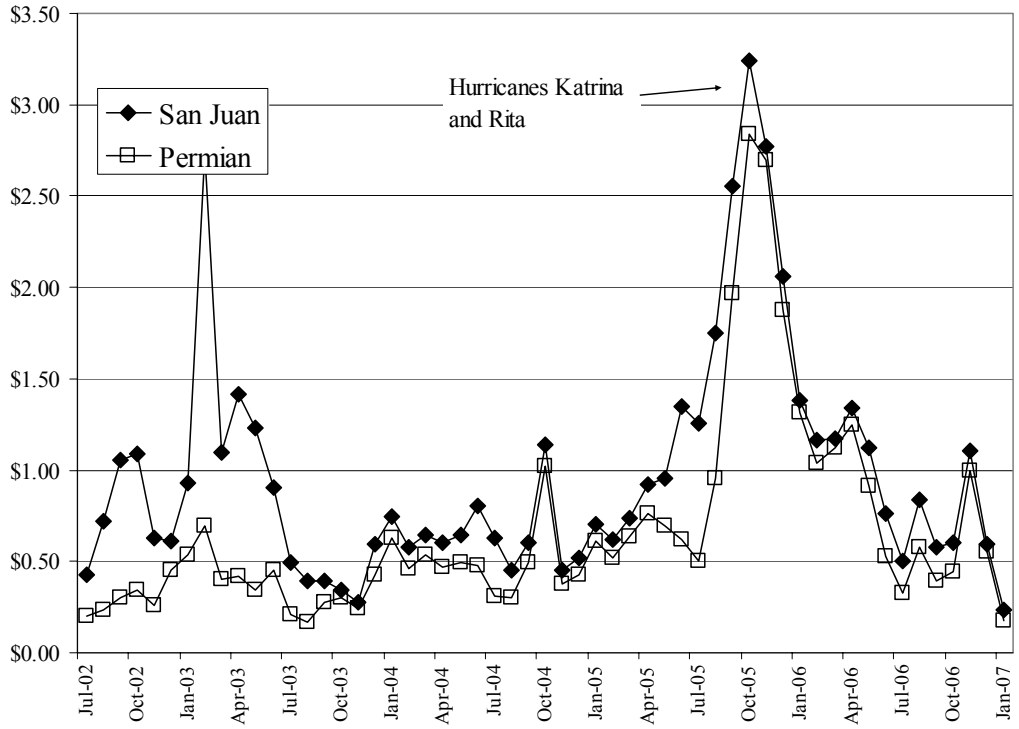
	FY04	FY05	FY06	Average Error
Consensus Forecast				
6 months out	-4%	-10%	1%	-5%
18 months out	-26%	-31%	-36%	-31%
Energy Service				
6 months out	-1%	-7%	0%	-3%
18 months out	-21%	-27%	-25%	-24%

Given these dynamics, there is clearly information asymmetry between the forecasters and the energy service, which is a research and forecast service the consensus revenue group subscribes to that specializes in natural gas and oil markets and production. This largely has to do with where and how prices are settled. Oil and gas taxes are based on the production value of the mined resources, which is determined at the wellhead. There is no distinction between production that has been sold previously so the price at the time of extraction was set sometime before. If a significant amount of production is to satisfy existing contracts then the prices the energy service is predicting, spot prices, will be different then the average price that NM producers receive.

If BOF had purchased a "floor" option for 10 percent of the production amount necessary to provide the tax revenue of natural gas based on the 18 month out price, the premium would have been the only cost since in FY04, FY05, and FY06, the actual price came in above the estimated price. Assuming a premium of $0.20 per thousand cubic feet (MCF), the premium would have been approximately $1 million. In October 2005, the consensus revenue group predicted an FY06 natural gas price of $9.20/mcf based on data heavily influenced by the Katrina and Rita hurricanes. If BOF were able to purchase contracts at that price, the return would have been extraordinary since the price tumbled in the next few months. However, in July, the forecast group estimated $5.80/mcf and if that had been the contract price, BOF would have lost the premium.

Risks. There are four types of risk involved in energy hedging: price risk, basis risk, production risk and counterparty risk. SB763, according to Board of Finance, has basis risk exposure, the risk that the commodity prices in NM do not correlate with the prices set by the contracts, by only allowing investments in indexes that closely match the San Juan and Permian basin prices. New Mexico natural gas is from these two basins with a small amount from Raton. Publicly traded indexes like the Henry Hub or WTI have fluctuating differential as shown in Figure 1. If in the future, the statute was changed to allow investments derived from NM basin prices, the state would be exposed to basis risk. (A similar bill, HB601, was amended Figure 2 shows the magnitude of difference between the national Henry Hub price and the local basins. During the hurricanes, the price differential was off by over $3.00. However, it is important to understand that unlike a utility or a supplier, New Mexico is hedging the revenue based on taxing a transaction and so there is a dissonance between the traditional hedging which would be locking in transaction prices. There is also additional basis risk in the price received by NM producers, who may be hedging themselves and entering into long term contracts, and these indexes. The more narrowly defined the hedge is in terms of the basis of the price, theory holds that there is less basis risk. However, there may be more fees associated with a more narrowly defined basis, particularly if there is a structured contract the intent of which is to exactly match the NM market.

Figure 2: Example of Basis Risk



Source: Conoco Phillips

SB763 also guards against counterparty risk, the risk the other party in the transaction defaults, by defining counterparty as a top rated entity. Price risk and production risk are still vulnerabilities though mitigated by the 10 percent limit on investments. Price risk would not be significant if the transaction was a "floor" as defined above. The more complicated the transaction the higher the risk. With a swap, where the state and a counterparty agree to a price and anything above the price goes to the counterparty and anything below comes to the state, the risk is limited on the downside so the state will protect its projected revenues but the risk on the upside is significant. In July 2005, the estimate for FY06 was $5.80 but the price went as high as $10 and averaged out at $7.50. If a swap was in place at that time, the state would not have been able to generate the same revenue. Anything above $5.80, in other words, would have been foregone.

Production risk is mitigated by the limits on BOF. The risk is that BOF will enter into a transaction and the volume the transaction is based on does not materialize. Louisiana, which allows energy hedge transactions, would have been exposed to production risk in late 2005 due to the hurricanes if they had had any hedges in place.

TRD:

The proposal represents a worthwhile attempt to take advantage of financial instruments that could be utilized to stabilize the state's revenues. To this end, it is inevitable that some discretion must be delegated to the Board to evaluate and choose among alternative financial instruments. However, given the importance of the trade-off between potential return and the risk assumed on these investments, it is important that the proposal provide guidance for the Board as it makes decisions involving these transactions. As it stands,

the proposal merely requires the Board to determine that the transactions are "in the best interests of the state." Thus, the proposal is completely silent on what the Legislature views as the appropriate amount of risk to be assumed in order to achieve a specified return. Such guidance could take into account, for example, the differences in how General Fund revenues are budgeted compared with Severance Tax Bonding Fund revenues. The General Fund budget encompasses the current year and one additional year. Thus, hedging transactions designed to guarantee revenue through the budget year are more important -- and also less risky -- than those for longer time periods. Severance Tax Bonding Fund revenue is used for capital outlay projects rather than operating, and a portion of the revenue is used for bond debt service. Thus, the risk/return criteria for this fund should be quite different than those for the General Fund.

Board of Finance:

SB-763 authorizes the Board to enter into financial contracts, on behalf of the State, in order to protect against significant declines in oil and gas tax revenues into the General Fund and Severance Tax Bonding Fund. Additionally, this program provides an additional tool to reduce uncertainty related to oil and gas revenues when conducting statewide financial planning.

SB-763 is a pilot program that allows for price hedging with respect to no more than 10 percent of the lesser of the previous year's production volume or the current year forecast production. Starting on a small scale, this bill allows the State to evaluate these financial products as a prudent approach to managing the State's ongoing commodity price risk. Additionally, the State Board of Finance would only be allowed to enter into these contracts if the Board finds that it is in the best interest of the State and determines that contract results in a financial benefit to the State. The bill requires the review and assistance of a financial advisor and legal counsel under general contract with the State Board of Finance. Lastly, the bill includes regular reporting requirements to the Board and legislature, providing for effective oversight of such a program.

ADMINISTRATIVE IMPLICATIONS

The consensus revenue group estimates oil and gas prices for budgetary purposes. A switch to the level of financial and market analysis required to estimate oil and gas prices for derivative transactions would require a much more comprehensive energy service and the services of an energy consultant who could advise the group and BOF on terms of a hedge transaction.

CONFLICT, DUPLICATION, COMPANIONSHIP, RELATIONSHIP

Similar to HB 601.

OTHER SUBSTANTIVE ISSUES

For a long time, these types of hedges were primarily used by utilities, railroads and airlines (Southwest Airlines hedged jet fuel purchases and as a result was not battered by the high prices in 2006). These are entities which depend on cost controls for profitability and so they favor locking in a price for factor inputs like fuel. They are actually purchasing the energy whether its barrels of oil or cubic feet of gas and using it. The state however depends on the revenue derived from the sale of oil and natural gas rather than from the use of them. This is an important

distinction to make. Regardless of hedging, the state will receive tax revenues on severance activities. The hedge is outside of the tax revenues. The hedge is equivalent to investing those revenues because the state will never be on the hook to actually deliver oil or gas to a purchaser of one of the hedge contracts. So, hedging is an investment strategy to insure against volatility in the energy markets.

Other states which rely heavily on energy revenues have looked at hedge derivatives to mitigate the volatility of their revenues.

Alaska, which is more dependent on oil revenues than any state in the union, has studied the issue and has determined that their use of a "budget reserve fund" is essentially performing the same function. Alaska puts all of the revenues into the Constitutional Budget Reserve Fund (CBRF) which requires three-fourths majority vote to appropriate from. This is similar to our tax stabilization reserve which is designed to accommodate swings in revenues. The Alaska Department of Revenue published a report on energy hedging, a summary of which is provided as an attachment.

Texas and **Louisiana** both have statutes allowing energy hedge investments. However, they both have been slow to engage in any transactions.

Wyoming, according to an economist with their legislature, thinks that a reserve fund similar to Alaska is the way to protect against volatility. "The basic strategy for Wyoming is when the state realizes a surplus of revenues, usually due to energy activity, more money is placed into rainy day accounts and the mineral trust fund. The state is also very active in developing its energy infrastructure to export oil, gas, and coal to the markets that need these commodities." – Senior Economist, Economic Analysis Division, State of Wyoming.

TRD (taken from analysis of HB874 in 2006 Session):

> The proposal represents a worthwhile attempt to take advantage of financial instruments that could be utilized to stabilize the state's revenues. To this end, it is inevitable that some discretion must be delegated to the Board to evaluate and choose among alternative financial instruments. However, given the importance of the trade-off between potential return and the risk assumed on these investments, it is important that the proposal provide guidance for the Board as it makes decisions involving these transactions. As it stands, the proposal merely requires the Board to determine that the transactions are "in the best interests of the state." Thus, the proposal is completely silent on what the Legislature views as the appropriate amount of risk to be assumed in order to achieve a specified return. Such guidance could take into account, for example, the differences in how General Fund revenues are budgeted compared with Severance Tax Bonding Fund revenues. The General Fund budget encompasses the current year and one additional year. Thus, hedging transactions designed to guarantee revenue through the budget year are more important -- and also less risky -- than those for longer time periods. Severance Tax Bonding Fund revenue is used for capital outlay projects rather than operating, and a portion of the revenue is used for bond debt service. Thus, the risk/return criteria for this fund should be quite different than those for the General Fund.

ALTERNATIVES

There is no effective date. An effective date of July 1, 2008, would allow time for the state economists and BOF to develop additional expertise required.

ATTACHMENT

NF/csd

Oil Hedging Summary

Department of Revenue - October 2002

INTRODUCTION AND OVERVIEW

From Alaska's perspective, locking in a predictable price for oil, even if it means giving up the opportunity to make more money if prices are higher than expected, is called trading in futures, or simply “hedging.”

Hedging essentially comes in two flavors:

1. Selling oil in advance to lock in a price and, in exchange, giving up the opportunity to make more money if prices rise (e.g., hedging with futures).

2. Paying a premium to ensure a minimum future price, while also retaining the opportunity to make more money if prices rise (e.g., hedging with options). Because of the upside benefits, this is more costly than hedging with futures.

Alaska has not yet needed to pay the costs or take the risks of hedging its future oil revenues because our cushion against fluctuating oil prices for the past decade has been the Constitutional Budget Reserve Fund (CBRF). The fund was established a decade ago for exactly that purpose — to fill the gap between a fluctuating revenue source and a constant need for public services.

The Budget Reserve Fund is a marvelous tool when used properly. We have strayed, however, from its original intent. Instead of simply covering temporary revenue shortages as oil prices move up and down each year, we’ve been draining the account to cover a structural gap in Alaska’s finances. As North Slope oil production declines, taking state revenues down with it, we’re spending more than we take in each year and we’re relying solely on the CBRF to fill that gap. Similar to an oil field, the Budget Reserve Fund is a non-renewable resource. The large oil and gas tax and royalty cases that filled the fund over the past decade have all been settled.

Considering how important the CBRF is to Alaska’s fiscal health, and how it can allow us to survive low oil prices, it would be irresponsible to empty the CBRF. But unless we do something soon, that is what will happen.

A hedging program, however, could allow the state to know with more certainty when the CBRF will hit empty. By starting a hedging program immediately, the state could lock in some of its oil revenues for the next few years. This would provide the public and elected officials with a somewhat more predictable timetable for draining the CBRF. We would know much of our revenues each year and how much we would need to withdraw from the fund. The outcome would be essentially the same, only without the uncertainty of when. We do not recommend this option since we believe the certainty of knowing when the CBRF will run out isn’t worth the cost.

HOW WOULD HEDGING WORK?

The Department of Revenue expects that receipts from oil royalties and production taxes will provide two-thirds of the state's unrestricted general purpose revenue for the next five years. These revenue sources depend directly on the price of oil. For each $1 per barrel change in the price of oil, the state's annual royalty and production tax revenue will rise or fall by $65 million. The question is how to protect those revenues — and the public services they pay for — from falling oil prices.

Active oil futures and options markets provide the state an opportunity, during periods of high oil prices, to put a floor under or a range around — that is to hedge — its anticipated royalty and production tax revenue. Because these markets anticipate oil prices to remain above the historical average for the next two or three years, the state could take advantage and — for a price — secure a more stable revenue stream for the next few years. There are two primary instruments used to hedge: futures and options.

Futures contracts provide for the future delivery of oil at a specified price. Any profit or loss from the agreed upon price vs. the actual market price on the delivery date is usually settled on the delivery date. For example, in mid-April 2001, the state could have contracted to sell West Texas Intermediate oil at $23 a barrel for delivery in December 2003 (there is no futures market for Alaska North Slope crude). If the market price is below $23 a barrel in December 2003, the state would still receive its $23 because the buyer of the futures contract would pay the state the difference between the market price and $23.

But if the price goes up and WTI is worth $25 a barrel in December 2003, the state would have to pay the difference between the market price and the $23 in its futures contract. Of course, if prices are up, the state could use its higher revenues to pay the bill. In summary, the state would be protected if prices fall but could lose out on extra revenue if prices rise. And while the up-front cost for a futures contract is minimal, the state could be faced with a significant liability if prices rise above the contract price.

Options are more like insurance policies, with an up-front premium. For a per-barrel fee paid in advance, an options contract gives the party on one side of the contract the *opportunity* but not the *obligation* to buy or sell oil to the other party at a prearranged price. For example, the state could pay the up-front options premium to sell WTI at $23 a barrel in December 2003, locking in that price. This would be buying an option to sell oil — called a "put" in the trade jargon. If the price is below $23 in December 2003, the state would exercise its option and the party that sold the put would have to make good to the state on the difference between the market price and $23 a barrel. And if the price in December 2003 is above $23, the state would gain the additional royalty and production tax revenue from the higher price. In summary, the state is guaranteed at least $23 a barrel either way, but that guarantee would come at the high up-front cost of the options contract. The up-front cost of buying put options is substantial, although there would be no downside risk or additional costs at the end of the contract.

WHY WOULD THE STATE WANT TO HEDGE?

First, the volatility in state revenue could be reduced. Second, with a realistic long-range fiscal plan in place, the state could help ensure its ability to meet its public service obligations during short periods of low oil prices if it no longer had the CBRF to serve as a cushion. Hedging is not expected to increase royalty and production tax revenue over the long term but, at some cost, it can increase the year-to-year consistency of royalty and production tax revenue to the state. Most hedging is done to remove or reduce the uncertainty associated with a volatile revenue stream.

The question becomes whether we are willing to pay that price to gain the benefits of hedging. That is, would the benefits of knowing how long the CBRF will last be worth the cost? We do not believe it would.

REASONS NOT TO HEDGE

There are several reasons why state officials might be reluctant to initiate a hedging program. First, the state already has a means for paying for vital public services when oil prices are low — the CBRF. But if the state continues its current fiscal habits, the CBRF will not last forever. When it is exhausted, the state will be forced to significantly restructure its public finances. Because oil prices are so volatile, using the CBRF as the state's insurance against low oil prices makes it impossible to precisely forecast when the CBRF will be exhausted.

Second, a hedging program would cost money. When considered alone, the transaction costs for entering into futures contracts seem reasonable; they would cost something on the order of $0.10 per barrel for each barrel of WTI futures sold. To hedge all the state's royalty and production tax revenue using futures would require contracts to sell 180,000 barrels per day (5.4 million barrels per month) of WTI futures. At $0.10 per barrel, a three-year futures program of this magnitude could cost $18 million to $20 million in up-front transaction fees.

But, if during a three-year hedging program based on futures contracts, WTI futures prices increased significantly, the state would be required to fund a margin requirement — that is, pay up to cover the higher price. Remember, in a futures contract, the state would be guaranteed a minimum price but would owe anything over that price to the contract's buyer. If, for example, WTI futures prices on average increased by $5 per barrel, the increased margin requirement for such a price change on a three-year futures contract would be over $950 million. If oil prices actually stayed that high for the three-year period, the state would recoup that amount through higher than anticipated oil revenue. Then, if the price of oil dropped back to the hedged price, the margin required would be reduced and the state's payment returned. If the state entered into a futures-based program, it would need to be able to come up with sums of money of this magnitude or larger on relatively short notice.

The per-barrel, up-front costs of an options-based program would vary widely. For example, a $0.75 per barrel fee would put a floor under near-term prices at a level about $1.00 per barrel under the futures prices for the upcoming month only. However, it wouldn't do the state that much good to lock in an oil price for just one month ahead. Like all insurance, the longer the protection you buy, the greater the cost. An option similar to the one above, covering a one-month period three years from now would cost close to $3.00 a barrel. An options-based hedging program covering three years would cost something like $300 million. While the up-front cost would be more than a hedging program using futures, an options-based program would allow the state to retain any additional revenue if oil prices move higher than the hedged level.

Finally, some policy makers will be reluctant to take the political risks of a hedging program. If a program succeeded, it is unlikely the policy makers who took the initiative to create the program would be rewarded with public congratulations. On the other hand, if prices increased significantly and the state had sacrificed that upside to reduce or eliminate the volatility in its royalty and production tax revenue, the conventional wisdom is that public criticism would be harsh.

LEGISLATIVE AND CONSTITUTIONAL ISSUES

Before the state could initiate an oil-revenue hedging program, the legislature would have to pass a law that authorized and spelled out the program's parameters. Two states currently have oil-revenue hedging programs on the books, although neither state does any hedging: Texas and Louisiana.

Some aspects of a hedging program clearly would require specific appropriations. For example, if Alaska embarked upon a program that involved the purchase of options, it would need appropriated funds to purchase the options. We are not certain which elements of a futures-based options program would require appropriations; certainly appropriations would be necessary for any fees or commissions associated with the program. If the state were required to put up large amounts from time to time to cover margin requirements in a futures-based program — and on occasion that could be hundreds of millions of dollars — it is not clear if appropriations would be required. The same issue arises with respect to payments required when closing out futures contracts.

The uncertainty about the need for appropriations for a futures-based program also raises questions about the constitutional prohibition of dedicated funds. Would contractual commitments to cover margin requirements or to close out contracts two or more years in the future violate that prohibition? We have discussed the appropriations question and the constitutional issue with the Department of Law, and they are not now prepared to provide definitive answers.

DEPARTMENT OF REVENUE RECOMMENDATIONS

The department recommends against initiating a hedging program if the CBRF balance is expected to remain sufficient. There is no need to pay for a hedging program when an adequately funded CBRF does the same job. If it becomes apparent that state policy makers intend to spend substantially all of the CBRF before they restructure the state's finances — eliminating our self-insurance fund against low oil prices — then we believe a state oil revenue hedging program may become necessary. However, even that will only work if the state has a long-term fiscal plan to balance the budget in years of average oil prices. To ensure the success of such a hedging program, the state should initiate the program at least two years (and preferably three years) before it exhausts the CBRF.

The principal benefit of an oil revenue hedging program would be to significantly reduce fluctuations in the state's year-to-year oil royalty and production tax revenue. With this reduction in revenue volatility, policy makers would know more closely when the state would exhaust its CBRF and how large the subsequent year-to-year revenue gap is likely to be. Would these benefits be worth the costs of a hedging program? Our judgment is that they would not, but it is just that - a judgment call. Reasonable, prudent decision-makers could easily conclude that the benefits of instituting such a program is worth the cost.

SUMMARY AND CONCLUSIONS

Businesses and investors hedge to reduce volatility. The markets that make hedging possible also accommodate speculators who use the same instruments in an effort to make money. Some of these speculators make money but many do not. Business and entities like the State of Alaska should not hedge to make money. Rather, policy makers should only look upon hedging as a post-CBRF option to stabilize the state budget and, by implication, the state economy.

Right now, the state manages oil price volatility by relying upon the Constitutional Budget Reserve Fund to provide a buffer between a volatile revenue stream and a stable expenditure budget. The CBRF has worked extremely well so far to smooth out the bumpy path of oil prices. And unlike a hedging program that will likely cost money, the CBRF does not cost the state anything. In fact, the CBRF actually makes money. If we keep $2 billion in the fund, we can expect to earn $100 million or more annually. We would be foolish to not preserve the CBRF for the long run as our best insurance policy against sudden economic shock caused by low oil prices.

However, if the state is going to exhaust the CBRF prior to implementing a long-term fiscal plan, and especially if use of the earnings reserve of the Permanent Fund is restricted by the proposed constitutional amendment, hedging is something the state should consider.