

MONTANA DEQ - PTRCB 2018 BIENNIAL REPORT



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Trends in Fund Revenue and Expenditure Activities

Revenue

A fitted line indicates that revenue from fuels sold in the state increased by approximately \$72,343 each year over the last 24 years; 1995-2018. This average increase, estimated from a linear regression of the fuel revenues from 1995 through 2018, is up by five thousand dollars per year from the last biennium's estimate of \$67,300, and the coefficient of determination remains at nearly 90%.

The fuel revenue comes from fees levied on gasoline, diesel, and aviation fuels, each of which exhibits a different trend. The data indicates that when comparing the three fuels, diesel fuel revenue still has the steepest incline over the period 1995 through 2018. This incline is evident in the least-squares analysis used to calculate a straight line that best fits the revenue data for the twenty-four-year period, for each of the fuel categories. The slopes of the lines predicted from a linear regression are \$19,364; \$50,882; and \$2,092 per year for gasoline, diesel, and aviation fuels, respectively. The slope provides an estimate of the annual increase in revenue for each category. Even though the slopes of the three trend lines are all positive, gasoline and aviation fuel revenues do not exhibit as significant a trend as diesel fuel. The addition of the numbers from 2017-2018 to the linear regression line, resulted in an increase in the slope for gas and aviation fuel with a decrease in slope for diesel fuel.

The linear trends for fuel revenues indicate that the Petroleum Tank Release Cleanup Fund (Fund) could expect combined fuel revenues to increase by approximately \$72,000 each year, with diesel contributing \$50,000 to the expected annual revenue increase, gasoline accounting for \$19,000, and aviation fuel accounting for nearly \$2,000. The revenue estimate predicts that fuel use will increase by about 1% per year. Although this indicates an increase in revenue, it probably is not significant enough to consider in a future estimate.

The linear regression line appears to still be the best predictor of future revenues. Least-squares regression would predict revenues at \$7.5, \$7.6, \$7.6, and \$7.7 million for 2019, 2020, 2021, and 2022 respectively. If revenues for the four years were predicted to remain nearly the same as they have for this biennium, the revenue predictions for 2019 through 2022 would be \$7.6 million annually. The difference in the two prediction methods for the coming biennium averages less than 1%.

The U.S. Energy Information Administration's Annual Energy Outlook provides projections of domestic energy markets through 2050, and includes transportation energy consumption. Their predictions indicate that transportation energy consumption will peak in 2018, because rising fuel efficiency outweighs increases in total travel and freight movements throughout the projection period. They expect that light-duty travel will increase but that the light-duty vehicle energy use will peak in 2018 and then decline through 2040, because

of higher fuel efficiency. Because the increase in freight travel demand is offset by expected increased fuel economy standards, heavy-duty vehicle energy consumption is estimated to be approximately the same in 2040 as it was in 2016. Demand for air transport will rise over the projection period, leading to an increase in energy used by air travel, despite efficiency improvements. Using these predictions, revenues for the next several years would be predicted to remain nearly the same as they have for this biennium.

Expenditures

The administrative expenses incurred by the Fund consist of expenses by the Petroleum Tank Release Compensation Board (Board) for fund administration and expenses by the Department of Environmental Quality (Department) for regulatory activities. The slope of a linear regression analysis of the total combined expenses for both the Board and the Department from 1995 to 2018 indicates that the slope of the trend for total expenses has decreased slightly, 3%, from the trend seen in the 2016 Biennial Report. The expenses associated with personnel continues an increasing trend, 3.2% per year, consistent with the consumer price index.

A linear regression equation for the combined total expenses for fiscal years 1995 through 2018 estimates that the total costs will increase approximately \$40,000 per year. This indicates that the total program expenditures for FY2019 and FY2020 can be estimated at approximately \$2.1 million.

Claim Expenditures

The annual claim expenditures for FY1995 through FY2018 reflect a decreasing trend. In FY1997, a \$2 million litigation settlement was paid as a claim. This has impacted our data by showing a great range of variation in claim expenditure from FY1995 through FY2018 from about \$3 million to \$8 million. The claim expenditure data was analyzed using regression techniques on FY1995 through FY 2018. Performing a least-squares linear regression analysis to calculate a straight line that best fits the claim expenditure data for FY1995 through FY2018, yields a decreasing regression line with a \$42,000 per year rate of decline. The regression estimates over the years continue to be erratic. Regression analysis for this data exhibits a very poor coefficient of determination, 0.0548, and is therefore not likely the most reliable predictor of future claim expenditures.

Fund Transfer

During the biennium, the State of Montana faced an unusual budget situation resulting from certain revenues coming in lower than anticipated, and the state faced the most expensive fire season in state history. The Governor called the Sixty-Fifth Montana Legislature into a special session in November of 2017 to balance the budget and authorize transfers.

The Legislature enacted House Bill 6, "Provide for Fund Transfers and Other Measures", LC0019, 65th Legislative Session, Special Session 2017. That legislative action resulted in a transfer of \$1 million from the Fund, provided for in §75-11-313 MCA, by December 15, 2017.

Funding reductions require the Board to adjust claim reimbursement to balance expenses with available revenue. When the Board expends funds, it prioritizes cleanup reimbursements based, in part, on site priority evaluations conducted by DEQ, on a site by site basis. The criteria used incorporates the risk to human health or the environment for sites that have been determined to be eligible for the fund. When revenues for the Fund decline, the resources available for reimbursement of cleanup of petroleum releases declines, reducing

the revenue to undertake cleanup work. The transfer of \$1 Million amounts to one-seventh, or about 14.28%, of the Board's annual revenue and could be expressed as a reduction in revenue that reduces cleanup work.

The transfer can also be viewed as an added expense, which also illustrates the impact of the transfer. Although the transfer reduces the amount of funds available for cleanups, if the demand for revenues by site cleanups is lower, the balance is maintained. When the 2015 Legislature provided funding to the Department from the Orphan Share account, to address contaminated sites across several programs, it resulted in a positive Fund impact that helped to maintain the Fund's balance. The Department used a portion of the Orphan Share funding on petroleum release sites. As a result, some of that funding, \$385,000, was expended on sites that ordinarily would receive some monies from the Fund, which reduced the demand on the Fund.

Another positive impact to the Fund that helped maintain balance was a result of sites that have petroleum Brownfields funding, are eligible for reimbursement, and have entered into a Guarantee of Reimbursement with the Board, which means that cost recovery for cleanup expenditures at those sites will be postponed until 2019 and 2022. The amount to be reimbursed in 2019 and 2022 is approximately \$200,000 and \$270,000, respectively. While Brownfields loans are not income to the Fund, the agreements allow the delay of reimbursement until a future date.

The combination of Orphan Share and Brownfields funding totals \$855,000. These funding sources have allowed the board to distribute the impacts of the \$1 Million transfer across a five-year period so that no planned projects were denied immediate funding, reduced in size, or required to extend their time frames. However, given the annual expenditures; the number of release cleanups that annually receive funding; the business process of putting funding towards the highest priority releases; and the recent guarantee of reimbursements; one would conclude that many lower priority petroleum releases will be delayed, due to the transfer of \$1 million from the Fund.

Future Claim Projections

Using the average of claim expenditures for the past 24 years would project the expenditures for the next few years to be at approximately \$5 million. The average annual claim expenditure is probably the best available predictor to provide an estimate for future claim expenditure projections. This analysis focused on the data and did not take into consideration any impacts from potential influential outside actions, such as regulatory changes, or any long-term strategic plans. The biennial report for 2016 projected claim expenditures to be at approximately \$5 million based on the average calculated from the prior 22 years. The average claim expenditures for FY2017 through FY2018 was \$4.84 million. The claim expenditures are predominantly a function of available revenue and therefore the best predictor would be an average of the more recent years. Using the average of claim expenditures for the past 10 years would project the expenditures for the next few years to be at approximately \$4.6 million.

Exposure to Long-Term Liabilities

Liabilities for the Fund consist of cleanup costs for current eligible releases, future eligible releases and possibly releases where ineligibility has been contested. The liabilities associated with the current eligible releases is the total cleanup for each current active release reduced by the amount of on-going effort required to accomplish cleanup; the amount of insurance coverage for the release; and the facility's compliance. The liabilities associated with future releases are affected by the aspects mentioned, as well as the rate at which new releases are being discovered, and eligibility applications filed. An autopsy of leaks for 2008 through 2017 is available in DEQ MUST News publications. The 2017 Tank Autopsies can be found

in the MUST News February 2018 issue, <http://deq.mt.gov/Public/mustnews/ArticleID/125/2017-Tank-Autopsy-Report>. Forty-three (43) confirmed petroleum leaks were reported in calendar year 2017 from both aboveground storage tanks (ASTs) and underground storage tanks (USTs). The report indicates that the number of releases has increased from recent years, however it includes several releases that are not eligible for the fund (over-filling vehicles and leaky fuel system in a customer's vehicle).

The number of releases discovered in any particular year that have applied for eligibility to the fund exhibit three distinct epochs, 1990-1999; 2000-2007; and 2008-2017. These periods have very different averages, 164, 47, and 15, respectively. These averages show a definite decline in release discoveries over the epochs and each epoch exhibits a decline in the number of discoveries per year, with the largest rate of decline in 1990-1999 and the smallest rate of decline in 2008-2017.

The number of releases applying for eligibility is most certainly affected by the number of confirmed releases. An evaluation of the releases that have applied for assistance from the fund for the same ten-year period as the autopsy of leaks indicates a declining trend. Even though more releases applied for eligibility in 2017 than the prior two years, the count was still below a ten-year average. The number of releases that applied for eligibility in calendar year 2017 totaled twenty-four, however only eleven were discovered in 2017. The number of releases that have applied for eligibility in 2018 totaled five, however none of these were discovered in 2018.

The Board remains concerned that the number of AST releases may become the majority of the long-term liabilities. Many ASTs do not comply with current storage tank standards. The current requirements can be found on the Board's web site at:

<http://deq.mt.gov/Portals/112/DEQAdmin/PET/Documents/Forms/StorageTankChecklist.pdf>

Over the long term, compliance with current Board standards namely, the AST check list, will help to reduce the number of releases from ASTs.

Actuarial Report

On October 25, 2016 an Actuarial Report, prepared by Taylor & Mulder, Incorporated (T&M), was finalized and submitted to the Board. The Board contracted with T&M to conduct an actuarial review of the Fund as of June 30, 2016. The report was prepared by Daniel W. Lupton, FCAS, MAAA, MBA, Vice President and Consulting Actuary and Evelyn Toni Mulder, FCAS, MAAA, FCA, Principal and Consulting Actuary. An actuarial analysis was recommended in a Tier II Soundness Assessment of the Fund by the US Environmental Protection Agency Region 8 dated April 7, 2015. The EPA report raised concerns about the long-term financial soundness of the fund, as well as questions about the speed with which cleanups could proceed toward release closure. The actuarial report was provided to EPA in response to their assessment and is available on the Board's web site at:

<http://deq.mt.gov/Portals/112/DEQAdmin/PET/Documents/ReferenceDocuments/MPTRCBReport102516Financial.pdf>

The specific scope of the actuarial analysis included:

- assessment of the history of claim activity including reimbursement to date, by year, by type of tank system and to the extent possible, by type of cleanup strategy;

- assessment of anticipated long-term average cost of release cleanup for all eligible releases; assessment of long-term average cost of release cleanup for different types of tank systems (such as Federally Regulated USTs, USTs not federally regulated, large ASTs, and small ASTs);
- assessment of anticipated long-term average cost of release cleanup for different types of cleanup methods (remediation systems (SVE, AS, etc.), excavation, monitored natural attenuation, petroleum mixing zone, etc.);
- financial projections for the next ten (10) fiscal years, assuming no changes are made to the Fund; projection of Loss and Loss Adjustment Expense Reserves by report year;
- assessment and quantification of risk; as well as, identification, measurement, analyses and understanding the existing and emerging risks that impact the Fund's business.
- risk evaluation on the financial impact of current economic, legal and social trends and used these insights to help suggest strategies for the Fund; Provision of values for the predictive variables and the actuarial assumptions made about certain variables, especially key predictive variables leading to inputs into the actuarial, financial and predictive models.

The scope of the analysis was used to assist in determining if the Fund were to cease collecting income or accepting new reported claims, how much money would need to be in the Fund to be able to bring all currently eligible and open sites to closure.

This report predicted that a total of \$158,667,8236 would be the anticipated amount spent on all currently open releases, as of June 30, 2016, to bring those releases to complete closure in the future. This is done with no accounting of future revenues or administrative costs. This predictive amount includes a total of \$37,493,087 yet to be paid out to bring all sites included in this study to closure, this amount represents the "actuarial central estimate" based on the understanding of changes to the program and actuarial judgement. The projected amount yet to be paid did not include any reserve for sites that are federally regulated and potentially eligible for the Fund but have not applied or are not likely to apply for assistance from the Fund.

The actuarial report stated that, in the case of sites that are potentially eligible, but have not applied, there is a likelihood that if they did apply, the projected cost to the fund could be anticipated to be \$125,184,547, with an additional unanticipated amount of \$10,966,915, for a total outlay of \$136,151,463. This could be a Fund liability, if the federally regulated sites that are potential eligible applied for assistance from the Fund, were granted eligibility and were subsequently brought to closure. The actuarial report assumes that the potentially eligible sites would cost the same to complete the cleanup as those that have applied, which does not appear to be a valid assumption. The Board believes that the releases used for the report assessment have not applied for eligibility because they are minor releases.

The report projected the anticipated total revenue, expenses (including personal services and operating expenses), remediation expenses and use of any reserve to reach the final payoff of the remaining backlog of releases. The estimates start in 2017 with a reserve loss of \$32,302,074 and project through 2029 to bring the loss of reserve to \$0, reaching the final cleanup of all current open and eligible releases. This prediction has a projected revenue and expense based on the history and reasonable inflationary factors over time. It is noted that if there is a slow-down in revenue, or an increase in sites ready for cleanup, this process could take longer.

It is noted that financial projections for future releases and cost factors related with those is very hard to predict and that the most solid predictions would be from the backlog currently on the books. The analysis considered three scenarios and projected the time estimated to pay-off the backlog.

- Scenario 1 represented the worst-case scenario, in which the current funding is inadequate to close the current backlog because other factors, like a catastrophic spill, outstrip the Fund's ability to keep up. This would mean that the backlog would extend indefinitely.
- Scenario 2 represented a more moderate approach that accounts for new releases, but the costs associated with those don't over run the revenue needed to address the current backlog. This scenario projects 15 years to pay off the backlog.
- Scenario 3 represented fewer new releases allowing more funding to be applied toward the backlog of historical releases. This scenario projects a backlog payoff of 10 years.

Using the expected losses, the losses that represent the actuarial central estimate, the estimated time to clear the backlog would be 13 years, and that estimate falls between scenario 2 and scenario 3.

T&M projected the long-term average cost per release, the severities, each year through 2026. The average costs per release was found by the actuary to start at \$120,000 in 2017 with a project increase of 2.5% per year thereafter. They noted that in general, ASTs appear to have more costly releases on average than USTs; that releases from large tanks tend to be about three to five times as expensive as releases from small tanks, on average; and, federally-regulated tanks have higher average costs than non-federally-regulated tanks. ASTs have a projected average cleanup cost of \$144,000 per release, which is \$24,000 higher than USTs. Releases from ASTs is still one of the long-term liabilities to the Fund and are not federally regulated like the USTs.

It was noted by the actuaries that due to the nature of ASTs and lack of regulations, these liabilities are much harder to project or track. The AST Tank Type, both large and small capacity, create a larger remediation problem than do the regulated UST Tank Types. The ASTs still have a narrow path to gain eligibility to the Fund and don't have the same incentives, inspections or assurance of compliance to safety standards to prevent fuel loss into the environment as their UST counterparts.

The report also analyzed work plan types and costs associated with work plans. It was concluded that when soil removal is part of a work plan, the overall costs for the plan stays closer to the average costs per release, provided above. A further conclusion from the report showed that ground water monitoring activities increases the cost of a work plan by \$8,267 and adds \$25,618 to the average cost per release.

Impacts of changes, in State and Federal Regulations, on Underground and Aboveground Storage Tanks

In the July 15, 2015 Federal Register EPA published 40 CFR Parts 280 and 281 "Revising Underground Storage Tank Regulations—Revisions to Existing Requirements and New Requirements for Secondary Containment and Operator Training" Final Rule. The revisions strengthen the 1988 federal UST regulations by increasing emphasis on properly operating and maintaining UST equipment. The revisions will help prevent and detect UST releases. The 2015 UST revised regulations changed certain portions of the 1988 UST technical regulations. The changes established federal requirements that are like key portions of the Energy Policy Act of 2005. In addition, EPA added new operation and maintenance requirements and addressed UST systems deferred in the 1988 UST regulation. The changes include adding secondary containment requirements for new and replaced tanks and piping; operator training requirements; periodic operation and maintenance requirements for UST systems; and requirements to ensure UST system compatibility before storing certain biofuel blends. The changes also include removal of past deferrals for emergency generator

tanks, field constructed tanks, and airport hydrant systems. This is the first major revision to the federal UST regulations since 1988.

The 2015 state program approval (SPA) regulation also updated SPA requirements and incorporated the changes to the UST technical regulations. States, like Montana, that currently have SPA have three years to reapply showing their state has updated their UST regulations to incorporate the revised 2015 federal UST requirements in order to retain their SPA status. The department is currently proposing to update existing rules and add new rules to reflect the 2015 Revising UST Regulations - Final Rule. The department is proposing to amend existing subchapters and add new rules and a new subchapter for consistency with 40 CFR Part 280 and 281 so that the department meets federal stringency requirements, maintains state program authorization, and protects human health and the environment. Some of the required changes may be a concern to some Montana UST owners and operators, due to increase in personnel time and costs. The Department will be allowing three years from the effective date of October 13, 2018 to come into compliance with these new federally mandated requirements. The board is concerned that implementing these new requirements may result in the identification of petroleum releases at a facility.

Availability of Petroleum Storage Tank insurance and Trends

Insurance coverage is available for some Montana releases. Insurance has been used to fund cleanup at three (3) release sites in FY2017 and 2 in FY2018. The availability of insurance in these cases assisted with the release cleanup from the moment of discovery and in most cases the insurance covered the owner's statutorily required fund copy requirement (75-11-307, MCA).

EPA publishes a list of known insurance agents and brokers to help provide information for financial responsibility coverage. In the last published list, "List of Known Insurance Providers for Underground Storage Tank Owners and Operators," (EPA 510-B-16-001) dated March 2018; there are a total of 147 insurance agents and brokers listed, with 61 that offer coverage for UST owners and operators within the whole United States. One agency specifically indicated Montana was an area of coverage. This list is periodically updated and can be accessed at <https://www.epa.gov/ust/list-known-insurance-providers-underground-storage-tank-owners-and-operators>. Having only one company specifically list Montana indicates that environmental insurance policies within the state of Montana are difficult to obtain and the Fund is a valuable source for both continued protection of public safety, and as an ongoing mechanism for financial responsibility.

In August of 2018, Tony Raia, Director of the Release Prevention Division, of the EPA's Office of USTs, issued a memorandum to all state fund program contacts and UST industry stakeholders. The memo was written to provide important information about UST insurance policies, specifically whether voluntary exclusions and self-insured retentions meet the financial responsibility (FR) requirements of 40 CFR 280. EPA felt it was important that folks understand and be attentive to the underlying language, terms, and conditions of their UST insurance policies to ensure owners are buying and retaining appropriate coverage for their UST systems. EPA indicated that there must be no voluntary exclusions in the insurance policy language that limits or disqualifies the coverage for tank replacements, investigations or remediation for releases nor any Self-Insurance Retention (SIR) requirement in order for the insurance policy to be compliant with the federal UST regulations.

Continuing Collection of Petroleum Tank Release Cleanup Fees

The Fund continues to protect public health and safety and the environment and allow UST owners to demonstrate financial responsibility as required by the EPA. The Fund continues to provide financial resources

for partial reimbursement of costs, expenses and other obligations incurred because of releases of petroleum products from active, inactive and historical petroleum storage tank systems. The Board and the Department continue to find ways to encourage owners to improve tank facilities in an effort to minimize the likelihood of accidental releases.

The Fund continues to play a significant role in the cleanup of releases from underground and aboveground petroleum storage tanks. Since financial responsibility is only required for certain active USTs, many of the discovered releases would not likely be remediated without the Fund. Many of the owners are unaware of historical subsurface contamination and most environmental insurance policies are focused on coverage for active UST systems and don't cover historical contamination. Insurance is available, however, not many facilities have insurance and the exclusions limit their coverage. Without the Fund, remediation of releases from historical contamination, releases from most ASTs, and some USTs would be stalled, resulting in delayed cleanup and less protection of public health and safety and the environment.

The Board feels the fee should remain imposed and collected to help owners and operators comply with UST obligations under federal requirements, to fund reimbursement of corrective action related to historical releases and assist certain petroleum storage tank owners with cleanup of petroleum releases in order to protect public health and safety and improve the condition of the environment. Given the cleanup activity associated with the discovered releases, the fund balance has not approached the ceiling established by law (§75-11-314 MCA). The fund continues to collect \$0.0075 on each gallon of fuel sold.

Definitions

Actuarial Central Estimate – this is an estimate that is based on the actuary's judgement and understanding of changes to the Fund.

Claim – In an actuarial context, a "claim" is typically used to refer to a single event triggering coverage by an insurer. For the Fund, a claim is a request for reimbursement for a single work plan related to the remediation of a site. For the purposes of this report, the term "claim" will have the latter meaning, while "release" will be used to signify individual triggering events, per the terminology used by the Fund.

Coefficient of Determination - Compares the fitted (estimated) curve and actual data, and ranges in value from 0 to 1. If it is 1, there is a perfect correlation between the fitted curve and the data. — At the other extreme, if the coefficient of determination is 0, the fitted equation is not helpful in predicting values.

Correlation - Refers to relationship between two variables during a period of time which indicates whether and how strongly pairs of variables are related.

Fiscal Year - The State of Montana Fiscal Year begins on July 1 of each year and ends on June 30 of the following year.

Frequency – Technically speaking, frequency is the average number of release per insured exposure. For the Fund, an insured exposure is one tank insured for one year. For example, if 250 releases are reported in a year with 10,000 insured tanks, the frequency (average number of releases per insured exposure) is $250/10,000$ insured tanks = 0.025 releases per tank. In spite of this, the term "frequency" is often used to describe simply the number of releases (rather than releases per exposure), such as in the "Frequency Times Severity Method". The term is clarified is the meaning is unclear from context, and the distinction is important.

LDF – A Loss Development Factor (“LDF”) is calculated by an actuary from historical payment data and applied to current paid losses values to estimate ultimate claim costs for an insurer. LDFs are determined by analyzing cohorts of releases at similar points in time to determine the anticipated amount by which those releases developed over time.

As an example, consider only the cohort of releases that were reported in the fiscal year ending June 30, 2010. As of fiscal year-end 2010, \$17,680 had been paid in remediation expenses for those releases. By the same time a year later (at fiscal year-end 2011), \$149,486 had been paid on the same cohort of claims. This yields an LDF of 8.455 ($= \$149,486 / \$17,680$).

Looking at similar LDFs for different cohorts at the same point in time provides indication as to how future cohorts might change over time. For instance, as of the date of this report, the cohort of claims that were reported in 2016 is at the same age as the cohort from 2010 was at year-end 2010. Therefore, we might expect that the 2016 cohort will develop by a similar amount between the fiscal year ending 2016 and fiscal year-end 2017. (Note: this was not the final selected LDF, just an example).

By looking at LDFs for each cohort at each year-end, and by using some actuarial judgment and statistical assumptions, we can determine the anticipated amount by which less “mature” cohorts of releases will grow in the future, including the rate at which those remediations will take place and the ultimate liability arising from those releases.

Least-squares - The method of least-squares analysis assumes that the best-fit curve of a given type is the curve that has the minimal sum of the deviations squared (least square error) from a given set of data. The least-squares line method uses a straight line ($y=mX+b$) to approximate the given set of data $(x_1,y_1), (x_2,y_2), \dots,(x_n,Y_n)$.

Linear Regression Formula - attempts to model the relationship between two variables by fitting a **linear equation** to observed data. ... A **linear regression** line has an **equation** of the form $Y = a + bX$, where X is the explanatory variable and Y is the dependent variable.

Severity – Severity is the average cleanup cost of a release for a given collection of release. For instance, if the total cost for three releases is \$45,000, the severity (average size of a release) is $\$45,000 / 3$ releases = \$15,000 severity.

Ultimate Loss – Ultimate Losses equal the total paid losses for all currently open and closed claims plus the total unpaid losses for all currently open claims. The ultimate losses represent the total cost final of remediation for all reported releases.