OIL SHALE TAX EXPENDITURES

JULY 2020
2020-TE19

EVALUATION SUMMARY

THIS EVALUATION WILL BE INCLUDED IN COMPILATION REPORT SEPTEMBER 2020

	Year Enacted	Repeal/ Expiration Date	Revenue Impact	Number of Taxpayer Claims	Average Claim Amount	Is it Meeting its Purpose?
Oil Shale Non-Commercial Production Severance Tax Exemption	1977	None	$11	Could not determine	Could not determine	Yes
Oil Shale Severance Tax Rate Reductions	1977	None	$0	0	$0	No
Oil Shale Equipment and Machinery Severance Tax Deduction	1977	None	$0	0	$0	No
Oil Shale Processing Severance Tax Deduction	1977	None	$0	0	$0	No
Oil Shale Royalty Payments Severance Tax Deduction	1977	None	$0	0	$0	No
Oil Shale Excess Percentage Depletion Income Tax Deduction	1964	None	Could not determine	Could not determine	Could not determine	No

WHAT DO THESE TAX EXPENDITURES DO?

Non-Commercial Production Exemption. Exempts oil shale production amounts that are below commercial-scale from the severance tax.

Oil Shale Rate Reductions. Provides a reduced severance tax rate to commercial oil shale facilities during the first 3 years after commercial production begins.

Netback Expense Deductions (Equipment and Machinery Deduction, Processing Deduction, and Royalty Payments Deduction). Allow producers to deduct post-extraction costs from the sales price for the purposes of applying the severance tax.

Excess Depletion Deduction. Allows C-corporations to claim an additional depletion deduction for oil shale against their state taxable income beyond the federal depletion deduction.

WHAT IS THE PURPOSE OF THESE TAX EXPENDITURES?

Statutes do not directly state a purpose for the Oil Shale Tax Expenditures. We inferred the following purposes:

- **Non-Commercial Production Exemption and Oil Shale Rate Reductions.** Reduce the financial burden on oil shale facilities that have not or have only recently commenced commercial production.
- **Netback Expense Deductions.** Allow producers to calculate the value of the oil shale at the point of extraction from the earth.
- **Excess Depletion Deduction.** Allow a depletion deduction for oil shale equivalent to the total state and federal income tax percentage depletion deduction allowed for conventional oil and gas producers.

WHAT DID THE EVALUATION FIND?

We determined that:

- The Non-Commercial Production Exemption is meeting its purpose because research and development facilities have not been liable for severance taxes on their oil shale production.
- The Oil Shale Rate Reductions and the Netback Expense Deductions are not currently meeting their purposes because there is no commercial-scale oil shale production occurring in Colorado to which they could be applied.
- The Excess Depletion Deduction is not meeting its purpose because it does not align the income tax treatment of oil shale operations with that of conventional oil and gas operations.

WHAT POLICY CONSIDERATIONS DID THE EVALUATION IDENTIFY?

The General Assembly could consider:

- Making changes to the Oil Shale Severance Tax Expenditures because the oil shale industry is not commercially viable and may not become commercially viable in the near future.
- Repealing the Excess Depletion Deduction, since it provides a total (state and federal) deduction for oil shale operations that is significantly larger than the federal deduction allowed for some oil and gas companies, thereby creating unequal state income tax treatment.

OIL SHALE TAX EXPENDITURES

EVALUATION RESULTS

WHAT ARE THESE TAX EXPENDITURES?

Colorado imposes severance taxes on the extraction of several types of natural resources in the state, including oil shale. Oil shale is a type of sedimentary rock containing trapped kerogen, a thick substance that can be extracted from the rock and converted into a liquid called shale oil. Shale oil can be sold as crude oil or be further refined into fuel products such as diesel fuel, gasoline, and liquid petroleum gas.

In the 1970s, the national oil crisis resulted in increased interest in domestic oil production, including oil shale development. House Bill 77-1076 created the severance tax on oil shale during the midst of this renewed interest, when a number of experimental oil shale operations had emerged on federal and private lands in Colorado. Based on the legislative history, it appears that the General Assembly did not expect the State to receive any immediate severance tax revenue from oil shale but established the tax in anticipation of increased production in the future.

Colorado's oil shale severance tax is assessed on the gross proceeds of commercial oil shale operations at a rate of 4 percent. Statute [Section 39-29-102(4), C.R.S.] defines "gross proceeds" as "the value of the oil shale at the point of severance," which means extraction from the earth.

In addition to creating the oil shale severance tax in 1977, House Bill 77-1076 also included provisions for five tax expenditures that apply to this tax. One additional tax expenditure, the Oil Shale Excess Percentage Depletion Income Tax Deduction, applies to Colorado's corporate income tax and was created in 1964 by House Bill 64-1003.

OIL SHALE NON-COMMERCIAL PRODUCTION SEVERANCE TAX EXEMPTION

The Oil Shale Non-Commercial Production Severance Tax Exemption (Non-

Commercial Production Exemption) [Section 39-29-107(3), C.R.S.] exempts from the severance tax the production of the first 15,000 tons per day of oil shale or 10,000 barrels per day of shale oil, whichever is greater, at each oil shale facility. The daily production amount is calculated by dividing the total production in a given calendar month by the total number of days in that month [Section 39-29-107(3.1), C.R.S.].

The Non-Commercial Production Exemption is claimed on Line 7 of the Colorado Oil Shale Facility Severance Tax Return (Form DR 0020E), which must be filed annually. Notably, oil shale facilities are only required to file Form DR 0200E if they are liable for severance tax. Therefore, if an oil shale facility's average daily production for the given tax year falls within the amount allowable under the Non-Commercial Production Exemption, the facility's entire severance tax liability would be abated, and the facility would not be required to file the Form. There have been no substantive changes to the exemption since its enactment.

OIL SHALE SEVERANCE TAX RATE REDUCTIONS

The Oil Shale Severance Tax Rate Reductions (Oil Shale Rate Reductions) [Section 39-29-107(2), C.R.S.] allow for a reduction in the severance tax rate applied to the gross proceeds of commercial oil shale facilities, depending on the length of time that has passed since commercial production commenced at the facility, as demonstrated in EXHIBIT 1.1. Commercial production is defined in statute as production in excess of the first 15,000 tons per day of oil shale or 10,000 barrels per day of shale oil, whichever is greater, and the daily production amount is calculated with the same method used for the Non-Commercial Production Exemption [Section 39-29-102(1.5), C.R.S.].

EXHIBIT 1.1. OIL SHALE SEVERANCE TAX RATE REDUCTIONS	
LENGTH OF TIME SINCE COMMERCIAL PRODUCTION[1] COMMENCED AT OIL SHALE FACILITY	TAX RATE
Up to 180 days	0%
Up to 1 year	1%
Up to 2 years	2%
Up to 3 years	3%
More than 3 years	4%

SOURCE: Sections 39-29-107(1) and (2), C.R.S.
[1]Commercial production is defined in statute as production in excess of the first 15,000 tons per day of oil shale or 10,000 barrels per day of shale oil, whichever is greater. This is calculated by dividing the total production in a calendar month at the oil shale facility by the total number of days in such month. [Section 39-29-102(1.5), C.R.S.]

The Oil Shale Rate Reductions are claimed on Line 9 of Form DR 0020E, which instructs taxpayers to enter the applicable rate based on the tax rate schedule provided in the form's instructions. When they were enacted, the Reductions applied to gross proceeds beginning 90 days after the oil shale facility reached a daily average of 50 percent of its design capacity. In 1982, statute was changed to the current provision.

OIL SHALE NETBACK EXPENSE SEVERANCE TAX DEDUCTIONS

The oil shale severance tax is assessed on gross proceeds, or the value of the oil shale at the point of extraction. However, in the oil and gas industry, the value of the resource at the point of extraction is not typically known; instead, the resource is valued when it is sold, which generally occurs after it has been processed and transported. Therefore, the value of the resource at the point of extraction is calculated after the resource is sold by subtracting from the sales price the value added to the resource through processing, transportation, etc., known as the "netback approach" in the industry. Statute provides for three Oil Shale Netback Expense Severance Tax Deductions (Netback Expense Deductions), which allow oil shale producers to calculate the value of the oil shale at the point of extraction for the purposes of applying the severance tax:

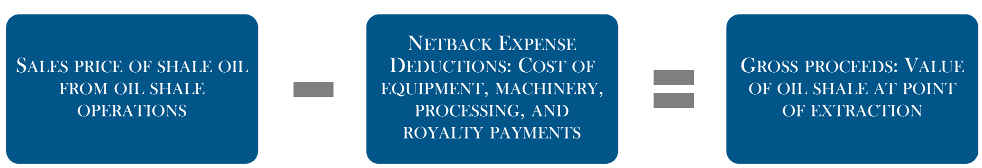
- **OIL SHALE EQUIPMENT AND MACHINERY SEVERANCE TAX DEDUCTION** (Equipment and Machinery Deduction) [Section 39-29-102(4)(a), C.R.S.]. The Equipment and Machinery Deduction allows oil shale producers to subtract from the first sales price of shale oil any costs for equipment and machinery.

- **Oil Shale Processing Severance Tax Deduction** (Processing Deduction) [Section 39-29-102(4)(b), C.R.S.]. The Processing Deduction allows oil shale producers to subtract from the first sales price of shale oil the cost of certain processing steps taken to convert the oil shale rock into saleable shale oil, including fragmenting, pyrolysis, retorting, refining, and transporting.

- **Oil Shale Royalty Payments Severance Tax Deduction** (Royalty Payments Deduction) [Section 39-29-102(4)(c), C.R.S.]. In the oil and gas industry, many companies extracting the resources do not own the land from which the resource is being extracted. As a result, these companies enter into partnerships with resource owners that entitle the owners to royalty payments, often calculated as a percentage of the operation's revenue. The Royalty Payments Deduction allows oil shale producers that have entered into similar contracts to subtract from the first sales price of shale oil any amounts paid to resource owners as royalties.

Exhibit 1.2 demonstrates how the Netback Expense Deductions allow producers to calculate the value of the oil shale at the point of extraction.

EXHIBIT 1.2. USING THE NETBACK EXPENSE DEDUCTIONS TO CALCULATE GROSS PROCEEDS



SOURCE: Office of the State Auditor analysis of Section 39-29-102(4), C.R.S.

The Equipment and Machinery Deduction is claimed on Line 2 of Form DR 0020E; the Processing Deduction on Line 3; and the Royalty Payments Deduction on Line 4. There have been no substantive changes to the Netback Expense Deductions since their enactment.

Oil Shale Excess Percentage Depletion Income Tax Deduction

Depreciation is an accounting convention in which companies can realize the costs of certain income-generating assets over a span of several years, rather than all at once in the year during which the asset was purchased. In principle, companies would record an asset's cost incrementally on an annual basis and in accordance with the extent to which the asset has been "used up" during the given year with respect to the asset's capacity for generating revenue, thereby spreading its cost over the duration of its life expectancy. Depletion is conceptually similar to depreciation and is specific to extractable natural resources, such as oil, coal, and minerals, including oil shale. With percentage depletion, companies estimate the amount of the asset (in this case, the oil shale) that has been used up during the tax year by applying a certain percentage to the income generated from the asset.

Accordingly, there is a federal percentage depletion deduction that allows taxpayers to deduct a certain amount of the income derived from the extraction of natural resources for the purposes of calculating federal taxable income. For oil shale extraction, the allowable federal deduction is currently equal to 15 percent of the annual gross income that is attributable to oil shale mining processes, including extraction, certain treatment processes, and transportation up to a certain distance limit [26 USC 613(a), (b)(2)(B), and (c)(4)(H)].

Colorado's Oil Shale Excess Percentage Depletion Income Tax Deduction (Excess Depletion Deduction) [Section 39-22-304(3)(h), C.R.S.] allows C-corporations that extract oil shale in the state to claim an additional depletion amount on their state income tax returns, in addition to the federal depletion amount already deducted prior to arriving at federal taxable income. The Excess Depletion Deduction is calculated as the difference between the federal depletion deduction (equal to 15 percent of federal gross income) and the total amount that would be allowed under the federal deduction if the United States Code's provisions matched those of Colorado statute (equal to 27.5 percent of state gross income) (i.e., a hypothetical federal depletion deduction). Specifically, statute [Section 39-22-304(3)(h), C.R.S.] makes the following adjustments to the federal depletion deduction for purposes of calculating this hypothetical federal depletion deduction:

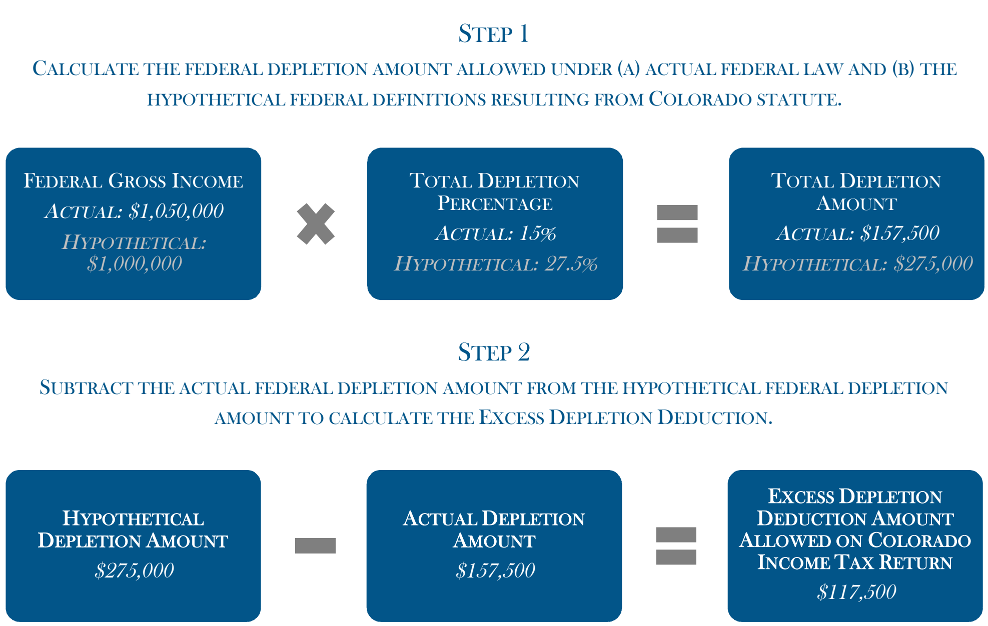
1. The total percentage allowed for depletion is increased from 15 percent to 27.5 percent of gross income, and

2. The list of treatment processes that are allowable for the calculation of gross income is changed. For example, both the state and federal definitions

allow for crushing and retorting, which involves heating the oil shale to extract kerogen, but the state definition also allows for condensing, a refining process that would not be covered under the federal definition. Therefore, there are two distinct definitions of gross income that must be used in order to determine the amount of the Excess Depletion Deduction: federal gross income, which is determined using the provisions in the United States Code for purposes of calculating the actual federal depletion deduction; and state gross income, determined using the provisions in Colorado statute for purposes of calculating the hypothetical federal depletion deduction.

After calculating the amount allowable under this hypothetical federal depletion deduction, taxpayers must subtract from this the amount claimed under the actual federal deduction in order to determine the amount of the Excess Depletion Deduction. EXHIBIT 1.3 provides an example calculation of the Excess Depletion Deduction in which the federal definition results in a gross income of $1.05 million and the state definition results in a gross income of $1 million.

EXHIBIT 1.3. EXAMPLE CALCULATION OF THE EXCESS DEPLETION DEDUCTION



SOURCE: Office of the State Auditor analysis of Section 39-22-304(3)h, C.R.S. and 26 USC 613(a), (b)(2)(B), and (c)(4)(H).

As shown in the example, the differences between the federal and state definitions of gross income may result in differing calculations of gross income for purposes of determining the depletion amounts. Therefore, taxpayers cannot calculate the value of the Excess Depletion Deduction as equal to 12.5 percent (the difference between the deduction's 27.5 percent depletion rate and the 15 percent federal depletion rate) of actual federal gross income. Instead, the percentage of actual federal gross income allowed by the Excess Depletion Deduction may vary, depending on the extent to which the state and federal definitions of treatment processes result in differing calculations of gross income.

The Deduction is claimed on Line 13 of the Colorado C-Corporation Income Tax Return (Form DR 0112), which must be filed annually by C-corporations doing business in Colorado. There have been no substantive changes to the Deduction since its enactment.

WHO ARE THE INTENDED BENEFICIARIES OF THE TAX EXPENDITURES?

Statutes do not directly state the intended beneficiaries of the Oil Shale Tax Expenditures. Based on our review of statutory language, we inferred that the intended beneficiaries are oil shale operations in Colorado.

The Green River Formation, located in Colorado, Utah, and Wyoming, is the largest and richest known source of oil shale in the world, and the bulk of these oil shale reserves are found in the Colorado portion of the formation, known as the Piceance Creek Basin. Recent estimates on the total amount of shale oil contained in the Piceance Basin are about 1.0 trillion barrels, assuming that at least 15 gallons of oil can be extracted per ton of oil shale. Oil shale research and development efforts have occurred sporadically in this and other regions of the United States during the past century. Most recently, the Energy Policy Act of 2005 directed the Department of the Interior to lease federal lands for oil shale research and development, and at least one private oil shale facility also began operations in Colorado during the subsequent 5 years. However, oil shale production has never reached commercial scale in Colorado.

WHAT IS THE PURPOSE OF THESE TAX EXPENDITURES?

Statutes do not directly state a purpose for any of the Oil Shale Tax Expenditures. Based on our review of statutory language and legislative history, we inferred the following purposes:

NON-COMMERCIAL PRODUCTION EXEMPTION AND OIL SHALE RATE REDUCTIONS. The purpose of these tax expenditures is to reduce the financial burden on oil shale facilities that have not or have only recently commenced commercial production. Specifically, statute defines "commercial production" to be average daily production amounts over 15,000 tons of oil shale or 10,000 barrels of shale oil, whichever is greater. Since the severance tax applies only to amounts produced above these thresholds at each oil shale facility, non-commercial production is intended to be exempt from the severance tax.

NETBACK EXPENSE DEDUCTIONS. The purpose of these deductions is to allow producers to calculate the value of the oil shale at the point of extraction from the earth by subtracting out post-extraction costs (in the case of the Equipment and Machinery Deduction and the Processing Deduction) and other amounts that may be built into the sales price of the oil shale products (in the case of the Royalty Payments Deduction). This is a structural provision that aligns with the General Assembly's intent, as provided by Section 39-29-102(4), C.R.S., to assess the severance tax on the value of the oil shale at the point of extraction rather than on the total income derived from this extraction and subsequent processes.

EXCESS DEPLETION DEDUCTION. The purpose of this deduction is to bring the total state and federal income tax percentage depletion deduction allowed for oil shale producers in line with the federal income tax percentage depletion deduction allowed for conventional oil and gas producers, as it existed in 1964 when the deduction was enacted. Specifically, in 1964, the federal depletion deduction rate permitted for conventional oil and gas producers was 27.5 percent. However, there was no depletion deduction specifically for oil shale in the federal code. As a result, the function of the Excess Depletion Deduction at the time of its enactment would have been to (1) deplete oil shale at the same rate for state income tax purposes as conventional oil and gas were depleted at the time (27.5 percent) and (2) define the oil shale treatment processes considered to be eligible for the deduction, since no such definition existed in the federal code at the time.

ARE THE TAX EXPENDITURES MEETING THEIR PURPOSES AND WHAT PERFORMANCE MEASURES WERE USED TO MAKE THIS DETERMINATION?

We determined that the Oil Shale Tax Expenditures are not currently meeting their purposes, with the exception of the Non-Commercial Production Exemption. This exemption is meeting its purpose to some extent because limited oil shale production has occurred at a smaller scale, typical of research and development projects, during recent years, and these facilities have not been liable for severance tax on their oil shale production due to the exemption. The Oil Shale Rate Reductions and the Netback Expense Deductions are not currently meeting their purposes because there is no commercial-scale oil shale production occurring in Colorado to which they could be applied. Finally, the Excess Depletion Deduction is not meeting its purpose because it does not align the income tax treatment of oil shale operations with that of conventional oil and gas operations.

Statute does not provide quantifiable performance measures for these tax expenditures. Therefore, we created and applied the following performance measures to determine the extent to which the tax expenditures are meeting their purposes:

PERFORMANCE MEASURE #1: *To what extent does the Non-Commercial Production Exemption reduce the severance tax burden for oil shale facilities that do not produce oil shale at a commercial scale?*

RESULT: We determined that limited oil shale production has occurred at a research and development scale during recent years, and that these facilities have not been liable for severance tax on their oil shale production due to the Non-Commercial Production Exemption. The Energy Policy Act of 2005 resulted in the United States Bureau of Land Management issuing five oil shale research, development, and demonstration (RD&D) leases on federal lands in western Colorado in 2007 and two additional leases in 2012. As of March 2020, six of these seven leases have expired, and the remaining lease no longer has any active oil shale development. Additionally, we identified several private oil shale enterprises in Colorado that may have been active between 2007 and the present. Although some of these projects are no longer operating, we determined that two of them likely still have the capability of extracting oil shale and may be doing so sporadically and on a very small scale.

Based on our analysis, it appears that all oil shale production in the state since at least 2003 has been eligible for the exemption because total annual oil shale production in the state has remained well below the maximum production allowed under the exemption. We reviewed annual reports published by Department of Local Affairs' Division of Property Taxation detailing the assessed values of real property in Colorado, including oil shale properties, which are generally assessed based on the value and quantity of oil shale production. These reports indicate that only minimal amounts of oil shale, well below the exemption's thresholds of 15,000 tons per day of oil shale or 10,000 barrels per day of shale oil, were produced from Calendar Years 2006 through 2011 and in Calendar Year 2017. For Calendar Years 2003 through 2005 and 2012 through 2016, there was no reported oil shale production in the state.

In addition to our estimates showing that all oil shale production was below taxable commercial levels, it appears that all eligible oil shale producers have benefited from the exemption for Calendar Years 2007 through 2017 and have not paid severance tax. Specifically, oil shale producers are only required to file a severance tax return if they have production amounts sufficient to generate severance tax liability, and the Department confirmed that there have been no filings of the Colorado Oil Shale Facility Severance Tax Return (Form DR 0020E) since the Department's conversion to its current tax processing system, GenTax, in 2007.

PERFORMANCE MEASURE #2: *To what extent are the Oil Shale Rate Reductions and the Netback Expense Deductions being used to reduce the tax burden on commercial facilities and ensure that oil shale is taxed based on its value at the point of extraction?*

RESULT: Neither the Oil Shale Rate Reductions nor the Netback Expense Deductions have been used between Calendar Years 2007 and the present, nor is it likely that they were used prior to 2007, because there has been no commercial oil shale production in Colorado to which either tax expenditure could be applied. Therefore, these tax expenditures are not currently meeting their purposes, although that may change if commercial production begins in Colorado.

As a result of the Non-Commercial Production Exemption, oil shale facilities must produce at least 15,000 tons of oil shale or 10,000 barrels of shale oil per day before the Oil Shale Rate Reductions and the Netback Expense Deductions can be applied. As discussed in PERFORMANCE MEASURE #1, there have not been any oil shale operations that have reached the commercial production level and have been liable for severance tax between 2007 and the present, as evidenced by the fact that no facilities filed Form DR 0020E during that time frame. The largest producing oil shale facility that we were able to identify in Colorado between the Deductions' enactment and 2007 produced about 5,900 barrels of shale oil per day prior to its closure in 1991, well below commercial production levels as defined in statute. Therefore, the Oil Shale Rate Reductions and the Netback Expense Deductions have likely never been used and are not currently meeting their purposes.

PERFORMANCE MEASURE #3: *To what extent does the Excess Depletion Deduction allow for the gross income of oil shale facilities to be depleted at the same rate for state income tax purposes as that permitted for oil and gas producers under the federal income tax percentage depletion deduction?*

RESULT: We determined that the Excess Depletion Deduction is not meeting its purpose because it does not align the income tax treatment of oil shale producers with that of other oil and gas producers. As discussed above, there was no federal percentage depletion deduction specifically for oil shale producers when the Excess Depletion Deduction was enacted, and the federal depletion deduction allowed for conventional oil and gas at the time was set at a depletion rate of 27.5 percent. Therefore, when the Excess Depletion Deduction was passed, it served the purpose of (1) depleting oil shale at the same 27.5 percent rate for state income tax purposes as conventional oil and gas were depleted at the time and (2) defining the oil shale treatment processes considered to be eligible for the deduction, since no such definition existed in the federal code at the time. However, Congress added a federal depletion deduction for oil shale in 1969 at a percentage depletion rate of 15 percent, along with a definition of allowable treatment processes for purposes of calculating gross income from oil shale production. Additionally, the federal percentage depletion rate for oil and gas production was changed to 15 percent, effective in 1984, and has remained unchanged since then. As a result, the Excess Depletion Deduction does not align the total depletion deduction allowed for oil shale operations for state income tax purposes with that allowed for conventional oil and gas producers. Instead, it provides more favorable treatment for oil shale operations because it allows them to use a much higher total depletion percentage (27.5 percent of state gross income) than that allowed for conventional oil and gas producers (15 percent of federal gross income).

WHAT ARE THE ECONOMIC COSTS AND BENEFITS OF THE TAX EXPENDITURES?

Overall, we found that the Oil Shale Tax Expenditures have had a minimal impact on state revenue and provided little financial benefit to taxpayers, since only a small amount of oil shale has been produced in the state in recent years.

We found that the Non-Commercial Production Exemption, the only Oil Shale Tax Expenditure that likely has had any revenue impact, had an estimated revenue impact of $11 in Tax Year 2017. Because the Department did not have sufficient data to estimate the Non-Commercial Production Exemption's revenue impact, we used data from the Department of Local Affairs' Division of Property Taxation to determine the total sales price of the shale oil from oil shale production in 2017 and estimate the exemptions revenue impact. Specifically, based on the reported oil shale real property assessed value of $210 and the oil shale assessment rate of 75 percent, we determined that the total sales price of shale oil from oil shale production in 2017 was $280. We then applied the standard oil shale severance tax rate of 4 percent to this amount, as demonstrated in EXHIBIT 1.5, and estimated that the State forwent about $11 in oil shale severance taxes in Tax Year 2017 as a result of the Non-Commercial Production Exemption.

EXHIBIT 1.5. CALCULATION OF THE NON-COMMERCIAL PRODUCTION EXEMPTION'S REVENUE IMPACT IN TAX YEAR 2017

Total Sales Price of Shale Oil Produced from Oil Shale Facilities, 2017		Oil Shale Severance Tax Rate		Estimated Revenue Impact of the Non-Commercial Production Exemption, 2017
$280	×	4%	=	$11

SOURCE: Office of the State Auditor analysis of the 2018 Annual Report published by the Department of Local Affairs' Division of Property Taxation.

We found that the Oil Shale Rate Reductions and Netback Expense Deductions had revenue impacts of $0 in recent tax years. In its 2018 Tax Profile and Expenditure Report, the Department of Revenue reported that the revenue impact of the Netback Expense Deductions was $0 in Tax Years 2015 and 2016. Additionally, since the Oil Shale Severance Tax Expenditures are claimed and reported on Form DR 0020E, and there have been no filings of the Form between 2007 and the present, we concluded that the revenue impact for the Netback Expense Deductions and the Oil Shale Rate Reductions was $0 in Tax Years 2007 through 2017.

The Excess Depletion Deduction has likely had little revenue impact in recent years, though it is not itemized on Colorado's income tax return and, for this reason, the Department did not have sufficient data to quantify its revenue impact. Because this deduction is applied to the gross income derived from certain oil shale extraction processes and is not refundable, taxpayers can only use it to the extent that they have tax liability from oil shale extraction. However, recent oil shale activities in Colorado have been primarily research and development projects, and our examination of industry and government sources indicates that oil shale production is not currently economically viable. Therefore, it is likely that Colorado's oil shale projects did not have any taxable income, in which case the revenue impact of the Excess Depletion Deduction would have been $0. If any of Colorado's oil shale operations did have income tax liability, the revenue impact of the Excess Depletion Deduction would still likely have been relatively low, due to the high cost of producing oil shale products and the relatively low production rates that these operations were able to achieve.

WHAT IMPACT WOULD ELIMINATING THE TAX EXPENDITURES HAVE ON BENEFICIARIES?

With the exception of the Non-Commercial Production Exemption, eliminating the Oil Shale Tax Expenditures would likely have no immediate effect on beneficiaries, since they are not being used. For the Non-Commercial Production Exemption, operations that extract some oil shale for research and development would be liable for severance tax, which would increase their expenses and could make it more difficult for them to advance oil shale technology or reach commercial production levels. Because these operations have produced only minimal amounts of shale oil in recent years (about 6 barrels in 2017), they would also have to increase production substantially to incur a significant tax liability.

However, if the tax expenditures were eliminated, any future oil shale operations in Colorado may experience increased tax liability if oil shale production becomes economically viable, as follows:

- Eliminating the Non-Commercial Production Exemption could increase the severance tax liability of any operations extracting oil shale, in addition to imposing a tax on research and development activities that produce shale oil, since the severance tax would then be applied to all oil shale production at each operation, regardless of quantity.

- Eliminating the Oil Shale Rate Reductions would apply the full severance tax rate of 4 percent to the gross proceeds of commercial oil shale facilities, which would increase these facilities' severance tax liability during the first 3 years of commercial operation and could make it more difficult for new commercial facilities to maintain sufficient profit margins.

- Since the Netback Expense Deductions allow taxpayers to calculate the value of the oil shale at the point of severance, eliminating these deductions would result in the severance tax being applied to the income derived from oil shale production rather than on the value at the point of severance. If the oil shale industry grew to the point of having multiple commercial production operations, this could place operations with greater expenses at a competitive disadvantage, since they would pay a higher effective tax rate on the shale oil they produce.

- Eliminating the Excess Depletion Deduction would lower the depletion amount that taxpayers could deduct from the income from oil shale resources, resulting in a potential increase in Colorado income tax liability.

ARE THERE SIMILAR TAX EXPENDITURES IN OTHER STATES?

Other than Colorado, the most significant oil shale resources in the United States are located in Indiana, Kentucky, Ohio, Tennessee, Utah, and Wyoming. All of these states impose a severance tax or similar tax on the extraction of oil. However, only Utah and Wyoming explicitly address the severance tax treatment of oil shale in their statutes. In Utah, all oil and gas produced from oil shale is exempt from severance tax until June 30, 2026, when the exemption is currently set to expire. Wyoming imposes a severance tax on both conventional oil and oil shale production but at different rates, with oil taxed at 6 percent and oil shale taxed at 2 percent. Wyoming also allows for deductions similar to some of Colorado's Netback Expense Deductions, with the severance tax on oil shale assessed on the sales price less transportation costs and royalty payments. We did not identify any tax expenditures in these six states similar to Colorado's Excess Depletion Deduction.

ARE THERE TAX EXPENDITURES OR PROGRAMS WITH A SIMILAR PURPOSE IN THE STATE?

We identified the following tax expenditures that apply to other natural resources that are subject to a severance tax in Colorado and that function similarly to some of the Oil Shale Severance Tax Expenditures:

- **OIL AND GAS SEVERANCE TAX DEDUCTION FOR TRANSPORTATION COSTS AND DEDUCTION FOR MANUFACTURING AND PROCESSING COSTS [SECTIONS 39-29-102(3)(a), C.R.S.].** Similarly to the Oil Shale Netback Expense Deductions, the Oil and Gas Severance Tax Deduction for Transportation Costs and Deduction for Manufacturing and Processing Costs allow taxpayers to deduct post-extraction value added from the sales price of the final product when computing gross income for severance taxes.

- **THRESHOLD EXEMPTIONS FOR METALLIC MINERALS, MOLYBDENUM, AND COAL [SECTIONS 39-29-103(1)(b), 104(1), AND 106(2)(b), C.R.S.].** Similarly to the Non-Commercial Production Exemption, the Threshold Exemptions for Metallic Minerals, Molybdenum, and Coal each have a threshold below which their respective severance taxes do not apply. For metallic minerals, the first $19 million of annual gross income is exempt (deducted) from the metallic minerals severance tax. For molybdenum, the first 625,000 tons of ore produced each quarter is exempt from the molybdenum severance tax. For coal, the first 300,000 tons produced each quarter is exempt from the coal severance tax.

In addition to these tax expenditures, Section 39-7-102(2), C.R.S., provides a reduction of the property value assessment rate for secondary and tertiary oil and gas recovery methods. Similarly to the Non-Commercial Production Exemption and the Oil Shale Rate Reductions, the ultimate effect of this provision is to decrease the property tax liability of oil and gas operations that use these more expensive recovery techniques to extract oil and gas that may not otherwise be recoverable, relative to the property tax liability of conventional oil and gas operations. Because this reduction only impacts local property taxes, we have not scheduled it for review as a state tax expenditure.

WHAT DATA CONSTRAINTS IMPACTED OUR ABILITY TO EVALUATE THE TAX EXPENDITURES?

The Department of Revenue did not have data on taxpayers' use of the Oil Shale Severance Tax Expenditures because the Department has received no filings of the Colorado Oil Shale Facility Severance Tax Return (Form DR 0200E) since it changed its tax processing system to GenTax in 2007. Specifically, although the Oil Shale Severance Tax Expenditures are itemized on Form DR 0200E, oil shale facilities are not required to file the form if the tax expenditures resulted in the complete elimination of the facilities' severance tax liabilities. The lack of filings of the form is consistent with our evaluation results, which indicate that oil shale production levels have not been sufficient to generate severance tax liability. In order to collect complete data on the Oil Shale Severance Tax Expenditures, the Department would need to require all oil shale producers to file the form, including those without tax liability.

Additionally, since Colorado's C-Corporation Income Tax Return (Form DR 0112) does not have a separate line for the Excess Depletion Deduction, oil shale facilities must report this deduction on Line 13 (Other Subtractions), which aggregates data from a number of additional tax expenditures. Therefore, we were unable to provide a revenue impact for the Excess Depletion Deduction, although we determined that this impact is likely very low and may be $0. If the General Assembly determined that a revenue impact for this deduction is necessary, it could direct the Department of Revenue to add an additional reporting line on its C-Corporation Income Tax Return and make changes in GenTax to capture and pull this information. However, these changes may not be cost-effective given that we found that the Excess Depletion Deduction is used minimally, if at all, with minimal revenue impact to the State. According to the Department of Revenue, this type of change would require additional resources to develop the form and complete the necessary programming in GenTax (see the Tax Expenditures Overview Section of the Office of the State Auditor's *Tax Expenditures Compilation Report* for additional details on the limitations of Department of Revenue data and the potential costs of addressing the limitations).

WHAT POLICY CONSIDERATIONS DID THE EVALUATION IDENTIFY?

THE GENERAL ASSEMBLY COULD CONSIDER MAKING CHANGES TO THE OIL SHALE SEVERANCE TAX EXPENDITURES BECAUSE THE OIL SHALE INDUSTRY IS NOT COMMERCIALLY VIABLE AND MAY NOT BECOME COMMERCIALLY VIABLE IN THE NEAR FUTURE. As discussed, the Oil Shale Severance Tax Expenditures are not currently meeting their purposes or only meeting their purposes to some extent, largely due to the lack of commercial-scale oil shale production in Colorado. We also determined that there has been no commercial production of oil shale in Colorado since the severance tax and its tax expenditures were put into place in 1977. As a result, it is likely that the State has received no revenue from the oil shale severance tax since its enactment.

According to federal and industry sources that we examined, oil shale production is not currently viable at a commercial scale in the United States. Recent estimates on when the industry may become viable range from 2023 to

2032, although other sources state that oil shale development in the United States will not be viable for the foreseeable future. Additionally, three oil and gas industry representatives we interviewed also reported that commercial oil shale development is not likely to occur in the near future because oil shale production is much more expensive than conventional oil, which typically produces the same saleable end products. Industry information and feedback from industry representatives also suggest that the abandonment of research, development, and demonstration operations located in Colorado between 2007 and the present was generally the result of declining oil prices, the increased prevalence of hydraulic fracturing in the United States, technological challenges, and regulatory uncertainty.

Because oil shale has not developed into a commercially viable industry in the state, the General Assembly may want to review the effectiveness of the Oil Shale Severance Tax Expenditures and consider repealing them or making changes to reflect the current status of the industry being limited to research, development, and demonstration projects. For example:

- **REPEALING SOME OF THE OIL SHALE SEVERANCE TAX EXPENDITURES.** In particular, the General Assembly may want to consider repealing the Oil Shale Rate Reductions and the Oil Shale Depletion Deduction because they are not being used. In addition, it could consider repealing the Non-Commercial Production Exemption, which has only provided an estimated $11 in tax benefits since 2012; however, this change would subject even small amounts of oil shale extracted at research, development, and demonstration operations to the severance tax and could result in increased taxpayer compliance and Department of Revenue administrative costs for tax returns that provide minimal severance tax revenue. These changes would simplify Colorado's tax code; however, they would also remove tax guidance that is already in place from Colorado's statutes and may therefore require the General Assembly to revisit the topic of the oil shale severance tax in the event that the oil shale industry becomes viable in the future.

- **REPLACING THE OIL SHALE SEVERANCE TAX EXPENDITURES WITH A BLANKET EXEMPTION FROM THE OIL SHALE SEVERANCE TAX FOR A PERIOD OF TIME.** This type of provision could exempt all oil shale production in Colorado from severance tax until a specified date, at which point the General Assembly could either maintain the exemption or allow it to expire and establish new tax expenditures, as needed, to reflect the status and operation of the industry at that time. Utah has a similar oil shale exemption in place, currently set to expire on June 30, 2026. However, if the General Assembly took this approach, it may wish to maintain the Oil Shale Netback Expense Deductions because they serve to define the oil shale severance tax base (i.e., based on the value at the point of extraction).

- **LEAVING THE OIL SHALE SEVERANCE TAX EXPENDITURES IN PLACE.** Although this approach may leave potentially obsolete provisions in the State's tax code, our discussions with stakeholders did not indicate that the provisions are causing confusion among taxpayers. Additionally, leaving them in place would provide structure and guidance regarding the oil shale severance tax should the industry become commercially viable in the future.

THE GENERAL ASSEMBLY COULD CONSIDER REPEALING THE EXCESS DEPLETION DEDUCTION BECAUSE IT WOULD NOT BE MEETING ITS PURPOSE EVEN IF OIL SHALE WERE BEING PRODUCED AT A COMMERCIAL SCALE. As discussed, the Excess Depletion Deduction creates potential inequity between oil shale companies and conventional oil and gas companies, which is the opposite of its intended purpose. In 1964, when the deduction was enacted, conventional oil and gas companies were allowed a federal depletion deduction equal to 27.5 percent of their gross income, but there was no federal depletion deduction specifically for oil shale. We inferred that Colorado's Excess Depletion Deduction was enacted in order to create equity between oil shale and conventional oil and gas companies at the state income tax level by allowing for a total (state and federal) depletion deduction of 27.5 percent of gross income for oil shale companies and providing a definition of treatment processes to be included in the calculation of gross income. However, in 1969, Congress added a federal deduction for oil shale at a rate of 15 percent, along with a federal definition of allowable treatment processes. The federal depletion deduction for oil and gas was then changed to 15 percent effective in 1984, such that the two federal depletion deduction rates are now essentially equivalent. Therefore, the current effect of Colorado's Excess Depletion Deduction is to provide a total (state and federal) deduction for oil shale operations that is significantly larger than the federal deduction allowed for some conventional oil and gas companies, thereby creating unequal state income tax treatment. Additionally, the statutory language of the Excess Depletion Deduction provides a different list of allowable treatment processes for the purposes of calculating gross income than that provided in the United States Code, which could potentially make the Excess Depletion Deduction confusing and cumbersome to calculate.