

UPDATED REPORT ON FUEL COST MITIGATION PLAN

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Executive Summary

Recommended Fuel Cost Mitigation Strategy

This report represents an integrated set of strategies to improve WSDOT budget protocols and reduce the amount of exposure WSDOT has to fuel price volatility. The strategies are envisioned to work together to create a comprehensive fuel cost mitigation plan.

Use of Consensus Average Method for Developing Biennial Fuel Budget. A Fuel Budgeting Practices Group has recommended a consensus average method that will allow us to use current forecast information and still mitigate some of the risks associated with using just two forecast sources. This forecasting method was used in developing the September 2010 Transportation Economic and Revenue Forecast and will be used in WSDOT's 2011 Supplemental and the 2011-13 Biennium budget to estimate the future cost to the agency of gas and diesel fuel.

Hedging Program. WSDOT would establish fixed price contracts with its current fuel distributor for a certain quantity of fuel to be purchased for periods up to 18-months in length. WSF would fulfill its remaining fuel needs by purchasing unhedged fuel at market prices. No more than 90% of WSF biennial fuel consumption would be purchased through fixed price contracts. The hedging program would affect the way fuel budgets are developed.

Fuel Conservation. A key to minimizing the overall impacts of fuel costs is to ensure that WSF is managing its consumption effectively. Several strategies are being pursued including:

- Operating on fewer engines;
- Slowing boat speeds while still meeting schedule;
- Implementing passive restraint systems at the dock;
- Loading and unloading more quickly, to enable slower boat speeds during transit; and
- Exploring the use of Liquefied Natural Gas (LNG).

Alternative docking procedures, fuel monitoring, and slowing vessels down could translate into a 2% to 3% reduction in fuel use for the fleet. If it proves successful and is implemented fleet wide, the prototype passive restraint system could result in another 3% reduction. WSF plans to study the feasibility of using liquid natural gas (LNG) on new vessels and retrofitting existing vessels. If LNG is implemented on newly constructed vessels there would be significant reductions in fuel cost. At today's prices, savings would be approximately 30% per equivalent diesel gallon.

Fuel Surcharge based on Total Budget Differential. A surcharge, if implemented, would be based on a formula that has an automatic trigger based on the total % price differential between budgeted fuel prices and actual fuel prices, but only if there is an accumulated deficit in the fuel budget. Once imposed, the surcharge amount would remain in place so long as there is a negative balance in the fuel budget.

Key policy questions. Should there be a hedging program, and if so, to what extent should fuel be hedged; should a surcharge mechanism be put in place; whether fuel deficits should be carried over into the next biennium and the surcharge amount be kept in place until the full amount is recovered; and whether fuel budget surpluses should also be carried over.

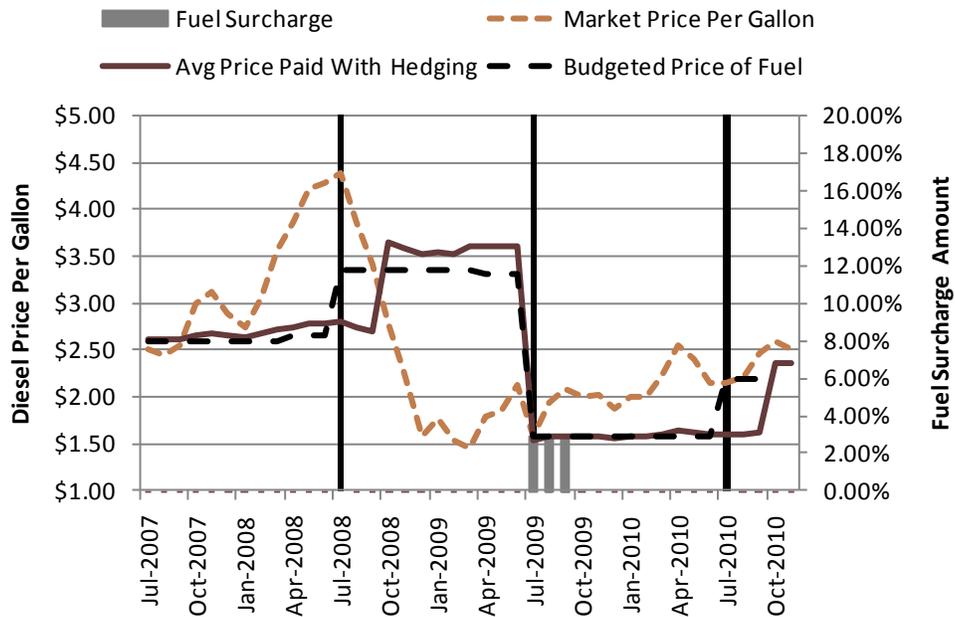
Implications of Proposed Strategies

To illustrate the implications of these combined fuel cost mitigation strategies an analysis was conducted using historical data from the beginning of the 2007-09 Biennium to evaluate the impact on prices paid, fuel costs and potential fuel surcharges assuming these strategies were in place. Exhibit 1 presents the result of this effort. The key findings include:

- Using the proposed consensus approach to fuel budgeting and incorporating hedging into the budget development process would have resulted in more stable budgets.
- The overall impact on costs would have been negligible over this period, as the savings from the early periods would have been offset by higher costs in the later periods. This is consistent with the intent of the fuel cost mitigating strategies which is to reduce volatility and improve predictability, not to save money.

It is important to note that the impact on costs is particular to the actual market prices and price volatility in this period and the specific assumptions about mitigation strategies; however, the analysis does show that the combined strategies can be expected to manage price volatility. Exhibit 1 illustrates the combined effects of a 90% hedging program and a surcharge, where application of a surcharge is minimal due to locking in so much of the fuel budget at fixed prices.

Exhibit 1
Looking Back: Fuel Surcharge with a 90% Hedge Ratio



	FY 2007-09 Total	FY 2009-11 Total (Biennium To Date)	GRAND TOTAL
Historical Fuel Expenditures			
Budgeted Fuel Expenditures	\$72.5 M	\$32.3 M	\$104.8 M
Actual Expenditures**	\$95.3 M	\$44.0 M	\$139.3 M
Total Change (Increase)/Decrease	\$(22.8 M)	\$(11.7 M)	\$(34.5 M)
Fuel Budget (Alternative Approach*)			
Budgeted Fuel Expenditures	\$81.2 M	\$37.0 M	\$118.3 M
Actual Expenditures	\$102.6 M	\$36.6 M	\$139.3 M
Total Change (Increase)/Decrease	\$(21.4 M)	\$0.4 M)	\$(21.0 M)
Revenue Effects of Fuel Surcharge:			
Estimated Surcharge Revenues	-	\$1.1 M	-
NET (Increase)/Decrease	\$(21.4 M)	\$1.5 M)	\$(21.0 M)
Impact of Alternative Approach			
(Additional Costs of Alt Approach)/Cost Savings:			
Budgeted Fuel Expenditures	\$(8.7 M)	\$(4.8 M)	\$(13.5 M)
Actual Fuel Expenditures	\$(7.3 M)	\$7.4 M	\$0.0 M

*90% of Fuel in Fixed Price Contract

** Actual fuel expenditures reflect actual monthly fuel consumption multiplied by average monthly

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WSDOT FERRIES DIVISION

FUEL COST MITIGATION PLAN UPDATE

The 2010 Fuel Cost Mitigation Plan (the Plan) was developed in response to two provisos contained in the FY 2009-11 adopted budget for WSF and the Transportation Commission regarding initiation of a fuel surcharge. The Plan recommended a three-part strategy to manage increasing long-term fuel expenditures and short-term fuel price volatility.

The key elements of the proposed fuel cost mitigation strategy included two cost-related elements in addition to a revenue-focused fuel surcharge mechanism:

- **Manage market exposure risk.** Implement fuel price hedging strategies to manage WSF's exposure to price swings and improve the budgeting and forecasting practices to improve budget stability.
- **Conservation.** Continue to implement current fuel efficiency measures and explore new ways to conserve fuel, while maintaining the existing level of service.
- **Fuel surcharge.** Implement a fuel surcharge mechanism that is designed to recover a portion of fuel costs when the price of fuel exceeds the budget expectations.

Washington State Department of Transportation Ferries Division (WSF) has been directed by the Legislature to provide a report detailing the progress of implementing the three main components of the Plan (fuel forecasting and budgeting practices, price hedging contracts for fuel purchases, and fuel conservation strategies).

1.0 COST MANAGEMENT STRATEGIES: MANAGING MARKET EXPOSURE RISK

1.1 Improving WSDOT Fuel Budgeting and Forecasting Practices

In 2010 a Fuel Budgeting Practices Group was formed by WSDOT to review the current method for fuel forecasting and budgeting. The group participants included key stakeholders from the Office of Financial Management (OFM), WSDOT, WSF, and Legislative Staff. The group has recommended consensus average method that will allow the use of current forecast information and still mitigate some of the risks associated with using just two forecast sources. The new method was used to develop the September forecast and proposed 2011-13 Budget. The consensus recommendation uses the average forecasted price of fuel from the following major forecasts for the current forecasting period (current biennium):

- **U.S. Energy Information Administration (EIA) Short-Term Energy Outlook (STEO).** The STEO uses a supply and demand forecasting method that brings together energy quantities and prices from various sources and combines these with other macroeconomic models to arrive at their monthly estimates for petroleum, natural gas, electricity, coal, and renewable.
- **Global Insights.** Current source for budgeted and 16-year fuel prices.
- **New York Mercantile Exchange (NYMEX).** The world's largest physical commodity futures exchange. The prices quoted for oil, gas, and other commodity transactions on the exchange are the basis for prices paid throughout the world.

- **Economy.com.** Moody's Economy.com is a provider of economic, financial, country, and industry research designed to meet the needs of businesses, governments, and professional investors.
- **Consensus Economics.** This is an international economic survey organization which polls more than 700 economists each month to obtain their forecasts and views. These surveys cover estimates for the principal macroeconomic indicators including GDP growth, inflation, interest rates and exchange rates in over 85 countries.

As part of their research, the Fuel Budgeting Practices Group surveyed 13 other states to gather information about whether if states have developed their own forecasting model and what sources are used for generating fuel price forecasts. The results of the survey are detailed below in Exhibit 2.

Exhibit 2
Summary of Peer State Fuel Forecasting Practices

State	Use of Fuel Price Forecast	
	Model	Source of Fuel Price Forecasts
Arizona	No	Global Insight - have median, lower 10% and upper 10%
California	No	EIA long & short-term forecast
Colorado		Staff is not sure at this point
Connecticut	No	EIA and Economy.com fuel prices
Florida	No	Global Insight adjusted with FL fuel prices
Idaho	Performs their own fuel price forecast based on examining trends in economy	N/A
Iowa	No	do not have fuel price data in forecast models
North Carolina	No	EIA but they do review GI fuel price forecasts
New York	No	EIA
Ohio	No	EIA and the views of experts at the risk analysis workshop
Oregon	No	EIA in short-term & GI in long-term; NYMEX not used in future because not many buyers so quotes can be suspect
Texas	No	Global Insight & EIA
Vermont	No	Rely on Moody's Economy.com and EIA

EIA = US Energy Information Administration

NYMEX = New York Mercantile Exchange

Source: WSDOT, 2010

It is important to note that improving budgeting and forecasting protocols is not to be viewed as an isolated fix that alleviates all price risk for WSF. Even by using a consensus of forecasts, the factors used by all forecasting agencies to determine future fuel prices are complex and difficult to predict. A range of issues such as political unrest in fuel producing countries, pipeline closures, and weather disruptions can have significant impacts on fuel prices. That being said, the consensus method is more comprehensive and does reduce the risk presented by relying primarily on two forecasts. If coupled with the potential of hedging, fuel conservation, and a fuel surcharge, WSF will have additional tools that will ultimately help reduce overall fuel price risk.

1.2 Price Hedging Strategies

Another key component of the Fuel Cost Mitigation Plan is to implement a price hedging program. The hedging program would be limited to mitigating fuel price volatility and not for the purpose of saving on fuel

costs. Hedging positions would be taken into account during budget development and would be taken into account for purposes of calculating any fuel surcharge. The hedging strategies that were evaluated include:

- **WSDOT-controlled hedging.** A program where WSDOT would manage its own fuel hedging program by contracting to participate in futures and/or options markets to effectively limit its exposure to price volatility.
- **Bank-provided Hedging.** Similar to the WSDOT-controlled hedging except that WSDOT would contract with a financial institution which would provide the hedging management functions on WSDOT's behalf.
- **Distributor-controlled hedging.** A program where WSDOT would contract with its fuel distributor for fixed prices for future fuel deliveries, shifting the price volatility risks to the distributor.

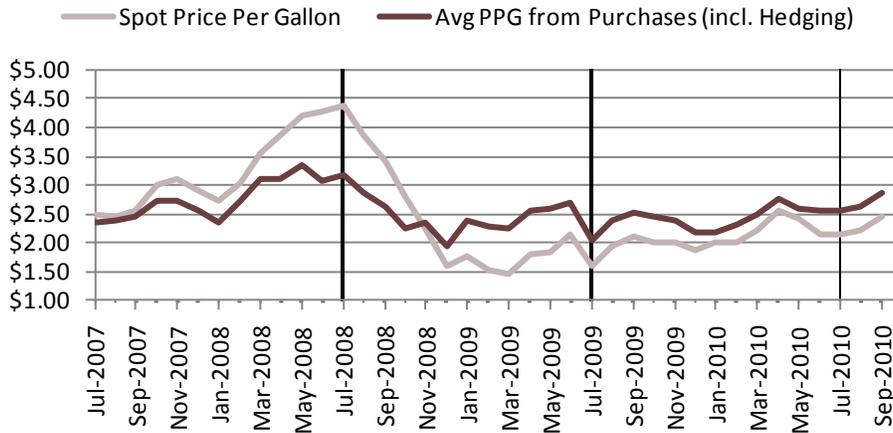
Each of these potential hedging approaches is briefly discussed below, including an assessment of how each might have affected the average price of fuel paid by WSF if the strategy had been in place since July 2007.

WSDOT-Controlled Hedging – Two Methods

NYMEX Heating Oil Futures Contracts. WSDOT's agent would act, purchase and sell contracts for future delivery of heating oil with a forward pricing window of up to 36 months. Since WSDOT is not an end user of heating oil, it would liquidate (sell) all positions before the contracted date of delivery, exiting hedges as the actual diesel fuel is purchased and consumed. A margin account would need to be established and sufficient funds would need to be maintained within the account to cover anticipated capital requirements, consultant, broker, and line of credit fees. In effect WSDOT would be participating in the large and more liquid heating oil market where gains and losses would be used to mitigate upward swings in diesel fuel prices.

The impact of hedging is shown in Exhibit 3, where the average price per gallon of fuel would have been significantly less volatile over the period of July 2007 to September 2010. In particular, during the period of high fuel prices in the middle of 2008, WSF would have experienced much lower fuel costs, since much of the fuel costs would have been "locked in" more than 12 months earlier when price expectations were much lower. In contrast, the average price of fuel would have been somewhat higher than the actual market price from early 2009 through September 2010, as the futures contracts acquired during the high cost years worked their way through the system. In the end, the overall cost of fuel would have been marginally higher (\$4.8M or 3.4% higher than the actual costs) experienced by WSF, but the volatility would have made budgeting much more predictable. It is important to note that the impact on costs is particular to the actual market prices and price volatility in this period, but it is useful to illustrate the fact that hedging is a strategy to manage volatility rather than reduce overall costs.

Exhibit 3
Price per Gallon Comparison of Spot Price (Market) and Purchase Price Including Hedging



Note: Exhibit above assumes 90% max hedge ratio.

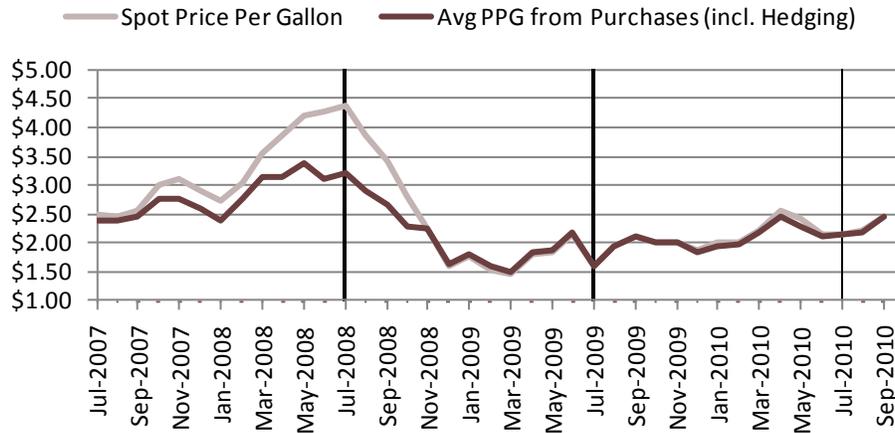
Using Options on Heating Oil Futures Contracts. For this method of hedging, WSDOT would act as buyer of calls and/or puts to reduce the exposure to price increases and also take part in the benefits of price decreases. This is similar to the futures contracts except that options are used as a way to “buy insurance” since the owner of an option is not obligated to exercise the option. Unlike futures contracts, at the end of an option contract, if prices have not moved in a favorable direction, the buyer can choose to let the option expire and is only required to forfeit the cost of the option’s premium.

WSDOT would have the flexibility to create a call-only (ceiling) strategy in which WSF would be protected from price increases above the ceiling. The benefit of this strategy is that not only is WSF protected from price increases, it has unlimited ability to participate in price decreases below the ceiling and only forfeits the costs of the premium paid for the ceiling. As with the futures contracts approach, a margin account would need to be established and sufficient funds would need to be maintained within the account to cover anticipated cash requirements.

Using the same basic hedging assumptions as above, Exhibit 4 shows the impact of a strategy that uses call options to mitigate risks on the high side. As with the futures contracts example, the volatility of WSF fuel prices would have been dramatically reduced. The difference is that in the period after November 2008, WSF would have been purchasing fuel at the market price and would not be exercising any of its options, which would have been priced above the spot price in these months. The overall effect on total costs would have been to reduce total state costs by approximately \$7 million or 4.8% over this period.

The primary reason costs are lower in this scenario is that the premium paid for the unexercised options was less than the premium that would have been paid if WSDOT were engaging in futures contract trading as demonstrated in the earlier example. Again it is worth noting that this conclusion is specific to the price fluctuations over this period and not a particular feature of this strategy. In other circumstances, it is possible that total costs with hedging would be higher than a no hedging scenario.

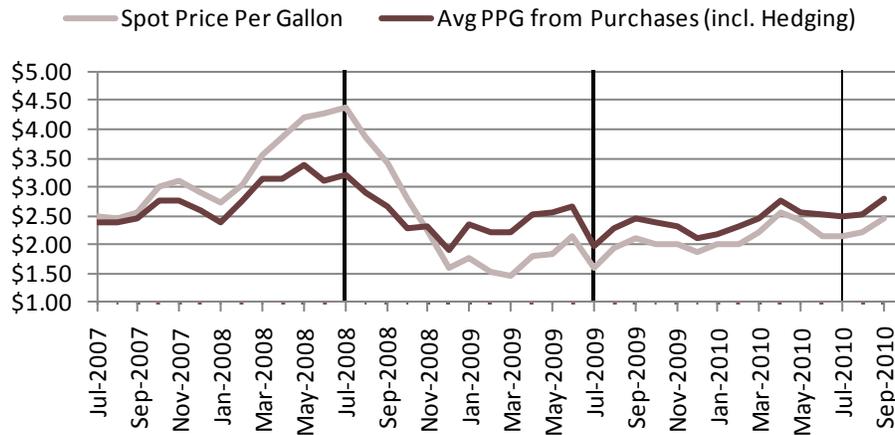
Exhibit 4
Price per Gallon Comparison of Spot Price (Market) and Cap-Only Strategy (95% Hedged)



Note: Exhibit above assumes 90% max hedge ratio.

A variation on the options hedging strategy would be to apply a collar strategy (as opposed to a call option only strategy) in which the premium paid for the ceiling would be offset by a similar premium received for a put (floor). In this case, WSDOT would establish a maximum premium which will correlate to a given strike price for a call options purchased on futures contracts. A margin account would need to be established and sufficient coverage would be maintained within the account to cover anticipated capital requirements.

Exhibit 5
Price per Gallon Comparison of Spot Price (Market) and Collar Strategy (95% Hedged)



Note: Exhibit above assumes 90% max hedge ratio.

The implications of a collar approach are shown in Exhibit 5, which closely mirror the results from the futures contracts approach taken in Exhibit 3, since this strategy simply works to keep prices within the “collar” range. In this case, as with the others, the volatility is reduced, but the total costs are marginally higher since the average price paid after November 2008 would have been higher than the call options only strategy. Total costs would have been \$5.5 million higher or an increase of 3.9% over actual costs for this period.

Bank-Provided Hedging

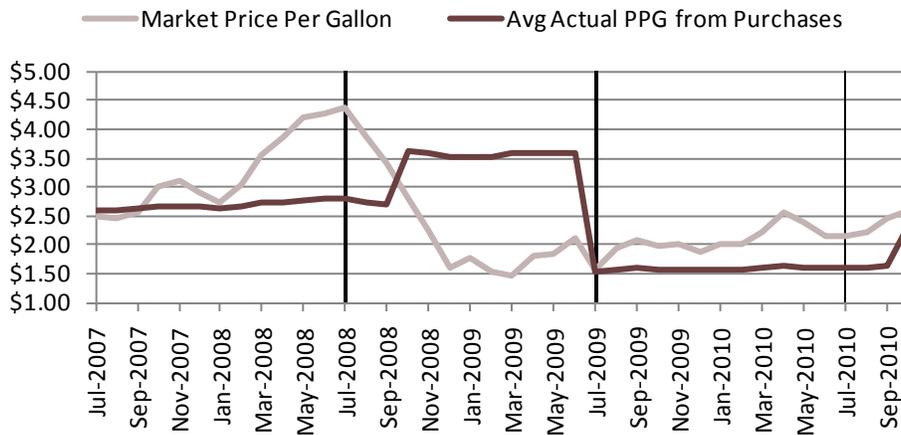
Instead of directing its own hedging strategy, WSDOT would contract the trading activity to a financial institution. All of the products that WSDOT could use to direct its own strategy would be provided by the financial institution, including heating oil futures contracts, options on heating oil futures, and “costless collars.” The difference between this and the WSDOT-directed strategy is that financial institutions would charge a premium to conduct this service.

Fuel Supplier Directed Hedging

Some marine users of diesel fuel contract with fuel distributor firms that provide financial management tools and programs that minimize the probability of financial distress related to fuel costs. The basic concept is that WSDOT would agree to a contract that offers a fixed price for a specified quantity of fuel for an agreed upon time period. The time period is flexible, and may be for 1 to 24 months in the future.

The key difference with this alternative is that WSDOT would not engage in any hedged transactions. Instead there is an upfront commitment to purchase fuel at a fixed price. The fuel distributor is able to offer a fixed price based on their purchasing power with refineries and pass along the price certainty to its customers. To illustrate how this approach might have affected fuel prices and costs, a hypothetical series of fixed price contracts were developed using current fuel distributor pricing offers and comparing how these relate to futures prices for fuel delivery over the next 12 to 18 months.

Exhibit 6
Price per Gallon Comparison of Spot Price (Market) and Fixed Price Strategy (95% Hedged)



Note: Exhibit above assumes 90% max hedge ratio.

Exhibit 6 presents the results of applying this hypothetical fixed price contract premium to the historical fuel purchases to show how prices and costs might have looked if WSDOT were using the distributor directed hedging approach. As with the other options studied, the volatility is reduced and in this instance, the overall impact on costs is negligible.

1.3 Assessment of Hedging Strategies

All of the hedging strategies provide WSF with similar benefits of greater budget stability and some protection against volatile fuel prices. However, there are a few distinct advantages and disadvantages that

must be addressed in order to compare and contrast each hedging strategy. Each hedging strategy was compared and rated in five key categories. The categories included:

1. **Program Costs.** How do program costs, both initial start-up and ongoing, differ for each strategy? The comparative rating criteria used to assess hedging strategies for this category included:

<input checked="" type="radio"/>	No additional start-up or ongoing program costs.
<input type="radio"/>	Some additional start-up or ongoing program costs
<input type="radio"/>	Significant start-up and ongoing program costs.

2. **State budget schedule and policy fit.** How well does each hedging strategy fit within current budget setting periods and impacts or changes to budget policies?

<input checked="" type="radio"/>	No changes to current budget policies. Hedging strategy is very congruent with budgeting cycle.
<input type="radio"/>	Some additional start-up or ongoing program costs.
<input type="radio"/>	Significant changes to current budget policies and/or practices.

3. **Transparency.** How transparent is each hedging strategy for the WSDOT to administer?

<input checked="" type="radio"/>	Very transparent and easy to administer. All costs (gains and losses) are known.
<input type="radio"/>	Most costs are known and relatively easy to administer.
<input type="radio"/>	Not transparent. Some costs are hidden and/or unknown.

4. **Program Risk.** How risky is each hedging strategy? This includes basis and counterparty risk. Basis risk exists when the basis of hedge payments is different than the basis for payments to the diesel

vendor. Counterparty risk involves the creditworthiness of the hedge provider (how likely is the hedge provider to honor their contract).

<input checked="" type="radio"/>	Basis and Counterparty risks are almost zero.
<input type="radio"/>	Some basis risk and counterparty risk.
<input type="radio"/>	Large differences between hedge payments and diesel payments. Creditworthiness is unknown.

5. **Implementation Challenges.** Are the strategies easy or difficult to implement?

<input checked="" type="radio"/>	Easy to implement.
<input type="radio"/>	Somewhat difficult to implement.
<input type="radio"/>	Significant changes needed and difficult to implement.

As Exhibit 7 illustrates below, each of the hedging strategies have their advantages and disadvantages. However, given the ease of implementation, zero start-up costs, and fit with current budget policies and schedule make the distributor-controlled hedging strategy the highest rated option of the strategies assessed.

Exhibit 7
Summary of Hedging Comparison

	Program Costs	Budget & Policy Fit	Transparency	Program Risk	Implementation Challenges	Overall Rating
NYMEX Heating Oil Futures	○	○	◐	◐	○	◐
NYMEX Options on Heating Oil Futures	○	○	◐	◐	○	◐
Bank-Provided Hedging	◐	◐	○	○	◐	○
Distributor-Controlled Hedging	●	●	◐	●	◐	◐

● - More Advantageous
 ○ - Less Advantageous

Risks and Tradeoffs of Fixed Price Hedging Program

In evaluating the impacts of the fixed price hedging program, it is useful to think in the context of price risk and compounding market price risk. Price risk exists when WSF is 100% unhedged and subject to all market price volatility. Once hedging positions are taken and market prices move above or below the actual price paid for fuel with hedging, the out-of-pocket costs of fuel could be above or below market costs. The tradeoff for minimizing price risk is the increased risk of “overpayment” for fuel at some point. It is not possible to construct a hedging program that would eliminate both risks. Exhibit illustrates this relationship.



2.0 FUEL CONSERVATION STRATEGIES

WSF has been operating under both state and internal policies to (1) improve energy efficiency and (2) reduce consumption. In that vein, WSF is reviewing new technologies and operating changes that will help the agency achieve these goals. Currently, WSF takes a conservative approach to new technology, due in large part to the risks associated with unproven methods. WSF considers these improvements once they have been proven within the industry, and wants to be able to analyze a track record before investing. However, new vessel design and construction offers some distinct advantages over retrofitting existing

vessels with new technologies. New vessel designs are able to incorporate new technology, usually at lower costs than trying to retrofit an older vessel. As WSF begins to retire its aging fleet, it has a better opportunity to make investments in new fuel-saving technologies.

One new technology that will be investigated is to design new vessels to run on Liquefied Natural Gas (LNG) rather than diesel. While there are no passenger vessels in the U.S., there are passenger vessels in Europe operating on LNG. Using LNG as a propulsion fuel has numerous advantages over diesel fuel. A primary benefit would be the reduction in greenhouse gas emissions associated with vessel operations. Studies have cited that running vessels with LNG would virtually eliminate sulfur oxides and particulate emissions, and reduce nitrogen oxides and carbon dioxides by 90% and 20%, respectively. Many energy analysts believe that natural gas demand will far outpace demand for oil, possibly making LNG a much more financially and economically beneficial fuel option given the vast domestic reserves that are projected. LNG is approximately 40% cheaper than current diesel prices even given the difference in energy equivalent (1.7 gallons LNG equals the energy equivalent of 1 gallon of diesel).

The costs and benefits related to storage and transportation of LNG are unknown and would need to be studied further. The economic benefit to local communities would be significant.

WSF is aware that there may be public concerns over the safe storage and transport of LNG and that these concerns will be an important part of the evaluation of any alternative fuel proposal. Proper safeguard measures would need to be investigated and implemented to ensure safe transportation and storage of LNG both to and from the refinery and once stored on the vessels. WSF would work with the United States Coast Guard to ensure regulatory compliance.

A number of fuel conservation and efficiency measures were included in the 2009 adopted budget and some conservation measures have already been implemented, including:

- Developing test protocols using nontoxic alternatives to fuel additives and other commercial products to conserve fuel and improve engine performance.
- Evaluating operating protocols to adjust transit times to conserve fuel while maintaining published service schedules and customer satisfaction. There are times of the day when the two Jumbo MK I Class vessels could potentially operate on three of four engines at slower speed (140 vs. 150 shaft turns) and still maintain schedule.
- Exploring in-terminal positive restraint systems to conserve fuel using slower engine speeds while in-berth with no degradation of safety. WSF has applied for Federal Funding to install Vessel Fuel Monitoring systems in its largest 4 vessel classes encompassing 15 vessels.
- Installing exact fuel measurement systems on board vessels to assist ship's crew in understanding fuel usage and demonstrating fuel conservation measures.

Alternative docking procedures, fuel monitoring, and slowing vessels down could translate into a 2% to 3 % reduction in fuel use for the fleet. If it proves successful and is implemented fleet wide, the prototype positive restraint system could result in another 3% reduction. If LNG is implemented on newly constructed vessels it would translate into a significant reduction in fuel cost. At today's prices, it would save approximately 30% per equivalent diesel gallon.

3.0 REVENUE STRATEGIES: FUEL SURCHARGE

The recommended fuel surcharge approach proposed in the 2010 Fuel Cost mitigation plan was designed to be a nimble mechanism that is responsive to volatile fuel prices that exceed Legislative expectations as identified in the WSF budget. It was designed to work within the framework of the legislative budget process and to neither limit nor impose any particular budget solution. Rather, the goal was to provide the Legislature with an additional mechanism whereby the risk associated with future unexpected increases in fuel prices can be shared between ferry customers and state taxpayers.

The current surcharge methodology proposes that the surcharge calculation be an automatic formula-driven process, that would determine if and how much a surcharge would be. The basic calculation would follow a four step process:

1. Calculate average actual market price of diesel fuel for the previous quarter, using monthly indexes made up of daily Tacoma and Anacortes diesel fuel prices weighted by WSF purchasing volumes;
2. Adjust the average quarterly market price for the effects of hedging activities over the corresponding period;
3. If the hedging-adjusted price is greater than the budgeted price (threshold price) then a fuel surcharge amount is calculated as shown below in **Error! Reference source not found.**; and
4. If the surcharge amount is greater than 2.5% then a surcharge would be applied at the next fare change opportunity.

Exhibit 9: Basic Fuel Surcharge Formula

Percent increase over threshold price (current quarter)	×	Fuel share of operating costs (budget)	÷	Farebox recovery rate (budget)	=	Surcharge amount
Example: 10%	×	20%	÷	70%	=	2.9%

The following are some of the more detailed elements of the how the surcharge would be implemented:

- Due to WSF's regional fare integration agreements, any price changes must occur on the 1st of the month.
- Quarterly fuel surcharge adjustments, where warranted by fuel price changes, need to be made automatically, as per a set formula established by the Washington State Transportation Commission and adopted in the Washington Administrative Code.
- The budgeted price of fuel would be established by the most recent WSF budget, and would be "reset" by subsequent legislative budgetary actions.
- A calculation of costs of diesel fuel would be based on a quarterly review process that uses the indices of Tacoma and Anacortes fuel price data, weighted according to WSF's purchasing pattern, and would serve as a readily available proxy for fuel costs by quarter.

- The fuel surcharge would be determined solely based on the degree to which actual fuel prices diverge from the “threshold price of fuel” established in the WSF budget. Possible elasticity effects of higher prices would be ignored for the purposes of calculating the surcharge.
- To integrate the surcharge with the hedging program, from the effects of hedging activities would be accounted for in the calculation of actual fuel prices.
- Fuel surcharges would be rounded to the nearest nickel, be separately identified from regular fares, and the revenues would be accounted for separately within the Ferry Operating Account so as to be used solely to defray fuel costs.
- To ensure that the surcharge is applied only when there is a reasonably substantial increase in fuel prices, the surcharge would only be implemented if the surcharge percent is greater than 2.5%.
- To provide customers with some relative certainty about potential surcharge impacts, the proposed methodology would cap the surcharge at 20%.

3.1 Updated Fuel Surcharge Methodology

Since the 2010 Fuel Cost Mitigation Plan was finalized, the Legislature directed that a fuel surcharge be implemented no sooner than July 1, 2011. The Transportation Commission did not formally consider the surcharge as part of its process to review and approve the tariff that went into effect on January 1, 2011, but has an opportunity to consider implementation in 2011. Prior to implementing a fuel surcharge, the Commission must adopt a fuel surcharge methodology and revise the Washington Administrative Code (WAC) through the regular rulemaking process. As part of the code revision process, the public and Ferry Advisory Committees will have an opportunity to review the proposed surcharge methodology and offer comment prior to adoption.

Additionally with the passage of Initiative 1053, the implementation of a fuel surcharge may require legislative action and language allowing the surcharge to be applied automatically.

There are some key additional policy choices concerning the proposed fuel surcharge methodology that need to be addressed before adopting a formal surcharge mechanism, including:

- **Surcharge Increment and Maximum Limits.** The 2.5% increment represents the minimum surcharge amount that would affect all fare categories. Decreasing this increment would potentially lead to more frequent fare changes. Increasing the increment would potentially lead to fares changes on high-fare categories, but not on certain low-fare categories.
- **Implementing a Two-Part Surcharge Trigger.** Concern was noted that a surcharge based solely on per gallon price differential did not take into account what occurred in previous months. For example, if prices had been lower than budgeted for several months prior to a period when prices did exceed budget, the “savings” from previous months should delay any imposition of a fuel surcharge. To address this concern the following two-part test is proposed:
 - **Per Gallon Price Differential.** A surcharge trigger based on the percent differential in the market price per gallon above budgeted prices. The advantage of this trigger is that it is more responsive to rapidly increasing fuel prices. A disadvantage is that it ignores what has occurred in the overall fuel budget in previous periods. For this reason the surcharge could not be put in place unless there is a **cumulative negative balance** in the fuel budget (budget vs. actuals).

The actual to budget surplus/deficit would be tracked quarter to quarter and would not be reset automatically when a supplemental budget is passed. For example, each quarter there is an assessment of

the previous three months actual to budget expenditures and the cumulative surplus/deficit is adjusted accordingly. So once a supplemental budget takes effect it would become the basis for determining what the surplus or deficit is for future periods but would not affect accumulated balances. Thus, new budgets would be used to calculate the quarterly incremental changes in the surplus or deficit, but would not reset the previous balance.

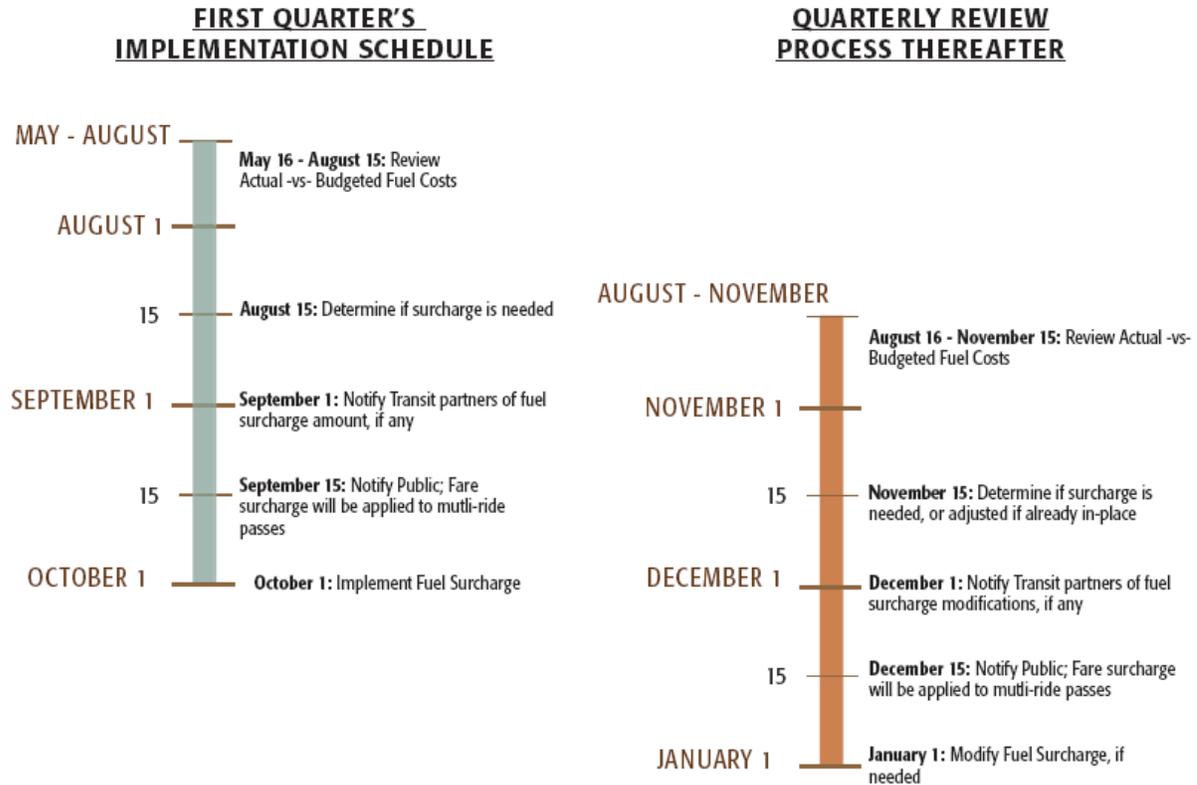
Frequency of Review Process

In considering the frequency with which fuel surcharges might be adjusted, there is a tradeoff between wanting to respond quickly to rising fuel costs in order to mitigate the budgetary impacts and the challenge for customers of frequent price adjustments. The preferred process would have the implementation or modification of a fuel surcharge amount occur on the first day of each quarter (January 1, April 1, July 1, and October 1). To facilitate this schedule WSF would conduct a quarterly review process. Implementing a quarterly review process would lessen the administrative and customer burdens of frequent fare changes compared to the monthly review suggested in 2010.

As stated in the 2010 Fuel Cost Mitigation Plan, WSF is required to notify its transit partners 30 days prior to a fare change and all fare changes are to be effective on the first day of the month. Administratively WSF already has the ability to support quarterly changes in the Electronic Fare System (EFS) and ticketing.

To be an effective fuel cost mitigation tool, WSF will need to minimize the time lags between the surcharge need and actual implementation. Based on the notification requirements, the shortest practical lag will be approximately seven weeks. Exhibit 10 illustrates the process and schedule for review and implementation for the first quarterly surcharge and the surcharge review and implementation process thereafter. The exhibit is meant to show that the implementation process and review process overlap, and the dates selected are for illustrative purposes only.

Exhibit 10
Example of Fuel Surcharge Review, Notification and Implementation Process
(For Illustration Only)



- **Quarterly Review of Fuel Prices.** A review of actual prices vs. budgeted prices and fuel costs vs. budgeted amounts from the previous quarter (mid-quarter to mid-quarter) and need for a fuel surcharge. Actual prices for the quarter under review would reflect the proportionate share of fuel purchased at market prices (using the average weighted OPIS index) and through fixed contracts.
- **First of the following month (Two weeks after the beginning of the review cycle).** Notify transit partners of price changes to be implemented at the beginning of the following month (meets requirements for 30 days notice and implementation of fare changes on the first of the month).
- **15 days prior to implementation.** Notify customers of fuel surcharge and price changes to take effect at the beginning of the next month.
- **First day of the new quarter (6-7 weeks from the beginning of the review cycle).** Implement new fares.

There is a key policy question that needs to be addressed. If the surcharge methodology uses a cumulative budget surplus/deficit factor as a consideration for when a surcharge is appropriate, there is a question as to whether the surplus/deficit amount would continue into a new biennium or whether the balance is reset to zero. The following are some of the issues that are relevant to choosing whether or not to carry over the accumulated surplus or deficit into a new biennium. Even if a fuel surcharge mechanism were in place to recover cumulative deficits in the fuel budget, the entire amount may not be recovered before the end of the

biennium. If deficits are carried over into the next biennium and the surcharge amount be kept in place, it would imply that the collection of money in the current biennium would cover costs incurred in the previous biennium. It would also imply that an increased portion of over-budget fuel costs is recovered from customers instead of state taxpayers. Another question is whether budget surpluses would carry over as well. Carrying over biennium fuel budget deficits would imply that Legislature could adopt a budget that included surcharge revenue assumptions. Under the proposed surcharge mechanism, these would be limited to the expected deficit in the fuel budget at the end of the biennium.

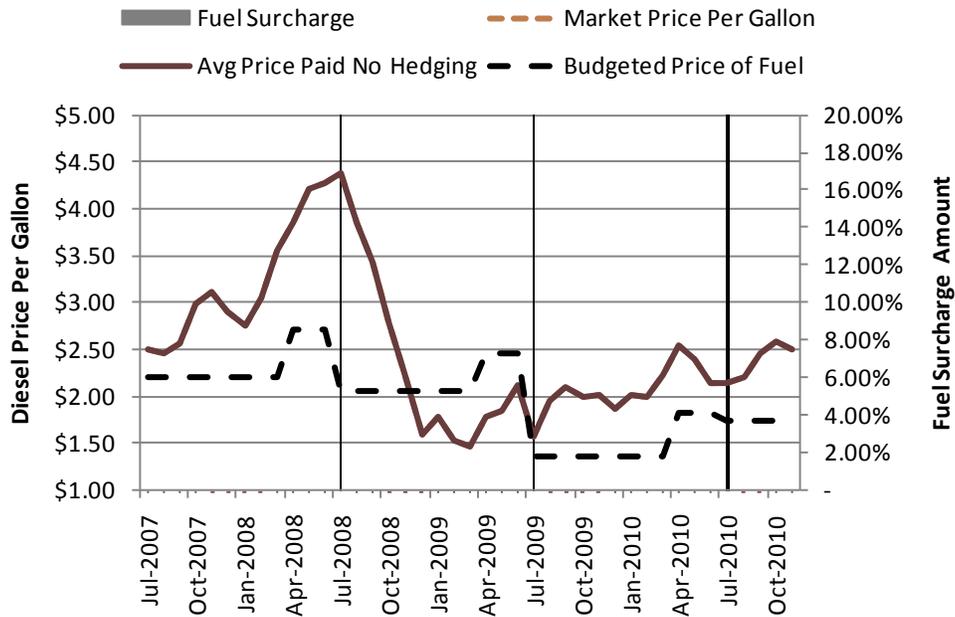
4.0 IMPLICATIONS OF COMBINED FUEL MITIGATION STRATEGIES

The proposed Fuel Cost Mitigation Plan contains a coordinated set of strategies available to WSF. These strategies were analyzed as one cohesive tool, using actual market prices for diesel fuel, to model what the world might have looked like if all of the components of the fuel cost mitigation plan were in place at the beginning of the 2007-09 Biennium. The following strategies are assumed for the purposes of analyzing the implications of a coordinated set of mitigation strategies:

- **Consensus Average Method for Developing Biennial Fuel Budget.** The consensus forecast will also incorporate all hedging positions at the time of budget development.
- **Hedging Strategy.** Based on 18-month fixed price contracts at both 90% and 50% maximum hedge ratios.
- **Two-Part Fuel Surcharge Trigger based on per Gallon Price Differential.** Fuel surcharges would only occur if there is a percent price per gallon differential above budgeted fuel costs –and– a cumulative negative balance between actual and budgeted fuel cost (applied and adjusted in increments of 2.5% and up to maximum of 20%).

Exhibit 11 below illustrates how WSF actual fuel expenditures compared with budgeted expenditures. In both biennia, budgeted expectations for fuel were set at levels below current market prices. Without having any mitigating measures, such as a consensus budget forecast, hedging, or a fuel surcharge to offset the differential between budgeted and market fuel prices, WSDOT had to request supplemental budgets to cover excess fuel. The approach to fuel purchases has been that WSF simply pays the market price at the time of fuel purchases, so the average price paid is equal to the market price per gallon. Since there was no surcharge in place during this period, there were no surcharge impacts during the rapid fuel price increases.

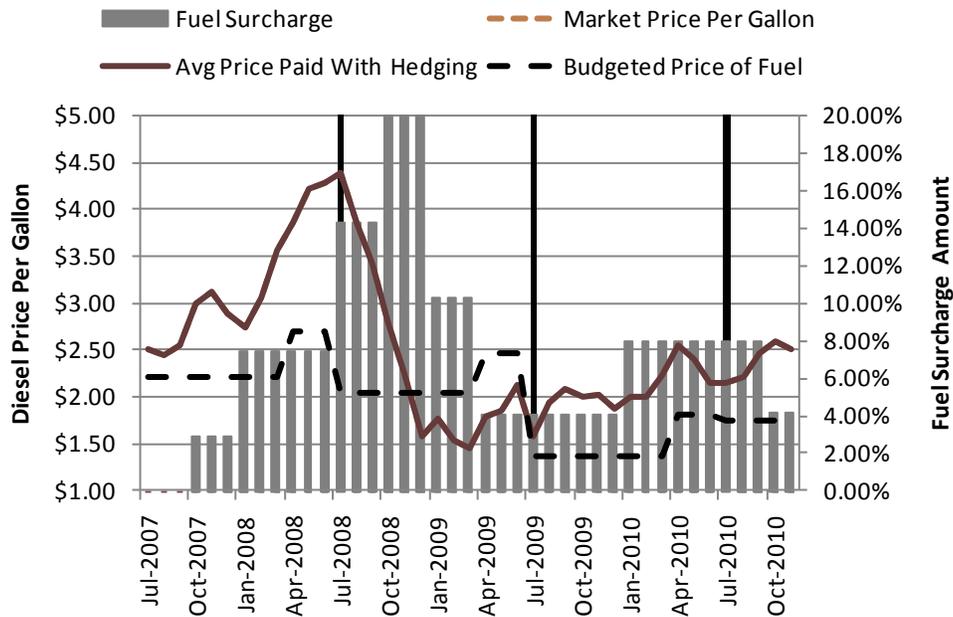
Exhibit 11
Looking Back: Historical Fuel Expenditures FY 2007-09 & FY 2009-11 YTD



	FY 2007-09 Total	FY 2009-11 Total (Biennium To Date)	GRAND TOTAL
Budgeted Fuel Expenditures	\$72.5 M	\$32.3 M	\$104.8 M
Actual Expenditures	\$95.3 M	\$47.2 M	\$142.5 M
Total Change (Increase)/Decrease	\$(22.8 M)	\$(14.9 M)	\$(37.7 M)
<i>Revenue Effects of Fuel Surcharge:</i>			
Estimated Surcharge Revenues	-	-	-
NET (Increase)/Decrease	\$(22.8 M)	\$(17.2 M)	\$(37.7 M)

Exhibit 12 shows what would have occurred if the proposed surcharge had been in place for the FY 2007-09 and FY 2009-11 Biennia. In FY 2007-09, a fuel surcharge would have generated \$15.4 million resulting in a net increase in fuel costs of \$7.3 million relative to budgeted expenditures. A fuel surcharge biennium-to-date in FY 2009-11 would have generated \$9.1 million in surcharge revenues resulting in a net increase of \$8.0 million over budgeted expenditures. As above, since there is no hedging, the market price of fuel is the same as the average price paid in this chart.

Exhibit 12
Looking Back: Fuel Surcharge, If No Hedging



	FY 2007-09 Total	FY 2009-11 Total (Biennium To Date)	GRAND TOTAL
Budgeted Fuel Expenditures	\$72.5 M	\$32.3 M	\$104.8 M
Actual Expenditures	\$95.3 M	\$47.2 M	\$142.5 M
Total Change (Increase)/Decrease	\$(22.8 M)	\$(14.9 M)	\$(37.7 M)
<i>Revenue Effects of Fuel Surcharge:</i>			
Estimated Surcharge Revenues	\$15.4 M	\$9.1 M	\$24.6 M
NET (Increase)/Decrease	\$(7.3 M)	\$(8.0 M)	\$(13.1 M)

4.1 Comparison of Recommended Hedging Approaches to Historical Fuel Expenditures

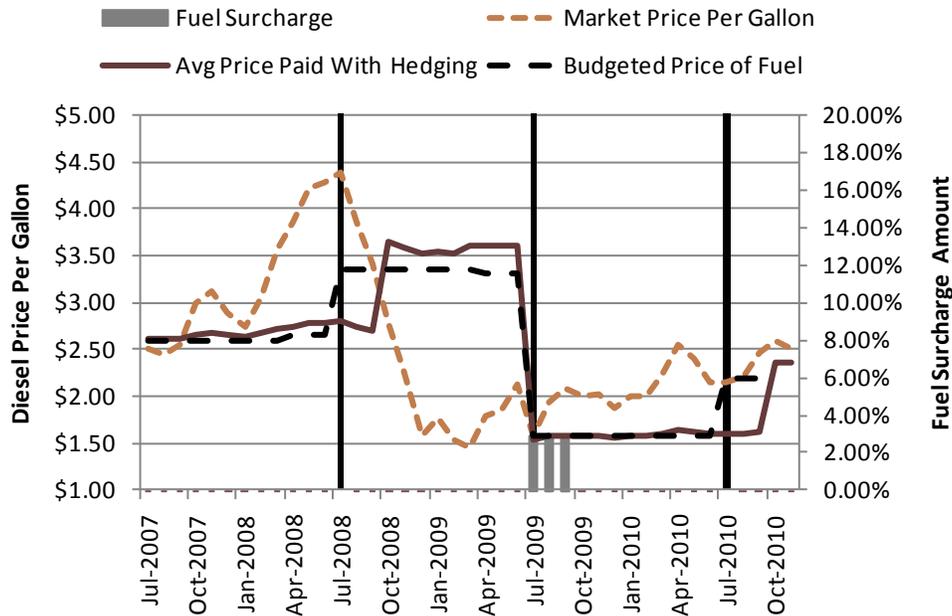
To understand the degree to which the combined strategies would help mitigate fuel price risks and budget impacts, two scenarios were constructed where the total amount of fuel that is hedged varies from a maximum of 90% to a maximum of 50%. The higher the portion of fuel that is hedged the more that fuel price volatility is eliminated and the greater the potential for actual costs to be higher or lower than market-based costs if fuel were purchased without hedging. This section illustrates the impact of alternative budget/forecasting practices, fixed price hedging strategies at different hedge ratios, and a fuel surcharge mechanism if the hedging strategies had been in place beginning in the FY 2007-09 biennium.

90% of Budgeted Fuel Purchased in 18-Month Fixed Price Contracts

- The impact of an alternative approach with 90% of fuel purchased through fixed contracts would have resulted in higher adopted fuel budgets for both biennia. The adopted fuel budget impact in FY 2007-09 and FY 2009-11 would have been \$8.7 million and \$4.8 million higher, respectively.

- Actual fuel expenditures would have differed between the two biennia. The impact in FY 2007-09 would have resulted in an additional \$7.3 million in actual fuel costs. However to-date in FY 2009-11, the alternative approach would have resulted in fuel savings of \$7.4 million.
- A small fuel surcharge would have been imposed to recover the fuel deficits created in FY 2007-09. Surcharge revenues would have been collected in the first quarter of the FY 2009-11 biennium.

Exhibit 13
Looking Back: Fuel Surcharge with a 90% Hedge Ratio



	FY 2007-09 Total	FY 2009-11 Total (Biennium To Date)	GRAND TOTAL
Historical Fuel Expenditures			
Budgeted Fuel Expenditures	\$72.5 M	\$32.3 M	\$104.8 M
Actual Expenditures**	\$95.3 M	\$44.0 M	\$139.3 M
Total Change (Increase)/Decrease	\$(22.8 M)	\$(11.7 M)	\$(34.5 M)
Fuel Budget (Alternative Approach*)			
Budgeted Fuel Expenditures	\$81.2 M	\$37.0 M	\$118.3 M
Actual Expenditures	\$102.6 M	\$36.6 M	\$139.3 M
Total Change (Increase)/Decrease	\$(21.4 M)	\$0.4 M	\$(21.0 M)
Revenue Effects of Fuel Surcharge:			
Estimated Surcharge Revenues	-	\$1.1 M	-
NET (Increase)/Decrease	\$(21.4 M)	\$1.5 M	\$(21.0 M)
Impact of Alternative Approach			
(Additional Costs of Alt Approach)/Cost Savings:			
Budgeted Fuel Expenditures	\$(8.7 M)	\$(4.8 M)	\$(13.5 M)
Actual Fuel Expenditures	\$(7.3 M)	\$7.4 M	\$0.0 M

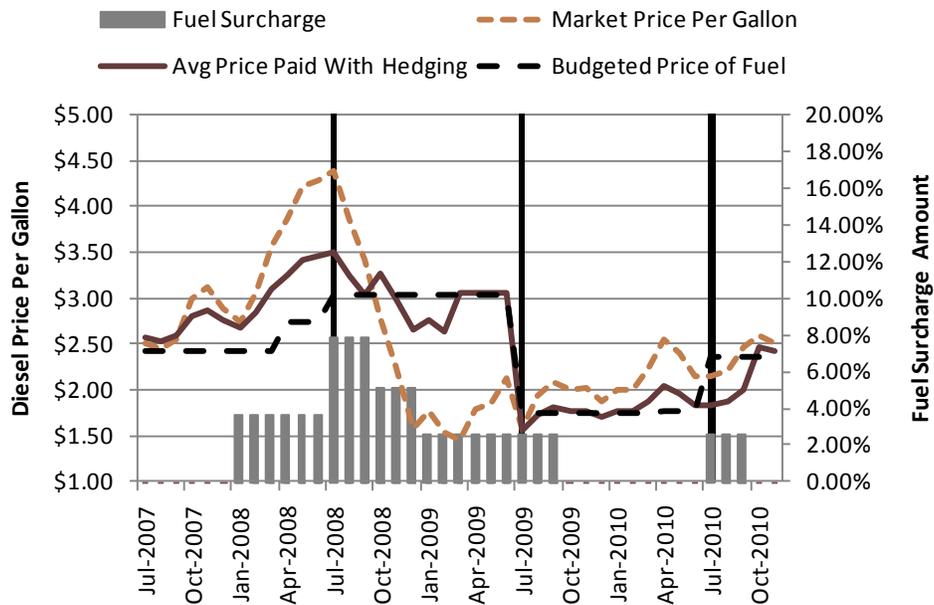
*90% of Fuel in Fixed Price Contract

** Actual fuel expenditures reflect actual monthly fuel consumption multiplied by average monthly

50% of Budgeted Fuel Purchased in 18-Month Fixed Price Contracts

- The impact of the alternative approach with 50% of fuel hedged would have resulted in higher adopted fuel budgets for both biennia. The adopted fuel budget impact in the FY 2007-09 and FY 2009-11 bienniums would have been \$4.8 million and \$9.3 million higher, respectively.
- Actual fuel expenditures would have differed between the two biennia. The impact in FY 2007-09 would have resulted in an additional \$5.5 million in actual fuel costs. However to-date in FY 2009-11, the alternative approach would have resulted in fuel savings of \$2.7 million.
- Fuel surcharges would have been imposed beginning in January 2008 to recover fuel deficits created in FY 2007-09. The surcharge would have remained in place up until July 2009. A total of \$8.8 million would have been generated in FY 2007-09 through fuel surcharges.

Exhibit 14
Looking Back: Fuel Surcharge with a 50% Hedge Ratio



	FY 2007-09 Total	FY 2009-11 Total (Biennium To Date)	GRAND TOTAL
Fuel Budget (Status Quo)			
Budgeted Fuel Expenditures	\$72.5 M	\$32.3 M	\$104.8 M
Actual Expenditures**	\$95.3 M	\$44.0 M	\$139.3 M
Total Change (Increase)/Decrease	\$(22.8 M)	\$(11.7 M)	\$(34.5 M)
Fuel Budget (Alternative Approach*)			
Budgeted Fuel Expenditures	\$77.4 M	\$41.6 M	\$119.0 M
Actual Expenditures	\$100.8 M	\$41.3 M	\$142.1 M
Total Change (Increase)/Decrease	\$(23.4 M)	\$0.3 M)	\$(23.2 M)
<i>Revenue Effects of Fuel Surcharge:</i>			
Estimated Surcharge Revenues	\$6.8 M	\$2.0 M	\$8.8 M
NET (Increase)/Decrease	\$(16.6 M)	\$2.3 M)	\$(14.4 M)
Impact of Alternative Approach			
<i>(Additional Costs of Alt Approach)/Cost Savings:</i>			
Budgeted Fuel Expenditures	\$(4.8 M)	\$(9.3 M)	\$(14.2 M)
Actual Fuel Expenditures	\$(5.5 M)	\$2.7 M	\$(2.8 M)

*50% of Fuel in Fixed Price Contract; Fuel Surcharge based on Total Budget Differential

** Actual fuel expenditures reflect actual monthly fuel consumption multiplied by average monthly

4.2 Fare Impacts of Alternative Approaches

There would be clear advantages of having more stability in fuel expenditures for both WSF and ferry customers. As discussed in previous sections, WSF would benefit from increased price stability through a reduced need for supplemental fuel budget requests. Ferry customers would benefit from lower fuel surcharges and fares. Exhibit 15 illustrates what the fare impacts would have been for a few select routes had the various fuel mitigation strategies been in-place.

Exhibit 15
Fare Impact of Alternative Approaches

	No Hedging			50% Hedge Ratio			90% Hedge Ratio		
	Mukilteo-Clinton (1-way)	Central Sound (1-way)	Anacortes - Friday Harbor (RT)	Mukilteo-Clinton (1-way)	Central Sound (1-way)	Anacortes - Friday Harbor (RT)	Mukilteo-Clinton (1-way)	Central Sound (1-way)	Anacortes - Friday Harbor (RT)
October-2007									
Base Vehicle Fare	\$6.85	\$11.55	\$37.90	\$6.85	\$11.55	\$37.90	\$6.85	\$11.55	\$37.90
Fuel Surcharge	\$0.20	\$0.35	\$1.10	\$-	\$-	\$-	\$-	\$-	\$-
Total Fare	\$7.05	\$11.90	\$39.00	\$6.85	\$11.55	\$37.90	\$6.85	\$11.55	\$37.90
October-2008									
Base Vehicle Fare	\$6.85	\$11.55	\$37.90	\$6.85	\$11.55	\$37.90	\$6.85	\$11.55	\$37.90
Fuel Surcharge	\$1.35	\$2.30	\$7.60	\$0.35	\$0.60	\$1.95	\$-	\$-	\$-
Total Fare	\$8.20	\$13.85	\$45.50	\$7.20	\$12.15	\$39.85	\$6.85	\$11.55	\$37.90
October-2009									
Base Vehicle Fare	\$7.00	\$11.85	\$38.90	\$7.00	\$11.85	\$38.90	\$7.00	\$11.85	\$38.90
Fuel Surcharge	\$0.30	\$0.45	\$1.55	\$-	\$-	\$-	\$-	\$-	\$-
Total Fare	\$7.30	\$12.30	\$40.45	\$7.00	\$11.85	\$38.90	\$7.00	\$11.85	\$38.90

5.0 HEDGING REPORTING AND DECISION-MAKING

It is envisioned that a Fuel Steering Committee would be established with the responsibility of providing fixed fuel purchase recommendations to Legislature, the Governor, and WSDOT. Between budget setting periods, the committee would periodically review the results of the hedging program, review hedging strategy, and provide direction for the program. WSDOT would implement direction from the Committee and would lock in prices for a percentage of fuel within the current fuel contract. The Committee would provide an annual report on hedging to Legislative before each session.

The WSF Deputy Chief of Finance and Administration would serve as the administrator of the process and would bring forward recommendations to the Committee.

The Fuel Steering Committee would provide the following hedging program recommendations:

For the Governor:

- Each December, the Governor would propose a budget that includes a fiscal year service plan and fuel budget including direction for fixed fuel purchases for:
 - The final six months of the current fiscal year (January through June); and
 - The entire fiscal year following the current fiscal year.
 - If WSF has less than 50% of fuel locked in fixed price contracts in any fiscal year, the Governor would have the opportunity, based on the Committee's recommendation, to increase the max hedge ratio to at least 50% and up to the maximum of 90% of a fiscal year's total gallons.

For Legislature:

- At the end of each legislative session (March or April), Legislature would adopt a WSF service plan and provide WSF with the budget authority to purchase fuel and enter into fixed fuel contracts. The adopted service plan and fuel budget would include direction for fixed fuel purchases including:
 - Two months of the current fiscal year (May and June);
 - The entire fiscal year following the current fiscal year; and
 - The first four months of the second fiscal year following the current fiscal year.
 - If WSF has less than 90% of fuel locked in fixed price contracts in any fiscal year, Legislature would have the opportunity, based on the Committee's recommendation, to increase the max hedge ratio up to the maximum of 90% of that fiscal year's service plan.

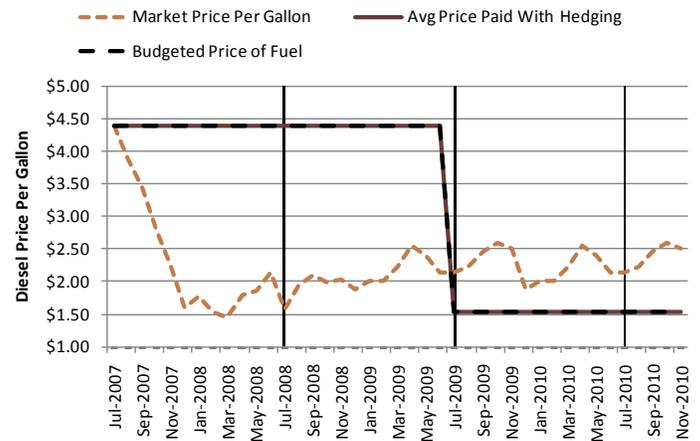
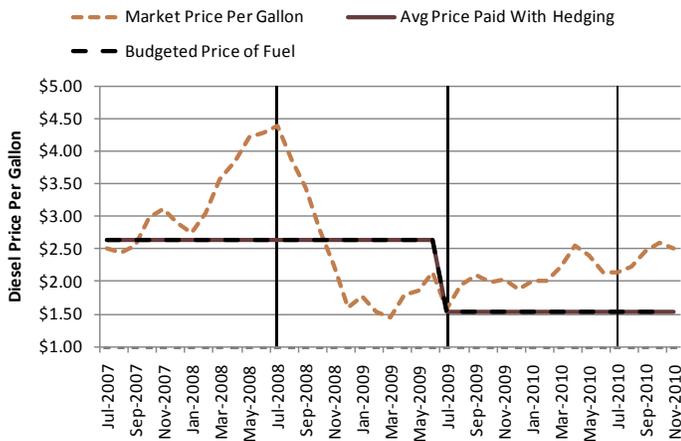
For WSDOT:

- Each October, WSDOT submits a budget proposal for WSF to OFM that includes a fiscal year service plan and fuel budget. For fixed fuel purchases this would include:
 - The final eight months of the current fiscal year (November through June); and
 - The first ten months of the following fiscal year (July through April).
 - If WSF has less than 50% of fuel locked in fixed price contracts in any fiscal year, WSDOT would have the opportunity, based on the Committee's recommendation, to propose a budget that increased the max hedge ratio to at least 50% and up to the maximum of 90% of a fiscal year's total gallons.

Maximum Price Stability: 24-Month Contracts; 100% Hedged

This magnitude of overpayment is heavily reliant on timing. Exhibit 16 illustrates two very different outcomes that could have occurred depending on when prices were locked in fixed contracts. The graph to the left shows that based on historical fuel prices it would have been advantageous to lock in 24-month contracts. However, the graph to the right shows a situation in which prices were locked in at a higher price per gallon. In this situation WSF would have overpaid through fixed price contracts relative to purchasing fuel at market prices.

Exhibit 16
24-Month Contracts; 100% Hedged

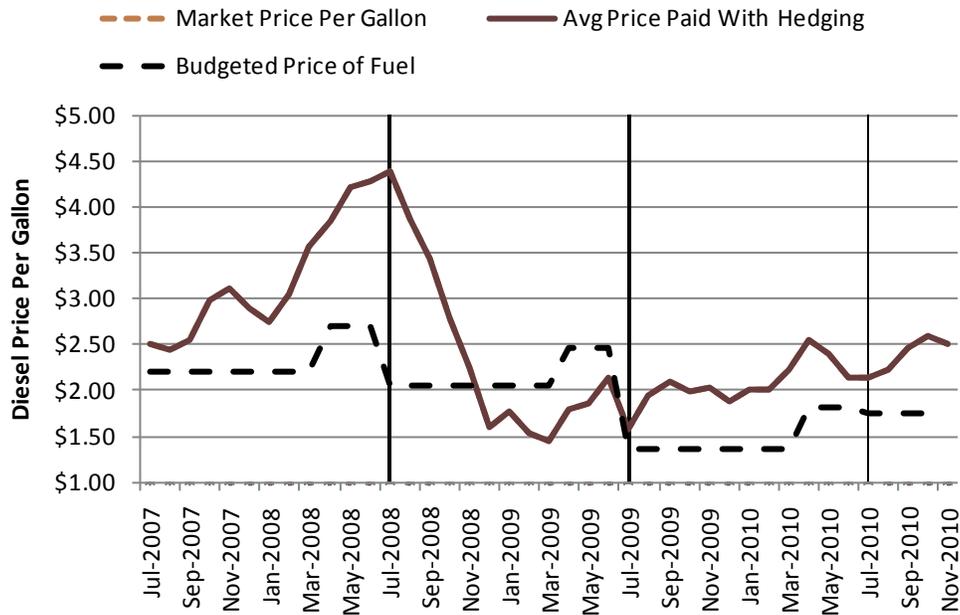


- The underlying assumption of this strategy is that in the long-run, differences between fixed price hedges and market prices would be zero.
- 100% of fuel would be purchased prior to the beginning of each biennium. This would provide maximum price stability; the entire fuel budget would be known and not subject to market price swings (Average Price Paid with Hedging is equal to Budgeted Price of Fuel).
- There would no need for fuel supplemental budget requests. However, the tradeoff of achieving maximum price stability is the political risk of paying too much for fuel (e.g. when market prices fall below fixed hedged prices). There is less certainty of where fuel prices will be in 24 months.
- If this were to be the enacted policy going forward, a fuel surcharge would never be imposed as actual prices paid for fuel would never deviate from the budgeted price for fuel.
- Fuel price savings experienced between October 2007 and October 2008 would have been diminished by the additional fuel costs experienced between November 2008 and June 2008.

Minimum Price Stability: 100% of Fuel Purchased at Market Prices

- This strategy illustrates the other end of the spectrum; 100% of fuel would be purchased at market prices (i.e. no change to current fuel budgeting or purchasing protocols).
- WSF would be subject to market price swings and would utilize a fuel surcharge to offset any price increases over budgeted fuel and to reduce any accumulated fuel budget deficits (e.g. when Average Price Paid is greater than Budgeted Price of Fuel).
- WSF may need supplemental fuel budget requests depending on how market prices were relative to the adopted budget.

Exhibit 17
 100% of Fuel Purchased at Market Prices



6.0 CONCLUSION

The combined strategies of improved budgeting for fuel, fuel conservation, hedging, and a fuel surcharge can work together to reduce the volatility of fuel purchases relative to the fuel budget for WSF and redistribute the risk of unforeseen fuel prices between the taxpayer and the ferry customer. We recommend that the new budgeting method be used and that a hedging program be implemented using the fuel supplier as the agent through which we conduct the program. Hedging will reduce the probability and magnitude of surcharges, if a surcharge mechanism is put in place. If there is a surcharge mechanism, we recommend that it recognize cumulative surpluses or deficits in the actual fuel purchases vs. the fuel budget.