



MEMORANDUM

To: Ann Alexander, Sujatha Bergen and Susan Casey-Lefkowitz, NRDC
From: Doug Koplow, Earth Track
Subject: Review of fossil fuel subsidy-relevant policies in California
Date: August 25, 2023

Overview

There are scores of policies and programs with the potential to subsidize oil and gas exploration, production, refining, transport, and consumption within California. This research reviews the policy environment and provides an initial roadmap of the many points of interaction between state and federal policy and the fossil fuel sector. The analysis evaluates these programs to differentiate those where subsidies to the sector seem likely from those where user fees on industry appear to cover the costs. The programs are summarized in a workbook table attached to this memo in PDF format, and that is also available in Excel. Areas anticipated to be of high impact are flagged in the workbook to help guide and prioritize future actions. The initial version of this work was done in March of 2023 and data reflect information and reports available at that time.

In some cases, there is good information on program beneficiaries and subsidy values. For others, data are sparse. In these cases, the anticipated scale of subsidy or importance of the activity on decarbonization or environmental protection are used to gauge whether the benefits from further analysis are likely to be substantial. The review also identifies policies and programs of potential benefit to the fossil fuel sector, but where initial review suggests additional analysis is not warranted. In this category, the scale of subsidy may be small, or the benefits too diffuse across industries for impacts on extraction or consumption decisions to be material. Knowing what not to spend more analytical effort on is also useful.

The workbook should be viewed as (1) a starting point for further analysis, and (2) a repository to which additional policies can be added based on local knowledge from your staff, local partners, or as new legislative actions move forward. I would also welcome information on additional data sources or local experts so this policy map can be improved over time.

Type of subsidy. Too often subsidies are viewed only as cash transfers such as grants to a favored industry. The reality of government interventions in markets is far more complex. Indeed, opaque transfer mechanisms may be preferred both by recipients and their political supporters because less visible subsidies also reduce political and public relations risks. Thus, in addition to direct outlays, this review also includes tax breaks, credit support, subsidized access to mineral resources, exemptions from standard regulatory requirements, and risk shifting. Not surprisingly, data availability varies widely by subsidy type. For example, while the state of California does provide significant loan and loan guarantee support to private enterprises, there was no easy way to identify fossil-fuel related recipients or the terms of the lending by which to assess the subsidy.

Subsidies at multiple levels of government. In addition to subsidies provided by the state government in California, federal policies benefitting the fossil fuel activity in the state are also included. Municipal or county-level supports may provide material support to the oil and gas sector as well, though gathering data from so many jurisdictions is complicated and was not within the scope of this analysis. Apart from Proposition 13, where some state-level assessments have already been done, the more local policies were not reviewed and are not included in the workbook.

Retention of quantitative data if available. While the objective of this mapping exercise was a qualitative summary of oil and gas subsidies relevant to California, if quantitative data were available from the sources being reviewed, that information was captured in the workbook. The scale of subsidies presented becomes one factor in evaluating which programs deserve additional focus.

While it is helpful to compare subsidy magnitude across policies and over time, such comparisons should be done cautiously with the data reported here because the information is far from comprehensive. Though the issues noted below are standard with any subsidy review, the specific examples better illustrate this general point on data coverage.

First, in most cases where federal subsidies are reported (DOE fossil fuel R&D is an exception), the quantitative data represents *national* totals. A pro-rate to California would require significant additional work, as the most appropriate way to allocate a national estimate to state-level activity varies by provision. Similarly, state budget data may reflect multiple functions or activities of a particular agency, only some of which would constitute a subsidy to fossil fuels. Where data facilitated tallying only fossil fuel-related activities for specific line items, this was done in the workbook. However, this was often not possible within the scope of analysis; as a result, totals should not simply be added across programs.

Second, quantitative data for individual provisions within the workbook often cover just a few years. With the review aimed at identifying relevant policies currently in place, the documents for the most recent budget cycle (including the state budget and tax expenditure reports as of March 2023) were the focal point. The data years reported varied by information source, which is why the workbook table includes so many columns for years but the same ones are not filled in for every provision. Thus, where there are numerical entries in the workbook for only a few years, this signifies only that spending for those other years was not tabulated. Blank cells do not mean there were no subsidies in those years. A full time series would require reviewing many budget cycles, filling in a few years of data from each. While beyond the scope of this research, backfilling subsidy history may be useful in specific areas by local partners if they are working to reform, redirect, or eliminate those items.

Further, budget documents often include a request for the most recent year rather than actual expenditures. Similarly, tax expenditure documents include projected revenue losses for multiple years into the future based on assumptions the state makes on market activity and prevailing prices. The reported information is broadly indicative of funding levels and relative values. However, because market conditions or other assumptions can change, future budget documents may contain modified values relative to the numbers reported here.

Data sources

Subsidy information was gathered from state and federal budget and tax expenditure documents, special studies, trade and academic press, and legislative reviews. Information on relevant policies also pulled from my prior work. Citations and links are included at the end of the attached table, and in the second tab of the Excel version of the workbook.

In some cases, areas of likely importance were flagged based on my experience with other resource areas or other states or countries, even though there was little mention of them in official reports and no data on them available at present. Third party liability insurance is one such issue; inadequate financial assurance to adequately fund the closure and reclamation of aging refineries and marine terminals is another. In general, subsidies associated with policy omissions can be the most challenging to identify though often provide significant support to incumbent fossil fuel producers.

A public records request was submitted to obtain updated information on financial assurance coverages in place at key fuel cycle facilities in California, which I am grateful to the state for fulfilling. Requests for Excel versions of disbursements for some other state programs (e.g., Cal Competes) were also submitted to state officials, and were also provided.

Relevant policy periods

The policy map captures data primarily for the 2020-2024 timeframe. In some cases, particularly with CCUS, the subsidies at the federal level flowing to California, and those on offer by the state itself, are likely to increase sharply in the near future even though no data exist at present. It is important to flag these emerging high-risk areas early in order to build a knowledge base and monitor their growth and associated market distortions. Only in this way will there be a capability to contest the policies if needed.

Interpreting the tables

Most of the entries in the workbook should be self-explanatory, though some additional context in a few areas will assist with interpretation.

Low subsidy values do not mean a policy is unimportant. Some subsidies to exploration and production, at both the state and federal levels, have price triggers where the tax breaks phase out as market prices for oil and gas rise. Inclusion of price triggers is a much better policy structure than subsidies that continue unabated regardless of the market value of the subsidized activity. The price trigger aligns public funding with periods when production is under cost pressure, and removes public support when prices are high and the subsidies would simply pad industry profits. A federal example of how *not* to structure policy is the percentage depletion allowance, which automatically increases the subsidies to producers during periods of high prices when it is least needed.

Note that by providing down-side risk protection for investors, even subsidies with phase-outs can be quite distortionary to investment patterns because they help reduce the downside risk to investors, and with it the cost of capital. This aspect of the subsidy remains important even when revenue losses appear low or zero.

Similarly, policies may sometimes be narrowed or ended, which would result in low (and sometimes negative) reported subsidy values during those transitional years. This is true in terms of nominal dollars only; in earlier periods, these subsidies may have driven large scale new investments in long-lived carbon-intensive capital. And despite negative nominal dollar entries in current tax expenditure budgets, the subsidies always provided economic support to the investors on a net present value basis.

Policy specificity. Not every policy listed is just available to oil and gas. Some benefit all extractive mineral industries, though still disadvantage fuel-free energy technologies such as wind or solar. Other policies may be available to multiple economic sectors, such as property tax limitations under Proposition 13. For more general policies, it is useful to evaluate whether they are structured or deployed in ways that are particularly supportive

to the dominant industries in a region. Where the financial scale of a program is large, and fossil fuels comprise a significant industry in the state, reviewing these more general policies and who is getting the cash or tax breaks from them, is always prudent.

A related example of general subsidies sometimes conveying disproportionate benefits to oil and gas is road damage. A combination of many vehicle trips and heavy loads on secondary roads has meant that fracking trucks cause a disproportionate degree of damage to roads in many states. Obviously, other vehicles use the roads as well; however, engineering studies can estimate the share of damages and associated excess costs attributable to particular types of vehicles. Ideally, some combination of higher tolls, heavy truck fees, and road user maintenance agreements would shift the full excess costs of road repairs onto the trucks causing the damages. Often, that does not happen.

Interacting policies. California has many different targeted funds and user fees, with proceeds from these funds often supporting multiple agency programs or activities. Similarly, there are sometimes multiple different fees that have slightly different targets but support the same activities (for example, different funds to hold motor fuel tax receipts from diesel versus gasoline, though both funds support road and transport infrastructure). There are other situations where tax breaks and alternative fees may interact. For example, California exempts electricity and natural gas delivered through utilities from the state's sales and use tax, while also having a different fee on electricity use. In these types of situations, a group of policies may need to be evaluated jointly to determine whether there is a residual subsidy or not, and if so, how big. While the limited research scope did not allow for full vetting of all these interactions, the workbook narrative aims to identify relationships and highlight areas likely to be of most significance. Local knowledge from partners in the state or the state government can help refine the mapping of policy interactions to generate more accurate estimates of scale.

Order of policies in workbook. An initial sort has been done to group the supports by stage of production, starting with research moving through exploration and production (with a break-out of emissions-related subsidies to fossil fuel exploration and production); refining and conversion; transport, storage and export; and asset retirement obligations once production ceases. Some policies affect more than one stage and are flagged as "mixed". The last category is subsidies to fossil fuel consumption.

Data can be sorted on other parameters to highlight different aspects of the policies. I have included a column "Top priority category for research and reform" that highlights my subjective choices on the areas where I anticipate that additional quantitative and political analysis would assist with subsidy removal, and where subsidy removal would have significant positive effects on decarbonization in California.

Policy highlights

While not an exhaustive list, the bullets below highlight some of the areas for which I see significant opportunities from reform.

Asset retirement obligations. California has a large backlog of improperly closed oil and gas wells. Existing bonding levels on operating wells are far too low. Further, though the state collects some fees from industry to support state-led plugging of abandoned wells and associated site cleanup, the revenues are also well below what is needed to address the backlog. California has recently started to tap general fund money to close them.

In addition, the state has other fuel cycle facilities such as marine terminals and refineries that also appear inadequately funded for closure and post-closure liabilities. Many rely on corporate guarantees even for this coverage, increasing the risk of “liability dumping” at the end of the service life of the facility. With well production sites, firms have sometimes adopted a long-term idle policy that enables them to defer cleanup costs. With refinery sites, a similar outcome may arise if the sites are converted to fuel storage or biofuel production. A mix of higher fees, bonding requirements, and stronger financial assurance mechanisms may be important leverage points to ensure these massive costs do not end up on taxpayers instead of being reflected in the cost structure of the fossil fuel firms themselves.

Methane emissions. The policy summary discusses multiple policies that have the effect of subsidizing methane emissions. This includes exemptions from federal fees on methane releases set to take effect in 2024; royalty-free streams of gas due to flaring or on-site use; and illegal methane releases that have historically been poorly tracked. Some of these areas may provide substantial subsidies to the sector; all provide opportunities to tighten policies to reduce emissions and subsidies concurrently.

Lack of severance taxes and reduced property taxes on oil and gas reserves, equipment. Despite its green credentials, California is one of only two fossil fuel producing states in the country with no severance or extraction taxes levied on oil and gas extraction (Pennsylvania is the other). In California, industry has argued that the state accomplishes the same end using property taxes instead. This review highlights that many states have both; and that oil and gas likely receives substantial tax savings on the property tax portion as well. This is due to Proposition 13, which limits the ability for property in the state to be marked at market value.

Though there is some indication that commercial property was included in the original Prop 13 referendum by mistake, reforming it even for commercial property only will likely be politically challenging. However, quantifying the degree to which the oil and gas sector benefits from many of its assets being marked well below their market value would still

have political salience and perhaps build a political base for fixing the problem. Evaluating the tax burden were both a severance and property tax to be levied on CA production in comparison to taxes in oil and gas producing regions could be equally valuable.

Carbon capture, utilization, and storage (CCUS) including LCFS. The policy review highlights new subsidies to supports for CCUS, such as those included in the federal Inflation Reduction Act. Within California, subsidies through the low carbon fuel standard may also start to flow to fossil fuels now that CCS is an eligible class of beneficiary fuels and can earn marketable LCFS credits. It appears that the same CCS activity can claim both federal and LCFS credits at the same time. If poorly targeted, these subsidies could extend the life of carbon-intensive fossil fuel infrastructure and slow the shift to zero carbon alternatives. The risk of large and poorly targeted subsidies to CCUS, particularly at the federal level, seems high.

A related issue involves sequestration projects on the California coast. A detailed review of carbon sequestration sites by a team at Princeton University concluded that sequestration in California would be cost-competitive (though not as inexpensive as in the Gulf), and this area should be watched.

Water use in oil and gas production. Inadequate water pricing may be conferring subsidies to some oil and gas producers in the state, though simply due to the relative volume consumed, subsidies to agricultural irrigation dominate the over-depletion concerns. However, increasing reuse of process water from oil and gas production on food crops likely confers substantial water treatment subsidies to the production companies using this approach and may trigger longer-term property damages and future reclamation costs on some of the farms.

Third-party liability coverage for wells located close to residential and commercial properties. The recently passed law to add buffer zones for new wells is on hold due to referendum activity by industry. Further, were the law to be finally implemented, emissions from existing wells would remain a concern. My efforts to identify whether well operations located next to homes and businesses have third-party liability coverage were unsuccessful. Better data on this issue, and implementation of insurance requirements if none now exist, would improve the price signals these wells face. Insurance requirements also create an additional set of evaluators on well operations and emissions (the insurance underwriters) and create a financial resource should parties be harmed by the activity. Should gaps be found now, improved insurance requirements might also accelerate the closure of wells deemed highest risk to nearby residents. These changes would make sense even if the buffer zone law is ultimately upheld.

Exemption of natural gas and power from state sales tax. My initial review suggests that the cost savings to industry from the current exemption for electric and natural gas

energy systems from the state sales and use tax is billions of dollars larger than what is collected from this sector via other fees. This likely underprices these energy resources relative to other goods and services in the state. Reform would affect all generation, but at present fossil generation still predominates. While there are public health and welfare reasons to ensure basic access to heat, cooling and power regardless of ability to pay, a more targeted subsidy to the poor would meet that need while providing better incentives for increased energy efficiency. Further, because a sales tax is linked to consumption levels, this type of reform would likely generate less political and privacy concerns than the current proposals to base electricity bills on income. The structure would also avoid the financial hit that consumers who have invested thousands of dollars into distributed generation and building efficiency will incur under the income-based fee structure.

Government funding for distributed electricity backup assets program and strategic reliability assets. To improve the resiliency of electrical supply in the state, these two programs will likely also provide billions of dollars in new subsidies to fossil-fuel fired infrastructure. While both programs also target non-fossil resources, most of the funding is likely to support incumbent infrastructure fueled by fossil fuels.

Additions, Suggestions and Corrections

As noted, a scoping review is a first step to map a complex and interacting policy system. Feedback on area experts, reports or data sets, as well as on subsidies missed are all most welcome, and can be sent to dkoplow@earthtrack.net. So are specific corrections from individuals working in California who know some of these programs and policies in detail.

Over the past few months, there have been some inquiries about looking not just at fossil fuel subsidies, but at environmentally harmful subsidies (EHS) in California more broadly. EHS would go beyond fossil fuels to include subsidies to irrigation, large scale agriculture, over-fishing or deforestation, mining, and sprawl that may also be contributing to environmental damages, biodiversity loss and human health impacts. Reform of EHS in other sectors will also provide incremental benefits to decarbonization. Many of the approaches used to survey fossil fuels could be expanded to include activities in these other areas, and hopefully this memo can be a guide as those efforts move forward.

Policy tracker for subsidies to oil and gas in California

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
1	Research and Development	Natural gas subaccount, public interest research, development and demonstration fund (3109)	State_CA	Direct expenditure	Pays the State Energy Resources Conservation and Development Commission for its costs in carrying out its duties and responsibilities to advance science or technology related to natural gas that "are not adequately provided by competitive and regulated markets." Funded mostly from the Gas Consumption Surcharge Fund. Expenditures shown are gross funding.	
1	Research and Development	Department of Energy fossil energy and carbon management	Federal	Direct expenditure	Fossil research; carbon capture, utilization and storage. Increasing share to CCUS; perhaps CCUS a way to keep high levels of support to fossil fuels. National totals are \$750m in 2020, \$825m in 2021 and \$893m for 2022. Data for CA is shown in the columns to the right based on DOE's breakouts by state in its Budget Justification to Congress. CA-specific funding includes CCS and power systems, advanced coal energy systems and CCUS, advanced oil and gas production technologies, and natural gas technology research.	
2.1	Exploration and production	Water subsidies to oil production	State_CA, Kern County	Cost of access	<p>In an arid region, water subsidies may be important though data to quantify them remain sparse. Subsidies can arise through sale to industry at below-market prices; senior water rights that allow for delivery of water with a regularity or at a scale that other users don't receive; and any reduced requirements on treatment, disposal, or reuse of return flows that may reduce costs to the oil and gas industry or introduce potential health or environmental risks to parties receiving those return flows. Overall, use of potable water for oil and gas production in California comprised less than 0.1% of total use (CCST 2019), though diversions in particular water service areas, and during times of drought, can still be material. It is also possible that advantageous terms for the water to specific customers also provide subsidies to oil and gas producers.</p> <p>Kern County produces heavy crude which relies on water and steam to extract. Inside Climate News noted that the county "produces about three-quarters of California's onshore oil and gas, but wells there account for more than 99.5 percent of this high-quality water injected for fossil fuel extraction across California..." (Gross and Aldhous, 2022). The benefits of these policies may be fairly focused: the reporters found that most of the diverted water (645m gallons) was sourced from the State Water Project, and that between 2018 and 2021, roughly two-thirds was used by a single firm: Berry Petroleum (Gross and Aldhous, 2022). Their analysis also indicated that the quality of reports to CalGEM's system was inconsistent and poor, with errors that could understate the scale of freshwater diversion.</p> <p>Most of the high-quality water used by the CA oil industry comes from West Kern Water District, a system that pulls mostly from groundwater (Gross and Aldhous, 2022). Overpumping has contributed to significant land subsidence problems in Kern County.</p> <p>Wastewater management may be a large potential source of subsidy in California if treatment requirements are too weak. This is because produced water generation has increased from 7 barrels per barrel of oil in 1982 to 18 in 2017 (CCST 2019: 17).</p>	2

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Cat Num	Production Stage	PolicyName	Estimated Scale in CA	Specificity	In Effect?	Time Frame	Scale	Notes, OpenIssues
1	Research and Development	Natural gas subaccount, public interest research, development and demonstration fund (3109)	Mostly funded by user fees	Natural gas	Yes			
1	Research and Development	Department of Energy fossil energy and carbon management	Fairly small.	Oil and gas, some coal	Yes			FY2021 and 2022 are enacted; FY2023 is requested.
2.1	Exploration and production	Water subsidies to oil production	Unknown.	Multiple water-intensive users. Does benefit oil and gas, though agriculture is by far the largest industrial end-user.	Yes			

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1	Research and Development	Natural gas subaccount, public interest research, development and demonstration fund (3109)	CA 23-34 budget RES-45	https://www.energy.ca.gov/sites/default/files/2021-04/CEC-500-2020-081.pdf											
1	Research and Development	Department of Energy fossil energy and carbon management	DOE, 04/2022; DOE, 2022, state table, pp. 10, 11.	https://www.energy.gov/sites/default/files/2022-04/doe-fy-23-budget-state-table.pdf											
2.1	Exploration and production	Water subsidies to oil production													

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Cat Num	Production Stage	PolicyName	2021 (\$Mil, nominal)	2022 (\$Mil, nominal)	2023 (\$Mil, nominal)	2024 (\$Mil, nominal)	2025 (\$Mil, nominal)	2026 (\$Mil, nominal)	2027 (\$Mil, nominal)	2028 (\$Mil, nominal)	2029 (\$Mil, nominal)	2030 (\$Mil, nominal)	2031 (\$Mil, nominal)	2032 (\$Mil, nominal)
1	Research and Development	Natural gas subaccount, public interest research, development and demonstration fund (3109)		24	24.2	24.2								
1	Research and Development	Department of Energy fossil energy and carbon management	10.7	10.7	0									
2.1	Exploration and production	Water subsidies to oil production												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
2.1	Exploration and production	Below-market valuation of legacy property under Proposition 13, including oil and gas reserves and commercial property owned by the sector	State_CA	Tax expenditure	<p>Proposition 13 limits the growth in assessed value used to calculate property taxes within CA. Passed in 1980, the effect has been that legacy property holdings, including of oil and gas reserves, are valued, and therefore taxed, at much lower levels than new purchases based on current market rates. There are some indications that the inclusion of commercial property in this proposition at all was "more the result of sloppy drafting than actual intent" (Shultz 2020). An attempt to remove the exemptions for industrial and larger commercial properties was put to voters in 2020 (Proposition 15) but failed by a margin of 4 percentage points. Because the provision is included within the CA Constitution, the state's Department of Finance does not treat the exception as a tax expenditure, though acknowledges that the differential implies annual "subsidies to existing property owners that would be equal to tens of billions of dollars" (CA TE Report, 2022-23: 2). They note an exception for a sales tax exemption for candy, prohibited from taxation in the CA Constitution since 1992, but included because prior to that time it was taxed. This logic seems inconsistent, since prior to the passage of Title 13, property taxes were determined based on market value; the difference between the two cases is not clear.</p> <p>The assessed value of CA oil and gas reserves in 2022, which incorporates the Prop 13 restrictions so does not reflect the market value, was \$19.1 billion. Other property associated with oil and gas production in the state, which also may benefit from Prop 13 limitations, is not broken out separately in state data. The CA Legislative Analysts Office estimated that Prop 13 saves commercial and industrial property owners \$8 to \$12.5 billion per year in property taxes (Patek and Bosler 2019) and other estimates suggest that Chevron alone could "save upwards of \$100 million in annual taxes on its oil-production sites thanks to Proposition 13" (Danforth, 2021: 523). The Western States Petroleum Association has argued that other taxes, including the property tax on oil reserves, make up for CA not having a severance tax (Reheis-Boyd, 2013). However, of 16 major oil and gas producing states, 12 have both property and severance taxes on the sector, and 11 of those allow local property taxes on oil and gas reserves or the value of production within the taxable property base (Raimi and Newell, 2016: 5, 7).</p> <p>Data on the residential sector indicates that turnover of residential property dropped from 16% per year in 1977 and 1978 to 5% in 2014 and 2015 (Danforth 2021: 520, 521). It would be interesting to know if asset holding structures in fossil-fuel relevant property have emerged to avoid a tax basis reset as well.</p>	1
2.1	Exploration and production	Fossil fuel cycle property not subject to Proposition 13 limitations	State_CA	Tax expenditure	Per the state Constitution, some types of property are assessed by the state rather than by county governments. State-assessed property is evaluated at market value and is not subject to the limitations put in force by Proposition 13 on county or local assessments. State-assessed property associated with the fossil fuel cycle includes: property (except franchises) owned or used by regulated railway and car companies operating on railways in the state; companies transmitting or selling gas or electricity; and pipelines, should they lie within at least two counties. While the state acts as assessor, revenues are allocated to the county or locality in which the property is located in nearly all situations. (CA State Board of Equalization 2018: 4).	
2.1	Exploration and production	Excess of percentage over cost depletion of mineral and other natural resources	State_CA	Tax expenditure	Allows a fixed percentage of gross income to be deducted for resource depletion, limited to 50% of net income prior to the depletion deduction, or 100% in the case of oil and gas properties. More generous than cost depletion due to potential acceleration of deductions and an ability to write off more than 100% of invested capital over the life of the property. CA treatment conforms to federal rules.	
2.1	Exploration and production	Expensing of intangible drilling costs	State_CA	Tax expenditure	Allows up to 70% of intangible drilling costs to be expensed rather than capitalized. The remainder is amortized over five years rather than the full life of the investment. The provision conforms to federal law.	

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2.1	Exploration and production	Below-market valuation of legacy property under Proposition 13, including oil and gas reserves and commercial property owned by the sector	<p>Likely very large. Evaluation would require three main steps: comparing the reported values of oil and gas reserves (ideally at the county level) to the market value of those reserves; comparing the effective rate on the actual value to the property tax rates in other producing states; and doing a similar exercise or prorate on land and real property owned by the oil and gas industry other than the reserves.</p> <p>Data for the first two parts of this do seem to exist. The third category may be more complicated, though it is likely possible to get property tax data for the largest O&G infrastructure assets in the state such as refineries, tank farms, etc.</p>	Multiple sectors	Yes	1980 to present	Very large	
2.1	Exploration and production	Fossil fuel cycle property not subject to Proposition 13 limitations	Unknown, though narrows the span of tax subsidies from Prop 13 that benefit fossil fuels somewhat.	Multiple sectors	Yes			
2.1	Exploration and production	Excess of percentage over cost depletion of mineral and other natural resources	Small	Though also applicable to other minerals, revenue losses in CA likely to be dominated by oil and gas.				
2.1	Exploration and production	Expensing of intangible drilling costs	Small	Oil and gas				

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2.1	Exploration and production	Fossil fuel cycle property not subject to Proposition 13 limitations														
2.1	Exploration and production	Excess of percentage over cost depletion of mineral and other natural resources	CA TE Budget 2022-23, p. 11													
2.1	Exploration and production	Expensing of intangible drilling costs	CA TE Budget 2022-23, p. 11													

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2.1	Exploration and production	Fossil fuel cycle property not subject to Proposition 13 limitations												
2.1	Exploration and production	Excess of percentage over cost depletion of mineral and other natural resources	12	10	10	10	10							
2.1	Exploration and production	Expensing of intangible drilling costs	8	7	6	6	6							

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2.1	Exploration and production	Geologic Hazards and Mineral Resources Conservation (2420) in Department of Conservation (3480)	State_CA	Direct expenditure	Among other responsibilities, the program analyzes and maps the state's mineral assets to support good decisions on development (Budget res 23-24, res 51). Financial data covers all functions of the program, not just the oil- and gas-relevant roles noted above.	
2.1	Exploration and production	Lack of severance tax on oil and gas extracted within California	State_CA	Tax expenditure	California and Pennsylvania are the only significant oil and gas producing states in the country with no excise tax at all on fossil fuel extraction (CSG 2022: 363-67). Severance or similar production taxes are a common way jurisdictions receive compensation for a non-renewable resource being permanently removed from their mineral estate. Both states argue they have other charges on producers; however, those charges tend to be much lower than what a severance tax would be. Further, collected funds are often allocated by statute to cover costs associated with the oil and gas industry such as regulatory oversight, abandoned well closure, or repairing damages to infrastructure such as roads from heavy oil or coal trucks. In contrast, severance taxes usually also provide a return on the sale of the natural resource asset that accrues to the state's general fund or in some states to a permanent fund used to diversify state investments and provide returns to future generations. It would be useful to evaluate the set of extraction fees in California relative to other states to quantify whether there is a comparative shortfall, and if so, how large.	1
2.1	Exploration and production	Mineral Resources Management (2560) within the State Lands Commission (3560)	State_CA	Direct expenditure	This division oversees the efficient and safe development of mineral resources on state lands and school lands, as well as participates in the safety and fiscal oversight of fields such as in Long Beach where the state has a beneficial interest. Key activities include management of responsible extraction of oil, gas, geothermal resources and other solid minerals; collection of payments owed the state from lease operators; protection of public safety and environmental quality; and engineering and safety audits of active operations. Other areas of engagement include oil spill prevention, safe operation of offshore operations, and proper closure and reclamation of oil and gas facilities under its jurisdiction (CA budget 23-24, Res-83).	
2.1	Exploration and production	Oil and gas royalty rates	State_CA	Royalty	<p>Most oil and gas in California is produced from private lands where royalty rates are established between willing buyers and sellers rather than by statute. What production there is from state-owned lands is concentrated in the Tide Lands and is managed by the California State Lands Commission's Mineral Resources Management Division. As of 2017, this included 21 state tidelands oil and gas leases, two-thirds of which were producing. Royalty rates are often based on a price-based sliding scale from 16 2/3% to 25%. Some leases have a lower minimum (12.5%) or a higher maximum (50%, though many in this category seem to be discontinued) (CA State Lands Commission, 2023). The lower-ends of the royalty range would be below rates charged by other energy-producing states. Data on the weighted average royalty rates paid on these leases could not be located, but would provide an important input in gauging how state fees compared to those on federal and private leases. Below-market rates or lease terms would constitute a subsidy to producers.</p> <p>No new leases have been issued since 1969, so the duration of the leasing period may also be longer than standard, with ancillary benefits to their holders. For example, BLM leases have a primary term of 10 years, though may be extended if wells are producing (BLM, 2023b). In contrast, by the time the State Lands Commission cancelled three offshore leases at Carpinteria in Santa Barbara County in 2019, they had not been producing in 27 years. Longer than normal lease terms provide an inexpensive "option value" to producers, while also enabling them to defer asset retirement costs. However, the moratorium on new leases likely alters incentives for the state to terminate production quickly.</p>	2

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Cat Num	Production Stage	PolicyName	Estimated Scale in CA	Specificity	In Effect?	Time Frame	Scale	Notes, OpenIssues
2.1	Exploration and production	Geologic Hazards and Mineral Resources Conservation (2420) in Department of Conservation (3480)	Fairly large budget overall; more research needed to isolate spending line items net of user fees though.					
2.1	Exploration and production	Lack of severance tax on oil and gas extracted within California	Likely large.					
2.1	Exploration and production	Mineral Resources Management (2560) within the State Lands Commission (3560)	Fossil-fuel related spending is only part of the budget total; distilling the relevant line items, and the portion funded via user fees, would take additional work.					
2.1	Exploration and production	Oil and gas royalty rates	Unknown	Oil and gas	Yes			Since the leases are so old, more detail on potential environmental issues associated with production (and the adequacy of closure and post-closure financial assurance) would also be useful.

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2.1	Exploration and production	Geologic Hazards and Mineral Resources Conservation (2420) in Department of Conservation (3480)	CA 23-24 budget, res 49, 51													
2.1	Exploration and production	Lack of severance tax on oil and gas extracted within California														
2.1	Exploration and production	Mineral Resources Management (2560) within the State Lands Commission (3560)	CA 23-24 budget, Res-82													
2.1	Exploration and production	Oil and gas royalty rates														

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2.1	Exploration and production	Geologic Hazards and Mineral Resources Conservation (2420) in Department of Conservation (3480)		33.8	65.2	62.1								
2.1	Exploration and production	Lack of severance tax on oil and gas extracted within California												
2.1	Exploration and production	Mineral Resources Management (2560) within the State Lands Commission (3560)		362	57.3	53.3								
2.1	Exploration and production	Oil and gas royalty rates												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
2.1	Exploration and production	Road damage from trucks servicing well activity	State_CA	Direct expenditure	Vehicles servicing oil and gas fields are often very heavy, and can cause disproportionate damage to road beds in areas of high activity. This has particularly been an issue with fracked wells. The damages have been studied in detail and quantified in Texas (Quiroga, 2017; TAMEST, 2017), however I was not able to identify similar work in California. One review of the costs and benefits of oil development to different levels of state governments did include a case study of California (Raimi and Newell, Duke 2016: 30) and found road damage was commonly the major cost of oil and gas development at the county level. This review also found that in Kern County, "[c]ounty roads are heavily affected by industry traffic, particularly in the rural western portion of the county. The precise costs associated with this damage is uncertain, but local officials say the effects are substantial" (Raimi and Newell, Duke 2016: 37). This may be an issue to explore in more detail in particular regions of the state, particularly if there are indications of damages that are being repaired from the general fund or even general fuel taxes, rather than being allocated to the specific sector that is causing the problem.	2
2.1	Exploration and production	Accelerated depreciation of natural gas distribution lines	Federal	Tax expenditure	Asset-specific carve-out in the tax code allows 15-year MACRS depreciation for natural gas distribution lines, shorter than their actual service life.	
2.1	Exploration and production	Below-market royalty rates on federally-administered leases in CA	Federal	Terms of Access, royalty	<p>The federal government, through BLM California, manages roughly "600 producing oil and gas leases covering more than 200,000 acres and 7,900 usable." More than 95% are located in Kern County. Leases include "one of the most productive individual onshore leases in the lower 48 states, and four of the nation's top seven producing oil fields are located in Kern County." Federal production comprises roughly 8-10% of total oil and gas production within the state (BLM 2023). Possible subsidies arise through public royalty or rental rates that are lower than what a private landowner would charge; lease terms such as duration that are more favorable; or bid awards made under non-competitive circumstances. There may also be legacy costs from improperly closed wells or contaminated sites.</p> <p>The Inflation Reduction Act of 2022 increased rates for leases after 8/16/22. This included a higher royalty rate (16.67%); higher rental fees (\$3/acre in years 1 and 2 rising to \$5/acre in years 3-8 and \$15/acre thereafter); and removal of authority for BLM to award leases in non-competitive auctions (BLM, 2022). While the updated royalty rate is up sharply from the 12.5% the federal government levied for about a century, it remains below the 19.375% median royalty charged on production from state lands by oil and gas producing states (Bucks, 2019: 9).</p>	2
2.1	Exploration and production	Enhanced oil recovery credit	Federal	Tax expenditure	<p>A credit is provided equal to 15 percent of the taxpayer's costs for enhanced oil recovery on U.S. projects. The credit is reduced in proportion to the ratio of the reference price of oil for the previous calendar year minus \$28 (adjusted for inflation from 1990) to \$6. Estimated revenue losses nationally dropped by hundreds of millions of dollars annually in the most recent Tax Expenditure Budget released by the US Treasury, likely associated with the rise in oil prices leading to phase-out of the credit.</p> <p>While the subsidy value has dropped as oil prices rose, this subsidy still provides downside protection to new fields, reducing the risk (and cost of capital) for new investment.</p>	
2.1	Exploration and production	Exception from passive loss limitations for working interests in oil and gas properties	Federal	Tax expenditure	The ability to deduct losses in passive activity against other income is broadly restricted to limit tax sheltering abuses; rather, taxpayers carry the losses forward to offset against future income from those same passive activities. These restrictions do not apply to working interests in an oil or gas property that the taxpayer holds directly or through an entity that does not limit the liability of the taxpayer with respect to the interest. This allows deductions to be taken much more quickly, generating a time-value benefit to the taxpayer.	

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2.1	Exploration and production	Road damage from trucks servicing well activity						
2.1	Exploration and production	Accelerated depreciation of natural gas distribution lines	Moderate value. Tax losses lower during period of bonus depreciation, which is now phasing out. Data are national values.	NG	Yes			In JCT only; not listed by Treasury.
2.1	Exploration and production	Below-market royalty rates on federally-administered leases in CA	Moderate, with material impacts on some wells but smaller aggregate impacts given the small share of total production that federally-owned resources comprise within California.	Oil and gas	Yes			
2.1	Exploration and production	Enhanced oil recovery credit	Due to the price triggers, and higher oil prices, the tax losses from this provision dropped sharply in the most recent estimates. CA is a relatively small share of national production, suggesting the subsidy value will be similarly small for the time being. National numbers.	Oil	Yes		Ten-year revenue loss estimates dropped from \$10b in the 2023 fed budget to only \$620m in the 2024 budget, likely driven by price assumptions and the EOR price triggers. May not be reasonable to assume high prices for 10 years though.	In Treasury only, not in JCT
2.1	Exploration and production	Exception from passive loss limitations for working interests in oil and gas properties	National numbers are small; CA share will be even more so.	Oil and gas	Yes		Fairly small, though estimate in FY24 budget was still only half that in FY23.	In Treasury only, not in JCT

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2.1	Exploration and production	Road damage from trucks servicing well activity														
2.1	Exploration and production	Accelerated depreciation of natural gas distribution lines	JCT 2020: 26; JCT 2022: 34													60
2.1	Exploration and production	Below-market royalty rates on federally-administered leases in CA														
2.1	Exploration and production	Enhanced oil recovery credit	Treasury FY23 TE (for 2021); FY24 TE for later years													
2.1	Exploration and production	Exception from passive loss limitations for working interests in oil and gas properties	Treasury FY23 TE (for 2021); FY24 TE for later years													

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2.1	Exploration and production	Road damage from trucks servicing well activity												
2.1	Exploration and production	Accelerated depreciation of natural gas distribution lines	60	60	60	60	60	60						
2.1	Exploration and production	Below-market royalty rates on federally-administered leases in CA												
2.1	Exploration and production	Enhanced oil recovery credit	510	390	240	200	140	40	0	0	0	0	0	0
2.1	Exploration and production	Exception from passive loss limitations for working interests in oil and gas properties	20	10	10	10	10	10	10	10	10	10	10	10

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2.1	Exploration and production	Excess of percentage over cost depletion, oil and gas	Federal	Tax expenditure	Investments are normally deducted from taxable income over the useful life of the asset, and are limited to the total amount spent. This provision allows deductions equal to a percentage of the market value of the commodity being extracted, so can exceed the total investment. Although subsidies are less needed by recipient industries during periods of high prices, this tax subsidy actually grows during those periods, making it particularly inefficient. Federal revenue losses from this provision and coal extraction are estimated separately. Since coal is not produced in California, the coal figures are not included.	
2.1	Exploration and production	Exclusion from corporate income taxes for publicly-traded partnerships with certain energy-related activities	Federal	Tax expenditure	While private partnerships can pass income directly to investors with no corporate income tax, publicly-traded partnerships have been restricted from doing so for decades. A narrow set of activities, dominated by oil and gas, were exempted from these changes, receiving lower effective tax rates. Publicly-traded private equity funds, which often have substantial allocations to oil and gas development, have been similarly favored.	
2.1	Exploration and production	Exemption from royalties for gas flared on BLM leases in CA	Federal	Terms of Access, royalty	Royalties are a percentage of resource value, compensating the resource owner for the resource removed from its mineral estate. Federal rules, and those of many states, allow oil and gas that is used for on-site operations, or otherwise lost through flaring (and implicitly by venting as well) to be exempt from royalty payments. Efforts have been underway to resolve this issue with regards to flaring, and have been for years. Though the process continues, it has not been smooth. Estimated national benefits from the tighter restrictions on flaring are \$39m/year in increased royalties and \$427m/year in avoided climate damages (AG Comments, 2023).	
2.1	Exploration and production	Expensing of intangible drilling costs	Federal	Tax expenditure	Allows the majority of costs associated with developing an oil or gas well to be deducted from taxes immediately, rather than capitalized and amortized over multiple years. For non-integrated (independent) producers, 100% of intangible expenses can be immediately deducted. For integrated producers, 70% of intangible expenses can be immediately deducted. The remaining 30% of integrated producers' IDCs still receive special tax treatment, as operators can depreciate IDCs over five years instead of recovering these costs through depletion. Expensing of IDCs for coal is a separate line item in the Treasury tax expenditure budget, but not relevant for CA due to having virtually no coal production.	2

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2.1	Exploration and production	Excess of percentage over cost depletion, oil and gas	Large subsidy on a national level; impact on CA production likely moderate. Note that CA line items for fossil fuel tax breaks measure losses relative to state income taxes. Federal tax breaks to oil and gas like this one are in addition.	Provision supports extracted mineral industries only; of this, by far the largest tax benefits flow to O&G.	Yes	About a century old. Unlike many supports to renewable energy, this provision is part of the baseline tax code with no sunset clauses.	Historically, one of the largest federal tax breaks to oil and gas. Subsidy value rises during high oil prices.	
2.1	Exploration and production	Exclusion from corporate income taxes for publicly-traded partnerships with certain energy-related activities	More analysis would be needed to evaluate activity in CA using PTPs rather than standard corporations or private partnerships.	Oil and gas	Yes			Usage of PTPs dropped due to the 2017 TCJA which reduced the scale of tax savings.
2.1	Exploration and production	Exemption from royalties for gas flared on BLM leases in CA	Likely fairly small. Based on well acreage data from BLM and production data from the DOI's Office of Natural Resources Revenue, Information and Data Management, California comprises less than 2% of federal activity. Flared gas is often exempt from private royalty payments as well, which means the losses to private resource owners could be material. Revised policies would increase well breakevens, though revenues would not accrue to the state.	Natural gas	Yes			
2.1	Exploration and production	Expensing of intangible drilling costs	Quantified values are national; pro-rate to California production needed. Values lower than historical averages due to temporary bonus depreciation, implemented in the 2017 TCJA, allowing 100% expensing of business property. Bonus depreciation benefits began phasing out in steps starting in 2022.	Oil and gas	Yes	About a century old. Unlike many supports to renewable energy, this provision is part of the baseline tax code with no sunset clauses.	Historically, one of the largest federal tax breaks to oil and gas.	

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2.1	Exploration and production	Excess of percentage over cost depletion, oil and gas	Treasury FY23 TE (for 2021); FY24 TE for later years												
2.1	Exploration and production	Exclusion from corporate income taxes for publicly-traded partnerships with certain energy-related activities	JCT 2020: 26; JCT 2022:34												300
2.1	Exploration and production	Exemption from royalties for gas flared on BLM leases in CA													
2.1	Exploration and production	Expensing of intangible drilling costs	Treasury FY23 TE (for 2021); FY 24 TE for later years; descriptions from Achakulwisut, Erickson and Koplow (2021), Supplemental information.												

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2.1	Exploration and production	Excess of percentage over cost depletion, oil and gas	620	910	1,040	1,100	1,130	1,180	1,260	1,340	1,410	1,470	1,530	1,590
2.1	Exploration and production	Exclusion from corporate income taxes for publicly-traded partnerships with certain energy-related activities	400	400	500	600	700							
2.1	Exploration and production	Exemption from royalties for gas flared on BLM leases in CA												
2.1	Exploration and production	Expensing of intangible drilling costs	-50	720	470	300	180	160	240	330	350	340	330	300

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
2.1	Exploration and production	Marginal well credit	Federal	Tax expenditure	<p>A credit is provided for crude oil and natural gas produced from a qualified marginal well (< 1,095 barrel-of-oil equivalents per year). Capped at \$3.00 per barrel of qualified crude oil production and \$0.50 per thousand cubic feet of qualified natural gas production. Price-linked phasedowns which reach zero when NG \$2.00/mcf and oil exceeds \$15/bbl. Triggers are in 2004\$, so current dollar phasedowns would be higher. However, Treasury's 10-year revenue loss estimate dropped from \$3.7 billion in its FY23 budget to only \$290m in the FY24 budget. This means they assume prices will remain too high to allow claiming the credit.</p> <p>Were prices below the phaseout, this provision would be relevant to CA. Carbon Tracker (2023) estimates that California has nearly 17,000 "stripper" wells (wells that produce at low volumes), comprising nearly 20% of the state's well count. CCST (2018) does not have the same well groupings, but estimates nearly 70,000 wells are either producing or have been idle for a short-enough time that they could theoretically re-enter production. This is roughly 65% of the state's unplugged wells.</p>	
2.1	Exploration and production	Rapid amortization of geological and geophysical expenses	Federal	Tax expenditure	<p>Independent oil and gas producers can amortize geological and geophysical expenses over two years instead of recovering these costs through depletion. Integrated operators can recover these costs over seven years instead of using standard cost depletion.</p>	
2.1	Exploration and Production	Use of Opportunity Zone tax benefits for California Oil and Gas	Federal	Tax expenditure	<p>Special class of investments that allows capital gains for investments in particular "disadvantaged" regions to defer, and after ten years eliminate, capital gains taxes on eligible investments. While statutory language indicates the provisions target economically troubled regions, beneficiaries have sometimes been in transition zones implementing investments that would have happened anyway. There are an unknown number of investments in the fossil fuel supply chain, though some firms have focused on this area.</p> <p>Oilman Magazine noted in 2021 that "[t]he opportunity zone tracts overlay some of the most prolific oil and gas plays in the U.S. Thus, by adhering to the provisions, the funds are allocated for original use, taking lease of the property tract, and developing exploratory wells with no substantial property improvements required. Provisions such as these allow opportunity zone funds to develop strong cash flow in the early years, without waiting on debt financed distributions commonly seen in other types of development projects. All traditional deductions are still passed through, in addition to the income generated, and the risk can be further mitigated through cross sector matching funds that combine energy and real estate development dollars for a better overall outcome."</p>	
2.2	Exploration and production, emissions	Flaring	State_CA	Regulatory exemption	<p>California has had restrictions on any wasting of natural gas, including flaring, since 1939. In March 2017, a regulation was added under the Greenhouse Gase Emission Standards for Crude Oil and Natural Gas Facilities to reduce methane emissions. These rules limit vented gas, fugitive emissions, and other unintentional leaked gas on private, state, federal, and offshore land. Tribal lands are not covered. Pollutant emissions from flaring are regulated by CARB. Flaring and venting is regulated by local air districts (DOE 2022). DOE (2022) further notes that "California does not maintain a database for flaring and venting data." Given the state's environmental priorities, this gap is unexpected and should be further researched. As California did join the "Zero Routine Flaring by 2030" Initiative of the World Bank in 2015 (CalEPA 2015), it suggests that routine flaring was, and perhaps still is, part of standard wellfield operations.</p> <p>The state reporting to the US EIA is spotty, with data through 2011, then no additional reporting until 2021. The 2021 data at least allows a narrow window into this issue, however. Flaring and venting in CA in 2021 as a percent of gross withdrawals and production that year suggests a reported flaring and venting share of 1.07%. This is significantly above the national average of 0.77% (EIA 2023a, EIA 2023b), a disparity warranting additional research. Because EIA data are missing substantial fugitive emissions from all states, however, the state rankings on total loss rate (fugitive plus reported flaring and venting) may change materially from those calculated using flaring and venting alone.</p>	2

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2.1	Exploration and production	Marginal well credit	Based on current prices, subsidies to CA oil and gas are expected to be small. However, price-linked subsidies provide important down-side protection to investors, reducing the risk of new well development with potential impacts in slowing decarbonization. Data are national values.	Oil and gas	Yes			In Treasury only, not in JCT
2.1	Exploration and production	Rapid amortization of geological and geophysical expenses	Moderate value. Tax losses lower during period of bonus depreciation. Data are national values.	Oil and gas	Yes			In JCT only; not listed by Treasury.
2.1	Exploration and Production	Use of Opportunity Zone tax benefits for California Oil and Gas	Unknown. According to a firm that tracks these Qualified Opportunity Zones (QOZs), Kern County has 35 of them which contain more than 200,000 people, nearly one-quarter of the country's population. Active funds in the county seem mostly linked to real estate, though some do include energy though perhaps not oil and gas. (Opportunity DB, 2023).					
2.2	Exploration and production, emissions	Flaring	Unknown	Natural gas	Yes			

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2.1	Exploration and production	Marginal well credit	Treasury FY23 TE												
2.1	Exploration and production	Rapid amortization of geological and geophysical expenses	JCT 2020: 26; JCT 2022:34 for 2022-26.												100
2.1	Exploration and Production	Use of Opportunity Zone tax benefits for California Oil and Gas													
2.2	Exploration and production, emissions	Flaring													

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2.1	Exploration and production	Marginal well credit	250	270	220	230	290	370	410	440	450	460	470	
2.1	Exploration and production	Rapid amortization of geological and geophysical expenses	100	120	120	120	120	120						
2.1	Exploration and Production	Use of Opportunity Zone tax benefits for California Oil and Gas												
2.2	Exploration and production, emissions	Flaring												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
2.2	Exploration and production, emissions	Inadequate third party liability coverage, production in close proximity to population centers	State_CA	Risk transfer	<p>More than other parts of the country, California has a substantial number of operating, idle, and abandoned wells that are located in close proximity to people, including near residential homes. Emissions from rigs result in high exposures for people living and working nearby; these are often lower income people. California recently enacted (SB 1137) a ban on new oil and gas wells within 3,200 feet of homes, schools, clinics and other sensitive sites. While existing wells operating in these buffer zones can continue operating, they would need to do so under tighter controls. The oil industry filed a referendum soon after this law went into effect; as a result, implementation remains on hold until the referendum issue plays out.</p> <p>An important subsidy-related question with these wells is whether there is adequate (or any) third party financial liability insurance associated with the wells. This type of policy would cover accidents or damage to surrounding populations. It can be a useful economic lever to incent improved site management, encourage new well locations in more remote areas, and provide a financial resource should there be damages. I contacted many NGOs who have been working on the setback issue. While some had information on well bonding (to cover closure and post-closure costs), none had data on third party liability coverage. This would be a useful area to look into, since adequate third party liability policies would both discipline production and operating standards even on the existing wells and provide backstop protection should the law be reversed by referendum.</p>	1
2.2	Exploration and production, emissions	Water subsidies, reuse of contaminated water on farms	State_CA	Regulatory exemption	<p>As drought conditions worsened, California's Central Valley Water Board allowed oil and gas companies to sell water with lower levels of contamination to be used on farms as irrigation. Though the practice is claimed to be safe, it has not been formally tested, and some members "of the water board's own expert panel disputed that conclusion" on safety. Inside Climate News also noted that the firm hired to do the study has close ties to Chevron, which is the largest provider of the wastewater (Gross and Aldhous, 2022; Gross, 2022). The firm saves millions of dollars per year by sending produced water for use in irrigation (Gross, 2022b). Long-term damages to soil quality from the reuse of the water might also be an issue. CCST's phase 2 report on water use in oil and gas sector (2019: 70) did note that Cawelo Water District in Kern County has been selling a blend of produced and other water sources to customers for three decades; how comparable this is to the more recent practices is unknown.</p>	2
2.2	Exploration and production, emissions	California geologic storage hubs for carbon	Mixed	Mixed	<p>Modeling by Princeton University suggests that California has significant options for geologically-sequestering carbon at about \$12/ton (GAO 2022:38, based on analysis by Princeton University). This is more expensive than the Gulf Coast and Permian resources, but deemed competitive, particularly to service carbon-intensive sources in the region.</p>	1
2.2	Exploration and production, emissions	Fees for lost gas	Federal	Tax expenditure	<p>The Inflation Reduction Act includes a charge on selected sources of methane releases within the oil and gas sector. Fees start at \$900/ton methane emitted in 2024, rising to \$1200 in 2025 and \$1500/ton in 2026 (equivalent to \$60/mt of CO2e in 2026). Subject to the charge are on- and off-shore petroleum and NG production, processing, and gathering and boosting facilities; and NG processing, compression, storage, import and export equipment, as well as onshore transmission pipelines (Ramseur 2022; TCS 8/9/22).</p> <p>However, substantial exemptions reduce the efficacy of these emissions fees. Facilities emitting <25,000 mt of CO2e/year are exempt and a first tier of emissions (as a % of natural gas sent to market) from any fee at all. Natural gas distribution facilities also exempt. Ramseur (2022: 7,8) estimates that 42.8 million MT CO2e will be subject to the charges of 180.8 million MT CO2e total from petroleum and natural gas systems per EPA, about 24%. An estimate based on analysis by the Congressional Budget Office generates an even lower share of emissions subject to tax: an average of 28.6 million MT CO2e between 2026 and 2030, or 16% (based on Ramseur 2022: 9). The CBO estimate suggests 152 million MT of CO2e of methane would escape the federal fees; at the fee level of \$60/mt applicable in 2026, this is equivalent to more than \$9 billion in avoided fees per year nationally.</p>	1

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2.2	Exploration and production, emissions	Inadequate third party liability coverage, production in close proximity to population centers	Unknown. Even if moderate in terms of state-wide subsidy value, addressing this gap would likely have substantial benefits to the communities hosting the wells by improving operational control of the wells.	Oil and gas.				
2.2	Exploration and production, emissions	Water subsidies, reuse of contaminated water on farms	Unknown. Could be large for particular fields.		Yes			
2.2	Exploration and production, emissions	California geologic storage hubs for carbon	Subsidies to CCUS are expected to be major, and include a mix of state and federal supports to injection sites, CO2 capture, CO2 pipelines, and liability associated with all stages. While CA won't be the largest geographic beneficiary, the subsidies could still be material. This issue is poorly characterized at present.	Any source, though expected to support primarily oil and gas processing, chemical plants initially.	Part yes, part pending		Very large nationally.	
2.2	Exploration and production, emissions	Fees for lost gas	Large nationally; additional data gathering would be needed to estimate a value for California.	Oil and gas	Yes			

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Cat Num	Production Stage	PolicyName	Sources	Additional sources, urls	2010 (\$Mil, nominal)	2011 (\$Mil, nominal)	2012 (\$Mil, nominal)	2013 (\$Mil, nominal)	2014 (\$Mil, nominal)	2015 (\$Mil, nominal)	2016 (\$Mil, nominal)	2017 (\$Mil, nominal)	2018 (\$Mil, nominal)	2019 (\$Mil, nominal)	2020 (\$Mil, nominal)
2.2	Exploration and production, emissions	Inadequate third party liability coverage, production in close proximity to population centers													
2.2	Exploration and production, emissions	Water subsidies, reuse of contaminated water on farms													
2.2	Exploration and production, emissions	California geologic storage hubs for carbon	Net Zero (2021), Greig and Pascale (2021), GAO (2022).												
2.2	Exploration and production, emissions	Fees for lost gas	TCS, 08/09/22, Ramseur (2022)												

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Cat Num	Production Stage	PolicyName	2021 (\$Mil, nominal)	2022 (\$Mil, nominal)	2023 (\$Mil, nominal)	2024 (\$Mil, nominal)	2025 (\$Mil, nominal)	2026 (\$Mil, nominal)	2027 (\$Mil, nominal)	2028 (\$Mil, nominal)	2029 (\$Mil, nominal)	2030 (\$Mil, nominal)	2031 (\$Mil, nominal)	2032 (\$Mil, nominal)
2.2	Exploration and production, emissions	Inadequate third party liability coverage, production in close proximity to population centers												
2.2	Exploration and production, emissions	Water subsidies, reuse of contaminated water on farms												
2.2	Exploration and production, emissions	California geologic storage hubs for carbon												
2.2	Exploration and production, emissions	Fees for lost gas												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
2.2	Exploration and production, emissions	Illegal methane venting	Federal	Regulatory exemption	With increasing precision, satellite imaging and ground cameras have documented widespread and large scale illegal emissions of methane from oil and gas production and processing sites, including in California. FracTracker (2022), for example, evaluated 400 wells and other pieces of infrastructure in 100 drill sites within the state (LA, Kern, and Ventura counties) during August 2022 and found substantial unreported emissions in all counties evaluated. These are poorly tracked or enforced by regulatory authorities. Illegal emissions escape standard taxes and royalties on the natural gas streams, exacerbate climate change, and allow poorly-controlled operations to continue selling their products without adequate investment into pollution and process controls.	1
2.2	Exploration and production, Emissions	Regulatory exemptions for wastewater from unconventional wells	Federal	Regulatory exemption	Wastewater from unconventional oil and gas production is exempt from hazardous waste regulations under RCRA and its disposal via underground injection is exempt from the Safe Drinking Water Act (SDWA)'s Underground Injection Control program.	
3	Refining and conversion	Cost of implementation account, air pollution control fund (3237)	State_CA	User fee	Fund supports CA efforts to achieve "the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases by 2020," including identification and recommendations on key options for direct reductions, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives for sources and categories of sources that the state board finds are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions. Funded primarily from fees on sources of greenhouse gases. To the extent that spending is supporting pollution controls in fossil-fuel intensive industries at a level materially higher than the user fees paid in by those industries, there could be cross-subsidies benefitting fossil fuels even if the total revenues equal what is spent overall.	
3	Refining and conversion	Distributed Electricity Backup Assets Program	State_CA	Direct expenditure	There are two main parts of this program. The first includes incentives to deploy new zero- or low-emission backup technologies (e.g., fuel cells) for new installs or replacement of older fossil installations. This area seems unlikely to have any associated subsidies to fossil fuels. The second area includes subsidies to install air pollution control equipment for distributed power sources >1 MW; in exchange, the upgraded generators would be required to support grid operations during times of emergency (CA DOF, 2022: 7). The program also includes up to \$200 million in upgrades to selected power generators to improve efficiency, cover maintenance expenses, and build incremental capacity. Also of interest are projects that would improve system resiliency and hardening to withstand natural disaster or other emergency events (CA DOF, 2022: 7). In all of these last three spending categories, the large number of existing fossil assets suggests a material portion of the funding will support oil and natural gas. The NRDC also identified concerns that fossil fuel resources supported to provide emergency support are not restricted from using those resources whenever desired by operators, or ensuring they are properly retired when no longer needed (NRDC, 2022: 2).	1

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2.2	Exploration and production, emissions	Illegal methane venting	Unknown. The illegal venting would not be captured in the methane release values associated with the new fees for lost gas, but would rather comprise an incremental subsidized source.	Natural gas	Yes			
2.2	Exploration and production, Emissions	Regulatory exemptions for wastewater from unconventional wells	Unknown		Yes			
3	Refining and conversion	Cost of implementation account, air pollution control fund (3237)	The most recent condition statement on the fund shows no funding from general fund to support the >\$100m in spending the fund does per year. However, cross-subsidies benefitting fossil-intensive activities may remain.	Multiple sectors, though oil and gas would be central due to ghg-intensity.				
3	Refining and conversion	Distributed Electricity Backup Assets Program	Hundreds of millions of dollars in funding; assessing the portion flowing to fossil-fueled assets would require additional research.					

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2.2	Exploration and production, emissions	Illegal methane venting	Biesecker and Wieffering 2022												
2.2	Exploration and production, Emissions	Regulatory exemptions for wastewater from unconventional wells	Achakulwisut, Erickson and Koplw (2021), Supplemental information.												
3	Refining and conversion	Cost of implementation account, air pollution control fund (3237)		https://esd.dof.ca.gov/funds/app/download/3237 https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3890/3900FCS.pdf											
3	Refining and conversion	Distributed Electricity Backup Assets Program													

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2.2	Exploration and production, emissions	Illegal methane venting												
2.2	Exploration and production, Emissions	Regulatory exemptions for wastewater from unconventional wells												
3	Refining and conversion	Cost of implementation account, air pollution control fund (3237)												
3	Refining and conversion	Distributed Electricity Backup Assets Program		550	0									

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
3	Refining and conversion	Investments in Strategic Reliability Assets	State_CA	Direct expenditure	<p>According to the state, the Investments in Strategic Reliability Assets program "will support the grid's reliability, with a focus on cost, availability, and meeting the operational needs of the grid. The Reserve will incorporate up to 5,000 MW of capacity..." Areas targeted include new capacity (does not seem to exclude fossil); life extensions for existing generation using expedited permits and capacity payments (does not seem to exclude fossil); and power purchase agreements to supplement the supplies available to the state. Indeed, the new supply may include "additional temporary generators and energy storage systems." CA has more than 40,000 fossil backup generation systems across the state (DOF 2022:6, 7).</p> <p>St. John (2022) notes that "California Governor Gavin Newsom (D) has proposed \$6.7 billion in additional spending over the coming years to shore up grid reliability. Some of that spending — nearly a billion dollars — would be aimed at expanding carbon-free energy. But much more of it — about \$5.2 billion — would likely end up going to gas power plants and diesel backup generators the state hopes it won't have to use." Life extensions for old natural gas plants are expected to receive a substantial portion of this money, despite reliability problems during past heat waves (LA Times Editorial Board, 2022).</p>	1
3	Refining and conversion	Refinery fees (4127300)	State_CA	User fee	<p>Petroleum refinery community air monitoring fees are levied on petroleum refineries to recover the costs of developing a refinery-related community air monitoring system that monitors a number of toxic emissions at the fence line of the refinery (rules 4460 and 3200) (San Joaquin Valley Air Pollution Control District, 2022). This is required by CA Health and Safety Code §42705.6. Required pollutants to be monitored are set at the county level, and are not consistent across the state. Reporting exemptions have been increasing and some facilities are not properly reporting exceedances (Furhman, 2022).</p>	
3	Refining and export	Subsidized credit for LNG export facilities relevant to California markets	Federal and Alaska	Credit	<p>\$38 billion investment, including up to \$28 billion in a federal loan guarantee originally authorized under the 2004 Alaska Natural Gas Pipeline Act. Alaska LNG is being developed by the Alaska Gasline Development Corp. , a state-owned corporation. Thus, the project will receive additional subsidies through its ownership structure, though AGDC says it is also seeking strong equity partners.</p> <p>Further, recent changes in lending rules for the US Export-Import Bank allows extension of credit to certain domestic activities, including LNG. Eximbank provides credit support with below-market interest and/or terms. Alaska LNG is expected to tap into that funding source as well (Poten and Partners, 2022). They indicate that most of the LNG that will come out of Alaska will go to Asian markets; however, the subsidies are so large that if LNG is also sent to California markets, it may be worth examining in more detail.</p>	
3	Refining and export	Foreign trade zones	Federal	TBD	<p>Federal rules, though implemented at the state and local level. FTZs establish a differential set of rules for the geographic region covered by the zone relative to base US law, often allowing goods to enter or undergo value-added manufacturing on US territory for export or re-export without incurring US-specific levies or other taxes. Whether these rules result in sector-specific subsidies that slow decarbonization would require more detailed analysis. However, FTZs are relevant and important to the fossil fuel cycle. Oil and gas was the single largest foreign status product received by production operators in US FTZs during 2021, at \$20.6 billion; it was second in California as well, comprising 16% of value. Across all sectors, California was the second largest state in terms of the value of merchandise received, and fourth for merchandise exported, from its FTZs in 2021 (FTZ Board 2022: 8-10). A combination of FTZ subzones and the Alternative Site Framework enable many key fossil fuel assets to exist within the frame of FTZs.</p> <p>This item is included as a place holder, as I have not yet been able to identify specific subsidies associated with US FTZ or FTZ subzones.</p>	Place holder

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3	Refining and conversion	Investments in Strategic Reliability Assets	Large					
3	Refining and conversion	Refinery fees (4127300)	Fees (about \$4.3m collected per year) seem too low to fully fund the state cost of establishing and overseeing the program. Additional analysis to confirm no general fund revenues are supporting this would be useful.	Primarily petroleum fuel cycle, though recently extended to biorefineries as well.	Yes			
3	Refining and export	Subsidized credit for LNG export facilities relevant to California markets	Potentially large, though only relevant to CA if the state will receive shipments or transship the LNG cargos.	Natural gas				
3	Refining and export	Foreign trade zones	Unknown	Many industries, though fossil fuels are a large share of the products using the FTZs.				

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3	Refining and conversion	Investments in Strategic Reliability Assets														
3	Refining and conversion	Refinery fees (4127300)														
3	Refining and export	Subsidized credit for LNG export facilities relevant to California markets	Cocklin 2022.													
3	Refining and export	Foreign trade zones														

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3	Refining and conversion	Investments in Strategic Reliability Assets		1500	445									
3	Refining and conversion	Refinery fees (4127300)												
3	Refining and export	Subsidized credit for LNG export facilities relevant to California markets												
3	Refining and export	Foreign trade zones												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
3	Refining and export	Temporary 50% expensing for equipment used in the refining of liquid fuels	Federal	Tax expenditure	<p>Capital investments are normally deducted over their useful life. Highly accelerated depreciation provides larger tax deductions sooner in the investment lifetime. Special rules allowed the cost of certain investments in refineries to be expensed, thereby giving such investments a tax advantage. Equipment had to be placed in service prior to Jan. 1, 2014.</p> <p>The provision generated revenue losses of hundreds of millions per year in the period around 2000, but shifted to negative nominal dollars as new facilities could no longer qualify for the provision and the front-loaded write-offs of older facilities reversed. As with all accelerated deductions, however, the provision always provided tax benefits on an NPV basis. Later nominal reversals appear markedly higher than the revenue losses in prior years, which doesn't make sense.</p>	
4	Transport, Storage and Export	Exemption from sales and use taxes for rail freight cars	State_CA	Tax expenditure	The sale or lease of freight rail cars used in interstate or foreign commerce is exempt from tax (section 6368.5). This provision is unlikely to be material; crude oil imports to CA moving by rail in 2017 were about 3 million barrels, but comprised less than 1% of imports. (LA EDC 2019:11).	
4	Transport, Storage and Export	Office of Energy Infrastructure Safety (3355)	State_CA	Direct expenditure	This Office monitors conditions that could trigger wildfires that put electrical infrastructure at risk and coordinates with other organizations in state to plan for various emergency response needs (CA 23-24 budget, RES-25). Funding is from the Public Utilities Commission Utilities Reimbursement Account (0462), which is financed through fees on public utilities rather than taxes. A full accounting would need to look at whether these types of fees substitute for general taxes on the utilities to fund industry-specific costs the industry places on government, in which case the industry contribution to funds used to support general state government functions may be lower than in other sectors. Budget values represent total spending, not estimated subsidies (which would be spending net of user fees).	
4	Transport, Storage and Export	Oil Spill Response Fee and Trust Fund (0321)	State_CA	User fee	The Oil Spill Response Fee applies to crude oil and petroleum products received at marine terminals, moving through marine pipelines, or received at California refineries. Collections continue until the fund reaches a statutorily-set reserve balance (\$50 million), after which collections are suspended. Reserves in 2021/22 started at only \$14m, though are projected to near \$45m by the end of FY23/24 (CA budget schedule 10, 2022).	
4	Transport, Storage and Export	Pipeline Safety Division within the Office of the State Fire Marshal (2461010), which is part of the Dept of Forestry and Fire Protection (3540)	State_CA	User fee	<p>As noted in the state budget, the Pipeline Safety division ensures the safe construction, operation, and maintenance of approximately 5,400 miles of intrastate hazardous liquid pipelines that transport crude oil, refined petroleum products, and Highly Volatile Liquids through populated urban areas, ecologically sensitive areas, and other high consequence areas. Systems under the Pipeline Safety division authority are pipelines that transport hazardous liquids between facilities, such as offshore platforms, production fields, refineries, storage terminals, and marine terminals. This division is additionally charged with implementing investigations for failures, explosions, and fires on intrastate pipelines; assisting on investigations for interstate pipelines; and ensuring state fire and safety regulations are properly implemented (CA 23-24 budget, RES-65,66).</p> <p>Funding through fees on pipelines supports the CA Hazardous Liquid Pipeline Safety Fund (0209).</p>	
4	Transport, Storage and Export	Spill Prevention and Response Program (2615) of the Department of Fish and Wildlife (3600); Oil Spill Prevention and Administration Fee (0320)	State_CA	User fee	<p>This program "minimizes damage and environmental impacts to, restores, and rehabilitates California's fish and wildlife populations and their habitats from the harmful effects of oil and other deleterious material spills in marine waters and inland habitats." (CA 23-24 budget, RES 92, 93). Most funding is from the Oil Spill Prevention and Administration Fund (0320), as well as other user fees. General fund support is less than \$1m/year.</p> <p>The Oil Spill Prevention and Administration Fee funds prevention and response programs in California. The fee of 6.5 cents per barrel is collected by terminal and refinery operators from producers of crude or petroleum products upon receipt and then remitted to the state. The fee rate changes frequently based on anticipated needs (it was 8.5 cents/barrel of crude or petroleum products starting in October 2021). Renewable fuels (which maybe included blends with petroleum components) were exempt entirely until January 1, 2022.</p>	

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3	Refining and export	Temporary 50% expensing for equipment used in the refining of liquid fuels	Not relevant for current policy since provision expired. However, while it was in effect it likely did subsidize CA refineries even though they are old. More than \$2 billion was spent on refinery modernization projects between 2007 and 2017 (Tam, 2017).	Oil				
4	Transport, Storage and Export	Exemption from sales and use taxes for rail freight cars	Negligible	All freight				
4	Transport, Storage and Export	Office of Energy Infrastructure Safety (3355)	No direct subsidy.	All energy infrastructure				
4	Transport, Storage and Export	Oil Spill Response Fee and Trust Fund (0321)	Spending in recent years has been well below the cap, though it seems low to deal with any large spill.	Oil				Would be useful to know how cleanup for a large spill, exceeding the reserve, would be funded.
4	Transport, Storage and Export	Pipeline Safety Division within the Office of the State Fire Marshal (2461010), which is part of the Dept of Forestry and Fire Protection (3540)	More than 70% of the Dept of Forestry and Fire Protection is financed from the general fund. A CA Hazardous Liquid Pipeline fund collects about \$7.3m/year from users; unclear if additional line items also support pipelines. (CA Budget 3540 in url).	Oil, gas, chemicals				
4	Transport, Storage and Export	Spill Prevention and Response Program (2615) of the Department of Fish and Wildlife (3600); Oil Spill Prevention and Administration Fee (0320)	While the budget for this function is large, it is funded by user fees on industry.	Oil and refined products				

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3	Refining and export	Temporary 50% expensing for equipment used in the refining of liquid fuels	Treasury TE fy 2013 and other years			670	580	530	-560	-1170	-990	-830			
4	Transport, Storage and Export	Exemption from sales and use taxes for rail freight cars	CDTFA 2022, 12.												
4	Transport, Storage and Export	Office of Energy Infrastructure Safety (3355)		https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000/3355.pdf											
4	Transport, Storage and Export	Oil Spill Response Fee and Trust Fund (0321)	LA EDC 2019: 38; CA budget schedule 10 (2022).												
4	Transport, Storage and Export	Pipeline Safety Division within the Office of the State Fire Marshal (2461010), which is part of the Dept of Forestry and Fire Protection (3540)	CA 23-24 budget, Res 63, 65.	https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000/3540.pdf											
4	Transport, Storage and Export	Spill Prevention and Response Program (2615) of the Department of Fish and Wildlife (3600); Oil Spill Prevention and Administration Fee (0320)	CA 23-24 budget, RE 90-93; LA EDC 2019:38	https://www.cdtfa.ca.gov/lawguides/vol4/osrpl/osrpl-ch7-4-all.html#8670-46											

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3	Refining and export	Temporary 50% expensing for equipment used in the refining of liquid fuels												
4	Transport, Storage and Export	Exemption from sales and use taxes for rail freight cars	Data not available											
4	Transport, Storage and Export	Office of Energy Infrastructure Safety (3355)		39.3	44.1	38.9								
4	Transport, Storage and Export	Oil Spill Response Fee and Trust Fund (0321)												
4	Transport, Storage and Export	Pipeline Safety Division within the Office of the State Fire Marshal (2461010), which is part of the Dept of Forestry and Fire Protection (3540)		7.3	7.3	7.3								
4	Transport, Storage and Export	Spill Prevention and Response Program (2615) of the Department of Fish and Wildlife (3600); Oil Spill Prevention and Administration Fee (0320)		48.3	50.3	51.1								

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4	Transport, Storage and Export	Terminals	State_CA		<p>California has nearly 100 petroleum terminals which receive and store crude and products by rail, truck, barge and tanker as well as by pipeline. Most of these are marine terminals (CEC, 2023). Marine terminals are regulated by the CA State Lands Commission, which enforces minimum engineering, inspection and maintenance standards through their Marine Oil Terminal Engineering & Maintenance Standards (MOTEMS). This is important because most of the marine terminals were built in the first part of the last century (CA Lands Commission 2023).</p> <p>A post 9/11 review of security at marine oil terminals by the State Land Commission (Hope, 2002) found significant vulnerabilities, which led to the MOTEMS, inspection requirements, and improvements. It is likely that some operational weaknesses and subsidies remain. Key areas of potential subsidization include insufficient insurance coverage for accident liabilities, inadequate financial assurance for post-closure reclamation costs, and inadequate investments into facility defense.</p>	1
4	Transport, Storage and Export	Underground storage tank fee and fund	State_CA	User fee	<p>The Underground Storage Tank Fee funds programs to replace underground petroleum storage tanks in California that have reached or exceeded their regulated age limit. The fund was established in 1991 and is set to sunset in January of 2026, at which point managers anticipate the purpose of the fund will have been met. Although the fund reached a low of about \$27 million in 2001, revenues recovered following an increase in fees. There do not appear to have been bailouts or other funding from general taxpayers in support of tank cleanup (Sjoberg Evashenk Consultants, 2021).</p> <p>The statement of fund conditions indicates this remains an active fund with expenditures in 2021/22 and 2022/23 exceeding \$500m. Collections have maintained an adequate reserve balance, though this is projected to drop to \$160m in FY2023/24 (down from \$770m in FY2022/23), perhaps part of the fund wind-down (CA budget schedule 10, 2022).</p>	
4	Transport	LNG vessels and terminals	Mixed	Risk transfer	Subsidies associated with LNG terminals and ships can be associated with their construction, financing, and insurance. However, California does not have a liquified natural gas terminal or any proposed along the coast.	
5	Exploration and production	Pass through of AK subsidies	State_CA derived from AK	Tax expenditure	California is the largest customer for Alaskan oil, and therefore may benefit from subsidies to producers in that state. Based on EIA data (EIA 2022), about one-quarter of Alaskan crude production is used inside Alaska; of the exported amount, California consumption averaged more than half between 2010 and 2020, and nearly three-quarters in 2020 (EIA 2022, CARB 2022). Alaska has long had, and continues to have, a variety of tax breaks to fossil fuel exploration, production, storage and transport; some of them are fairly large.	
5	Mixed	California Air Resources Board	State_CA	Direct expenditure	The state air resources board (3900) is responsible for protecting air quality in California, a role that has many areas of overlap with the fossil fuel sector. Total expenditures are about \$4.1 billion for 2020-21, \$2.7 billion for 2022-23, and \$2.0 billion for 2023-24. The higher funding level for 2020/21 was driven by Proposition 98, which included funding for zero-emission school buses. Recent general fund transfers to support ARB operations have ranged from \$0.8 to \$1.3 billion per year; the remainder of funding comes through a variety of special funds, most often supported by fees on users or sectors driving the air pollution problems. The portion of general fund transfers supporting fossil fuels, or the degree to which specific user fees are set too low to cover the related costs ARB needs to address, are unknown.	2
5	Mixed	California Coastal Commission (3720)	State_CA	Direct expenditure	Some fossil fuel-related functions such as addressing "coastal energy issues including, but not limited to, offshore oil and gas development, offshore wind projects, electricity generating power plant expansion and development, and siting and development of liquefied natural gas facilities." Funding amounts are gross and include all functions of the Commission. General fund contributions were \$30m in 2021/22, \$65m in 2022/23, and \$25m in 2023/24.	

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4	Transport, Storage and Export	Terminals	Unknown	Oil	Yes			
4	Transport, Storage and Export	Underground storage tank fee and fund	Appears to be fully funded by user fees.					
4	Transport	LNG vessels and terminals	Not relevant at present, since CA has no LNG terminals.					
5	Exploration and production	Pass through of AK subsidies	Possible indirect via impacts on oil sold into CA from Alaska.					
5	Mixed	California Air Resources Board	Unknown					
5	Mixed	California Coastal Commission (3720)	Unknown					

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4	Transport, Storage and Export	Terminals													
4	Transport, Storage and Export	Underground storage tank fee and fund	LA EDC 2019: 38; CA budget schedule 10 (2022).												
4	Transport	LNG vessels and terminals		https://www.energy.ca.gov/data-reports/california-power-generation-and-power-sources/liquefied-natural-gas											
5	Exploration and production	Pass through of AK subsidies	EIA (2022); AK DOR (2022)												
5	Mixed	California Air Resources Board	CA LOA letter, 2021.11.23												
5	Mixed	California Coastal Commission (3720)	CA 23-24 budget, RES-119, 121												

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4	Transport, Storage and Export	Terminals												
4	Transport, Storage and Export	Underground storage tank fee and fund												
4	Transport	LNG vessels and terminals												
5	Exploration and production	Pass through of AK subsidies												
5	Mixed	California Air Resources Board												
5	Mixed	California Coastal Commission (3720)		40.4	77.2	36.8								

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
5	Mixed	California Competes grants program	State_CA	Grant	The California Competes Grant Program is available to businesses that want to locate or stay and grow in California. Grant agreements are negotiated by the Governor's Office of Business and Economic Development (GO-Biz) and approved by a statutorily-created California Competes Tax Credit (CCTC) Committee. This a newer program than the tax credits, so has fewer historical awardees; of these, none are in the fossil fuel sector.	
5	Mixed	California competes tax credit	State_CA	Tax expenditure	The California Competes Tax Credit (CCTC) is an income tax credit available to businesses that want to locate in California or stay and grow in California. Businesses of any industry, size, or location compete for over \$180 million in available tax credits by applying in one of the three application periods each year. Tax credit agreements are negotiated by the Governor's Office of Business and Economic Development (GO-Biz) and approved by the California Competes Tax Credit Committee. Through this 5-year agreement, businesses commit to meeting yearly milestones for full-time employment, salary levels, and project investment. Milestones must be met for each taxable year to earn the allocated credit for that year (Section 233).	
5	Mixed	Geologic Energy Management Division (245) in Department of Conservation (3480)	State_CA	Direct expenditure	The state's division of California Geologic Energy Management (CalGEM) within the Department of Conservation (DOC) is responsible for regulating the drilling, operation, plugging, and abandonment of oil and gas wells. CalGEM issues permits for the construction of new wells and well stimulation treatments to increase oil and gas production, including hydraulic fracturing and acid well stimulation. CalGEM is primarily funded via the Oil, Gas and Geothermal Administrative Fund. However, general fund (\$100m over two years) and federal (\$25m in fy 2022/23) disbursements for abandoned well plugging are also reflected in recent budgets for this Division, but are listed separately below in the policy list as the funds are specifically targeted to well plugging. Budget data listed for this line item reflect gross funding, not funding net of user fees.	
5	Mixed	Greenhouse Gas Reduction Fund (3228)	State_CA	Direct expenditure	Fund was created to advance the goals of the California Global Warming Solutions Act of 2006, "leading to reductions in the greenhouse gas emissions and supporting long-term, transformative efforts to improve public health and develop a clean energy economy." The fund is capitalized by the auction proceeds from carbon allowance sales, with spending ranging from \$2.5 to \$5.4 billion in recent years. Proceeds support a variety of state objectives with the largest disbursements going to the State Air Resources Board for local assistance, high speed rail, and local assistance for housing and transportation. There are likely cross-subsidies in how proceeds are deployed. Many likely support decarbonization, though some review may be warranted to identify disbursements to marginal resources such as biofuels and carbon capture, and to gauge the overall efficacy of the program in achieving its targeted solutions.	2
5	Mixed	Office of Environmental Health Hazard Assessment (3980)	State_CA	User fee	Part of CalEPA, the fossil fuel-related activities of this office include oversight of extracting, transporting and refining oil and gas in CA (CA LAO 2021) and establishing fishery closures after oil spills. Some costs offset via industry fees.	
5	Mixed	Oil and Gas Environmental Remediation Account (3299)	State_CA	User fee	The fund is used to "plug and abandon oil and gas wells, decommission attendant facilities, or otherwise remediate sites that the state supervisor determines could pose a danger to life, health, water quality, wildlife, or natural resources if there is no operator determined by the supervisor to be responsible for remediation or who is able to respond." The primary source for funds in this account appear to be penalty assessments. In recent years, fund balances have been less than \$3m. Funding supports state operations of the Department of Conservation.	

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5	Mixed	California Competes grants program	\$120m for the current cycle, though based on review of their grant recipients, funding is not material for fossil fuels.	Fossil fuel businesses are eligible, but have not been significant recipients.	Yes			
5	Mixed	California competes tax credit	\$180m/year; \$1.4 billion awarded since June 2014. A review of all awardees indicates only \$1.2m in tax credits have gone to the oil and gas industry, less than 0.1%.	Fossil fuel businesses are eligible, but have not been significant recipients.	Yes			
5	Mixed	Geologic Energy Management Division (245) in Department of Conservation (3480)	Baseline funding for the division is covered by user fees on industry; supplemental funding for well closure is noted separately below and is a direct subsidy.	Oil and gas				
5	Mixed	Greenhouse Gas Reduction Fund (3228)	Unknown.	Primary source of proceeds is oil and gas; disbursements to wider range of activities.				
5	Mixed	Office of Environmental Health Hazard Assessment (3980)	Minimal	Multiple functions				
5	Mixed	Oil and Gas Environmental Remediation Account (3299)	Minimal	Oil and gas				

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5	Mixed	California Competes grants program	CA provided a worksheet version of all grantees.												
5	Mixed	California competes tax credit	Cal Competes website; full excel tables of awardees provided by the state.												
5	Mixed	Geologic Energy Management Division (245) in Department of Conservation (3480)	CA 23-24 budget, res 49, 51; CA LOA letter, 2021.11.23	https://lao.ca.gov/reports/2022/4508/oil-well-abandonment-remediation-013122.pdf											
5	Mixed	Greenhouse Gas Reduction Fund (3228)		https://esd.dof.ca.gov/funds/app/download/3228											
5	Mixed	Office of Environmental Health Hazard Assessment (3980)	CA LAO letter, 2021.11.23												
5	Mixed	Oil and Gas Environmental Remediation Account (3299)		https://esd.dof.ca.gov/funds/app/download/3299											

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5	Mixed	California Competes grants program												
5	Mixed	California competes tax credit												
5	Mixed	Geologic Energy Management Division (245) in Department of Conservation (3480)		89.6	188.2	172.6								
5	Mixed	Greenhouse Gas Reduction Fund (3228)												
5	Mixed	Office of Environmental Health Hazard Assessment (3980)												
5	Mixed	Oil and Gas Environmental Remediation Account (3299)	0	0.05	0.05									

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
5	Mixed (exploration and production, asset retirement)	Oil, Gas, and Geothermal Administrative Fund (3046)	State_CA	User fee	Charges levied on operators and owners of wells in California go into this fund and "shall be used exclusively for the support and maintenance of the department charged with the supervision of oil and gas. The proceeds may also be used by public entities, subject to appropriation by the Legislature, for all costs associated with well stimulation treatments and costs of the State Water Resources Control Board and regional water quality control boards as provided in Public Resources Code section 3401 (b)" (CA DOF fund 3046). For some reason, the expenditures from this fund presented in the budget were substantially lower than the expenditures noted in the Schedule 10 (summary of fund condition statements) for the same 2023-24 budget cycle. The monetary values listed here for 2022-24 are from the Schedule 10.	2
5	Mixed (exploration and production, asset retirement)	State Mining and Geology Board (2440) in Department of Conservation (3480)	State_CA	Direct expenditure	<p>The Board serves as a regulatory and policy body for the state's geology, geologic and seismologic hazards, conservation of mineral resources, and reclamation of mined lands. The Board is supported by California Geological Survey and the Division of Mine Reclamation which provides engineering, technical expertise, and support functions for certain reports, plans, and maps.</p> <p>The Board also serves as an appeals body for mining operations that have been issued notice of violation orders to comply, or administrative penalties and in cases where the Division of Mine Reclamation contests the adequacy of a local government's approval of a mine operation's financial assurance cost estimate.</p>	
5	Exploration and production, emissions	State Water Resources Control Board (3940), Oil and Gas Monitoring Program	State_CA	Direct expenditure	The Oil and Gas Monitoring Program was initiated in 2014 to evaluate potential impacts on California's limited groundwater resources from hydraulic fracturing activities. Its mission now also includes produced water associated with production activities, and water management using underground injection control (UIC) and produced water ponds. The Board receives some funding from the Oil, Gas and Geothermal Administrative Fund (\$14.4m in 2021/22, \$16.8m in 2022/23 and \$19.5m in 2023/24); however a detailed breakdown of specific funding, including from the general fund, associated with just oil and gas monitoring programs would require additional research.	
5	Mixed	Reduced tax rate on private equity carried interest	Federal	Tax expenditure	<p>This subsidy supports all private equity, hedge, or venture funding structures where general partners can take a large portion of their compensation in the form of equity in the investments, which is taxed at a much lower rate than income. These financial structures are widely used to fund oil and gas investments, including new partnerships, mergers and acquisitions, and potentially assets held by traded infrastructure funds as well. The scale of benefits from carried interest rules to the sector is not known at this point. The savings to all sectors from eliminating it have been estimated at \$1.4b/year, though this seems low given the scale of the private equity industry in the US.</p> <p>The Private Equity Stakeholder Project has tracked private equity investment in fossil fuels for some years. A 2020 review identified a number of investments into upstream and midstream oil and gas assets in California (PESP 2020), including California Resources Corporation (CRC), California's largest oil and gas producer. In addition to tax breaks, a concern over private equity ownership is diminished financial strength to cover long-term liabilities of operations relative to oil majors. Indeed, CRC declared bankruptcy in 2020 with \$5.2 billion in debt obligations and nearly \$1 billion in well-closure costs and obligations (Sierra, 2020). The oil industry, through the Western States Petroleum Association and the California Independent Petroleum Association, argued that all well closure obligations would be paid despite the bankruptcy (Nemec, 2020), and in this case the firm was restructured without shedding well closure liabilities.</p>	2

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5	Mixed (exploration and production, asset retirement)	Oil, Gas, and Geothermal Administrative Fund (3046)	This is a large fund with proceeds used primarily to cover state costs to oversee and regulate the sector. To evaluate any net subsidies, one would need to look at state fees on the sectors as a group and compare it to sector-related costs to the state. Any net proceeds to the state would then need to be compared to standard severance tax rates in other oil and gas producing states.	Oil, gas, and geothermal				
5	Mixed (exploration and production, asset retirement)	State Mining and Geology Board (2440) in Department of Conservation (3480)	Minimal. Some oil and gas-related activity, but a small budget overall, with much of that revenue coming from user fees or investments on fund balances.	Mining; likely mostly related to oil and gas.				
5	Exploration and production, emissions	State Water Resources Control Board (3940), Oil and Gas Monitoring Program	Likely small.	Oil and gas				
5	Mixed	Reduced tax rate on private equity carried interest	Unknown.	All private equity and venture capital investment.				

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5	Mixed (exploration and production, asset retirement)	Oil, Gas, and Geothermal Administrative Fund (3046)	CA 22-23 budget; CA 23-24 budget, Res-50; CA Schedule 10 2023-24 Budget, 15.	https://esd.dof.ca.gov/funds/app/download/3046											
5	Mixed (exploration and production, asset retirement)	State Mining and Geology Board (2440) in Department of Conservation (3480)	CA 23-24 budget, Res-49, 52, 53												
5	Exploration and production, emissions	State Water Resources Control Board (3940), Oil and Gas Monitoring Program	CA LOA letter, 2021.11.23; CA 23-24 budget, Res-61.	https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/											
5	Mixed	Reduced tax rate on private equity carried interest	https://www.npr.org/2022/08/03/1115218183/carried-interest-close-tax-loophole												

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5	Mixed (exploration and production, asset retirement)	Oil, Gas, and Geothermal Administrative Fund (3046)	80.4	115.5	136.3	151.9								
5	Mixed (exploration and production, asset retirement)	State Mining and Geology Board (2440) in Department of Conservation (3480)		1.4	1.6	1.6								
5	Exploration and production, emissions	State Water Resources Control Board (3940), Oil and Gas Monitoring Program												
5	Mixed	Reduced tax rate on private equity carried interest												

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
5	Mixed	Water's Edge election	State_CA	Tax expenditure	This provision in the CA tax code allows multinational companies with some operations in California to isolate their California activities as though it were a stand-alone taxpaying entity. More specifically, under "the water's edge provision, a business may elect to compute its California tax by reference to only the income and factors of a limited number of entities. In general, these entities include United States incorporated entities, the United State activities of foreign incorporated entities, and the activities of various foreign entities that are included in the federal consolidated return. The election is generally for a seven-year period" (Revenue and Taxation Code Sections 25110-25113). The allowance can greatly simplify tax reporting and make tax liabilities to the state more predictable; however, as noted by the large scale of estimated revenue losses, the provision may end up providing significant tax savings to benefiting entities. The allowance may also increase the ease by which multinational firms can use tax strategies with subsidiaries and transfer prices to reduce their tax base and shift profits to low-tax foreign jurisdictions.	Place holder
6	Asset retirement	Abandoned Mine Reclamation and Minerals Fund Subaccount, Mine Reclamation Account (3025)	State_CA	User fee	This fund targets only hard rock mines in California, so is not relevant to fossil fuels. Fees are imposed only on gold and silver extraction.	
6	Asset retirement	Division of Mine Reclamation (2435) in Department of Conservation (3480)	State_CA	Direct expenditure	This program regulates surface mining operations and monitors local lead agencies to ensure compliance with the Surface Mining and Reclamation Act of 1975. It assists cities, counties, state agencies, and mine operators in their efforts to reclaim mines and to address abandoned mine hazards. The state has an estimated 47,000 abandoned mines. Program seems mostly funded by the Surface Mining and Reclamation Account (0035) which holds funds (about \$5-6m/year) from mining on federal lands disbursed by the federal government to the state in line with the Surface Mining and Reclamation Act. Funding is primarily from federal royalties. Budget data represent annual expenditures, not amounts net of user fees.	
6	Mixed	Energy Resources Conservation and Development Commission (3360)	State_CA	Direct expenditure	The Energy Resources Conservation and Development Commission (Energy Commission) has wide-ranging activities including supply reliability, evaluating and minimizing negative impacts from energy development, data collection, research scoping and implementation, oversight of existing and new energy facilities, oversight of proper site closure, and development of standards and regulations supportive of its core mission of clean, safe, and reliable energy (CA 23-24 budget, RES-27)	2
6	Asset retirement	General fund subsidies to plug and abandon oil and gas wells in California, via CalGEM Geologic Energy Management Division	State_CA	Direct expenditure	<p>Many states collect fees from well operators to fund the proper closure of abandoned wells in the state. California is no exception. The Oil, Gas and Geothermal Administrative (OGGA) Fund receives revenues from assessment fees on operators; and the Hazardous and Idle-Deserted Well Abatement Fund funded by fees on operators of idle wells. However, collections from these funds greatly lag the liability associated with the state's backlog of abandoned wells. In each of the fiscal years 2022/23 and 2023/24, the state is directing \$50m in general funds to support oil and gas well plugging. This is a clear subsidy to the sector. Additional research would be needed to identify whether such transfers have been done in earlier years as well.</p> <p>Also of note is that expenditures from OGGA were capped at \$5m/year starting with the 2021/22 fiscal year. Given the scale of the backlog, it would be useful to know whether the cap was an effort to limit industry-funded well closures, effectively shifting the cost to the state general fund and federal subsidies now subsidizing this activity.</p>	1

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5	Mixed	Water's Edge election	Because oil and gas is an international industry with multinational presence within the state; and because the total revenue losses are very high, this provision has been left as a placeholder for potential future research.	Any multinational firm.	Yes			
6	Asset retirement	Abandoned Mine Reclamation and Minerals Fund Subaccount, Mine Reclamation Account (3025)	Not relevant	Hard rock minerals				
6	Asset retirement	Division of Mine Reclamation (2435) in Department of Conservation (3480)	Likely small.	May apply mostly to legacy coal mines.				
6	Mixed	Energy Resources Conservation and Development Commission (3360)	Overall funding to these research and oversight functions is billions per year, though the share directly supporting fossil energy and associated infrastructure would require substantial additional evaluation. While some user fees support this program budget, funding from the CA general fund is also very large (billions in 2022/23 and 2023/24).	All energy resources.				
6	Asset retirement	General fund subsidies to plug and abandon oil and gas wells in California, via CalGEM Geologic Energy Management Division	Big	Oil and gas	Yes			Significant subsidies in these two years; were transfers done in other years as well?

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5	Mixed	Water's Edge election	CA TE 2022-23, pp. 11												
6	Asset retirement	Abandoned Mine Reclamation and Minerals Fund Subaccount, Mine Reclamation Account (3025)	CA 22-23 budget, Res 55	https://esd.dof.ca.gov/funds/app/download/3025 https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000/3480FCS.pdf											
6	Asset retirement	Division of Mine Reclamation (2435) in Department of Conservation (3480)	CA 23-24 budget, res 49, 52	https://esd.dof.ca.gov/funds/app/download/0035 https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000/3480FCS.pdf											
6	Mixed	Energy Resources Conservation and Development Commission (3360)	CA 2023-24 budget, Res-27.												
6	Asset retirement	General fund subsidies to plug and abandon oil and gas wells in California, via CalGEM Geologic Energy Management Division		https://www.conservation.ca.gov/calgem/Pages/State-Abandonments.aspx											

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5	Mixed	Water's Edge election	3600	4200	4400	4800	5000							
6	Asset retirement	Abandoned Mine Reclamation and Minerals Fund Subaccount, Mine Reclamation Account (3025)	0.15	0.745	0.744									
6	Asset retirement	Division of Mine Reclamation (2435) in Department of Conservation (3480)		7.8	10.3	10.3								
6	Mixed	Energy Resources Conservation and Development Commission (3360)		1053.4	3629.3	2877.2								
6	Asset retirement	General fund subsidies to plug and abandon oil and gas wells in California, via CalGEM Geologic Energy Management Division		50	50									

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Cat Num	Production Stage	PolicyName	GovtLevel	Support Type	Description	Top priority categories for research and reform?
	Asset retirement	Inadequate financial assurance for refinery and bulk terminal asset retirement obligations	State_CA	Risk transfer	<p>Refineries are large scale, highly complex facilities with significant pollution-related challenges. They are similarly complex and expensive to close properly at the end of their service lives (see, for example, Goodin, 2020). The facilities in California are very old and often pre-date any environmental regulation. Contamination at the sites is well known. Although the state has actively regulated refinery sites, and requires some financial assurance to cover closure and post-closure costs, these assessments are likely far too low to ensure adequate funding to repurpose the site. Further, the forms of financial assurance, often a corporate guarantee, are at higher risk of not surviving a corporate bankruptcy.</p> <p>Financial Assurance is overseen by the California Department of Toxic Substances Control. In 2016, DTC provided detailed information on existing coverage amounts and forms in response to a specific request from the DTC Independent Review Panel operating at the time. The list of facilities included some, though not all, of the state's refineries. Given the age of this data, Earth Track requested an update from the California Board of Environmental Safety, which is the successor to the DTC Independent Review Panel. The Board chair redirected the request to the Public Records Coordinator, and the state was able to provide an update, including nearly 500 facilities from the EnviroStor database. This material may be helpful for a variety of work NRDC is doing.</p> <p>As with the earlier dataset, information is somewhat spotty. The state noted that entry was done by multiple officials over many years, so may not always be consistent. Further, it is not clear when, or if, data on financial assurance coverage has been updated since the initial entry into the database. The adequacy of coverage amounts and coverage quality warrant detailed analysis; shortfalls could result in material subsidies to oil markets served by the state as these facilities are sold or close. The Chevron refineries in both El Segundo and Richmond, for example, comprise a large share of total operating refining capacity in the state. All forms of financial assurance for these facilities rely on corporate guarantees; closure and post-closure guaranteed amounts total only \$16.5m for El Segundo and \$20.5m for Richmond. Tesoro Refining and Marketing Co in Carson is in the post-closure phase with bonding of \$33.6m, also a corporate guarantee. In all of these circumstances detailed analysis to evaluate whether the corporate guarantee flows to the corporate parent or is limited to the assets of the less well-capitalized subsidiary, would be important. Further, financial assurance amounts at many of these facilities are likely too low. Attorney Goodin noted to Reuters that "These cleanups are just enormously expensive, and companies basically never set aside enough money to fully remediate a site" (Kearney and Volcovici, 2021).</p>	1
6	Asset retirement	Insufficient bonding, existing onshore wells	State_CA	Risk transfer	<p>As of September 2020, the estimated liability to properly plug and abandon the existing stock of O&G wells in CA was \$6.4 billion according to detailed data compiled by Carbon Tracker. Of this, more than 40 percent was linked to wells that have been idle for more than 24 months, or are producing very low quantities of product as stripper wells. Revenues in these categories contribute little or nothing to funds needed to retire the wells. Surety bonds for CA wells have a face value of only 2% of the estimated closure liabilities, suggesting a large portion of these costs will end up on taxpayers.</p> <p>Analysis on CA wells conducted by CCST (2018:17) indicated that "a typical California oil and gas well has passed between about three different operators by the time it reaches ten years old." Generally, these transfers move wells to smaller and smaller operators. Although former operators are jointly liable for plugging and decommissioning costs of wells sold after 1996 under California law, CCST notes that recovering costs from previous operators is not easy and often expensive. CCST's analysis (2018:28) estimates the total liability to properly close the state's well stock at a lower \$5.2 billion, and the public cost of likely orphan wells at \$500m (2018:40). Additional research would be needed to evaluate the causes of variance, though past conversations with the Carbon Tracker team indicated that newer estimates of well closure costs have been larger than older ones, and that they continue to rise.</p>	1

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	Asset retirement	Inadequate financial assurance for refinery and bulk terminal asset retirement obligations	Large; this is an area where additional analysis would likely yield important insights on shortfalls.	Oil and gas fuel cycle facilities; chemical plants; plus some other industries.				
6	Asset retirement	Insufficient bonding, existing onshore wells	Big	Oil and gas	Yes			

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	Asset retirement	Inadequate financial assurance for refinery and bulk terminal asset retirement obligations	CA public records request response	https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000/3480FCS.pdf											
6	Asset retirement	Insufficient bonding, existing onshore wells	Carbon tracker ARO database, 9/20 update. CCST (2018).												

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	Asset retirement	Inadequate financial assurance for refinery and bulk terminal asset retirement obligations												
6	Asset retirement	Insufficient bonding, existing onshore wells												

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6	Asset retirement	Oil and Gas well plugging - offshore	State_CA	Direct expenditure	The California Lands Commission manages leases on submerged lands, which includes three miles out into the Pacific. Two recent sites, Rincon Island in Ventura County and Platform Holly in Santa Barbara County required substantial state funds for cleanup as bonding amounts were far too low. This included \$108.5 million over three years from the state's General Fund to plug and decommission the wells, as well as millions of dollars of funding that has been previously spent to maintain and monitor the wells prior to that point. (CCST 2018: 4).	1
6	Asset retirement	Federal subsidies to plug and abandon oil and gas wells in California	Federal	Direct expenditure	Well closure is a known cost of oil and gas operations, and supposed to be funded by well operators and owners, or in the case of defunct operators, via surety bonds and state orphan well funds (financed usually by fees on producers). The Bipartisan Infrastructure Law created a federally funding pool of \$4.7 billion to supplement other funding sources at the state level. California received a grant of \$25m in August 2022 with eligibility for an additional \$140m in future years (CA Conservation, 2023).	1
6	Asset retirement	US DOE management of the Naval Petroleum and Oil Shale Reserves	Federal	Direct expenditure	Funding addresses post-closure care, remediation, and post-employment medical benefits for workers associated with Naval Petroleum Rserve 1 in Elk Hills, CA. Spending is required by a 2008 agreement between the Department of Energy (DOE) and the California Department of Toxic Substances Control (DTSC). Funding may have been larger during the early years following the agreement.	
7	Consumption	CA Alternative Energy, exemption from sales and use taxes (combined state and local revenue foregone)	State_CA	Tax expenditure	Authorizes CA Alt Energy and Advanced Transportation Financing Authority to allocate exemptions from sales and use taxes on the purchase of tangible property used to support the areas of recycled feedstocks, advanced manufacturing and advanced transportation technologies. Original authority was capped at \$100m/year; the cap was increased by \$15m/year for CY22-24, with the incremental earmarked for lithium extraction, recovery and processing. (Public Resources Code Section 260003).	
7	Consumption	CA LIHEAP	State_CA	Direct expenditure	State implementation of federal grants through LIHEAP that helps residents afford heating and cooling, both on a recurring and crisis basis. Approximately 15% of funding is directed to weatherization. (CA Dept of Community Services & Development, 2023). Funding for FY2023 included an additional \$75m in federal money (CA LAO 2/9/23). Evaluation of low income energy programs would generally not focus on whether to keep them (as the benefits to health and welfare are well documented), but rather on ensuring they are reaching the right people and also whether there are opportunities to direct more funds to weatherization rather than fuel purchase support to extend the benefits of the subsidies over multiple years.	
7	Consumption	California Arrearage Payment Program (CAPP)	State_CA	Direct expenditure	Overseen by the Department of Community Services and Development, this program uses a combination of state and federal funds to help residential and commercial customers repay accrued debts to utilities incurred during the COVID-19 pandemic. Initial funding of \$1 billion from the federal government in the American Rescue Plan Act. This was augmented for FY2022-23 with \$1.2 in CA general funding through the CA Emergency Relief Fund. Of this, approximately \$650m will be used to pay down arrears and \$550m returned to the General Fund (CA LAO, 2/9/23). Because so much of the primary energy consumed in California remains fossil, this subsidy has the effort of supporting fossil fuels while also being a poverty-reduction measure. As with all consumption subsidies to energy users, the effectiveness of the targeting is key. This includes the mix of consumption versus end-use efficiency or demand management; and the leakage of support to customers who are not at the target levels of poverty. This is a short-term program, but were it to continue at the levels it has been funded at, much more analysis of the targeting would be warranted.	

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6	Asset retirement	Oil and Gas well plugging - offshore	Big	Oil and gas				
6	Asset retirement	Federal subsidies to plug and abandon oil and gas wells in California	Big	Oil and gas				Federal support should have been structured much more effectively to retain polluter pays principle and to incent audit and disclosure of abandoned sites by industry.
6	Asset retirement	US DOE management of the Naval Petroleum and Oil Shale Reserves	Small	Primarily oil	Yes			
7	Consumption	CA Alternative Energy, exemption from sales and use taxes (combined state and local revenue foregone)	Large, though share (if any) flowing to fossil-relevant technologies likely small.	Multiple sectors.	Yes; sunsets 1/1/26			
7	Consumption	CA LIHEAP	Large	All power, heating and cooling energy resources, of which the fossil share remains significant.				
7	Consumption	California Arrearage Payment Program (CAPP)	Large, though time-limited	All power, heating and cooling resources.				

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6	Asset retirement	Oil and Gas well plugging - offshore													
6	Asset retirement	Federal subsidies to plug and abandon oil and gas wells in California		https://www.doi.gov/pressreleases/biden-harris-administration-releases-final-guidance-new-orphaned-well-program											
6	Asset retirement	US DOE management of the Naval Petroleum and Oil Shale Reserves	DOE 2022 v3, PDF page 48; DOE 2022 state table, pp. 10, 11.	https://www.energy.gov/sites/default/files/2022-04/doe-fy2023-budget-volume-3-petroleum-reserves.pdf											
7	Consumption	CA Alternative Energy, exemption from sales and use taxes (combined state and local revenue foregone)	CA TE 2022-23, pp. 12, 58; CDTFA 2022, p. 4.												
7	Consumption	CA LIHEAP													
7	Consumption	California Arrearage Payment Program (CAPP)		https://lao.ca.gov/Publications/Report/4674											

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6	Asset retirement	Oil and Gas well plugging - offshore												
6	Asset retirement	Federal subsidies to plug and abandon oil and gas wells in California			25									
6	Asset retirement	US DOE management of the Naval Petroleum and Oil Shale Reserves	11	11	11									
7	Consumption	CA Alternative Energy, exemption from sales and use taxes (combined state and local revenue foregone)	95	89	94	96	98							
7	Consumption	CA LIHEAP			250									
7	Consumption	California Arrearage Payment Program (CAPP)	1000	650										

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7	Consumption	Diesel fuel used in farming and processing, exemption from sales and use taxes (combined state and local revenue foregone)	State_CA	Tax expenditure	Sales of diesel fuel are not subject to the 5 percent state sales and use tax rate (General Fund plus Local Revenue Fund 2011) when that fuel is consumed during the activities of a farming or food processing business. Farming business includes transporting farm products to the marketplace (Revenue and Taxation Code 6357.1). In other states, fuel tax exclusions for farm equipment are often predicated on the argument that the fuel taxes fund highways, and the farm exemptions are for off-road use of equipment that are not funded by the fuel tax. But the CA provision clearly includes road use to move product to marketplace. Only 603 returns claimed this deduction in 2021-22 (the value listed in year 2022 in this table), averaging more than \$53k each in tax savings.	2
7	Consumption	Energy resources surcharge	State_CA	User fee	The surcharge has been imposed on the consumption in California of electrical energy purchased from an electric utility since 1975. Every electric utility in California making energy sales to consumers must collect and remit to the state the amount of surcharge applicable to its consumers. Collected funds go into the Energy Resources Programs Account of the General Fund and is used for ongoing energy programs and projects deemed appropriate by the Legislature, including but not limited to, activities of the California Energy Commission (CEC). (CDTFA, accessed 20 Jan 2023). To some extent, this charge acts like a tax on electricity and offsets the revenue losses associated with the sales and use tax exemption to the sector. To assess the net tax or subsidy situation, a more detailed assessment of collections and fund flows would be needed. Gross collections are shown in the columns to the right.	2
7	Consumption	Exemption from fuel excise tax for selected consumers	State_CA	Tax expenditure	Sales tax does not apply to the federal excise tax on diesel fuel or aviation fuel when the purchaser certifies that they are entitled to either a direct refund or credit against their income tax for the federal excise tax paid. (Sections 6011 and 6012).	
7	Consumption	Exemption from sales and use tax for gas, electricity and water (combined state and local revenue foregone)	State_CA	Tax expenditure	Gas, electricity, and water delivered through mains, lines, or pipes are exempt from tax. Water sold in bulk quantities of 50 gallons or more and liquefied petroleum gas delivered for use in a residence is also exempt (Revenue and Taxation Code Section 6353). Targeting exemptions or direct support to poor customers in other ways can result in better price signals to utility consumers while still ensuring access to critical resources and services. California does tax electricity through its Energy Resources Surcharge, which goes into the Energy Surcharge fund and among other things helps to fund the California Energy Commission. Evaluation of the scale of collections and uses for this and related funds versus exemptions to the sector would be needed to assess where there is a residual net subsidy. It is likely there is, as the Energy resources surcharge collects less than \$1b/year, versus \$6 billion in revenue losses shown in this line item from exempting gas, electricity and water from sales and use tax.	1
7	Consumption	Exemption from sales and use tax, cogeneration	State_CA	Tax expenditure	The sale of exhaust steam, steam waste, heat or resultant energy produced by cogeneration technology, as defined, is exempt from sales and use taxes (Section 6353). Cogen often involves fossil-fuel fired equipment.	
7	Consumption	Exemption from sales and use tax, telephone lines and poles	State_CA	Tax expenditure	Telephone and telegraph lines, electrical transmission and distribution lines, and the poles, towers, or conduit by which they are supported or in which they are contained are excluded by statute from the definition of tangible personal property when sold in place. (Revenue and Taxation Code Section 6016.5)	
7	Consumption	Exemption from sales and use taxes for electric power generation and distribution equipment	State_CA	Tax expenditure	Beginning January 1, 2018, and before July 1, 2030, sales, purchases, and leases of electric power generation and distribution equipment are exempt from 3.9375 percent (3.9375%) of the sales and use tax rate when sold to or purchased by certain qualifying electric power generators or distributors for use primarily in electric power generation or production, or storage and distribution activities (Section 6377.1)	

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7	Consumption	Diesel fuel used in farming and processing, exemption from sales and use taxes (combined state and local revenue foregone)	Moderate	Diesel fuel				
7	Consumption	Energy resources surcharge	Unknown.	Electric utilities				2022 is actual; 2023 and 2024 are estimated revenue values
7	Consumption	Exemption from fuel excise tax for selected consumers	Unknown.	Oil				
7	Consumption	Exemption from sales and use tax for gas, electricity and water (combined state and local revenue foregone)	Very large, though analysis of any offsetting charges on gas and electricity would be needed to estimate the net subsidy value.	Oil, gas, electricity, water				
7	Consumption	Exemption from sales and use tax, cogeneration	Likely small.	Includes all cogen				
7	Consumption	Exemption from sales and use tax, telephone lines and poles	Likely small.	Telecoms as well as electric power.				
7	Consumption	Exemption from sales and use taxes for electric power generation and distribution equipment	Large	Any power generation or distribution equipment	Yes	Tax exemption set to terminate July 1, 2030		

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7	Consumption	Diesel fuel used in farming and processing, exemption from sales and use taxes (combined state and local revenue foregone)	CA TE Budget 2022-23, pp. 12, 60.												
7	Consumption	Energy resources surcharge	CA Budget, revs to excluded funds	https://ebudget.ca.gov/2023-24/pdf/BudgetSummary/BS_SCH12B.pdf											
7	Consumption	Exemption from fuel excise tax for selected consumers	CDTFA 2022, p. 20.												
7	Consumption	Exemption from sales and use tax for gas, electricity and water (combined state and local revenue foregone)	CA TE Budget 2022-23, pp. 12, 53.												
7	Consumption	Exemption from sales and use tax, cogeneration	CDTFA 2022, p. 4.												
7	Consumption	Exemption from sales and use tax, telephone lines and poles	CDTFA 2022, p. 50.												
7	Consumption	Exemption from sales and use taxes for electric power generation and distribution equipment	CDTFA 2022, p. 18												

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7	Consumption	Diesel fuel used in farming and processing, exemption from sales and use taxes (combined state and local revenue foregone)	32	49	52	52	54							
7	Consumption	Energy resources surcharge		769	913	917								
7	Consumption	Exemption from fuel excise tax for selected consumers	Data not available											
7	Consumption	Exemption from sales and use tax for gas, electricity and water (combined state and local revenue foregone)	6000	6197	6304	6412	6523							
7	Consumption	Exemption from sales and use tax, cogeneration	Data not available											
7	Consumption	Exemption from sales and use tax, telephone lines and poles	Data not available											
7	Consumption	Exemption from sales and use taxes for electric power generation and distribution equipment		51.5										

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7	Consumption	Exemption from sales and use taxes for fuel sold to common carriers (combined state and local revenue foregone)	State_CA	Tax expenditure	<p>Sales of fuel and petroleum products to air common carriers for international flights are exempt from tax (Revenue and Taxation Code Section 6357.5) The stated objective of this exemption was to put domestic fuel producers on equal footing with foreign producers who under federal law are exempt from state sales taxes on airline fuel used in international travel.</p> <p>Fuel and ticket taxes in aviation are often earmarked to build, maintain, and operate capital infrastructure related to air flight. As the revenue losses are large, how are these funding shortfalls made up? Transfers from general revenues could have the effect of subsidizing the most carbon-intensive form of transport.</p>	2
7	Consumption	Exemption from sales and use taxes for the transfer of title to pollution control infrastructure	State_CA	Tax expenditure	<p>The transfer of title to property constituting any project or pollution control facility by the California Pollution Control Financing Authority is not a "sale" or "purchase" for purposes of sales and use tax when the transfer or lease is made pursuant to certain provisions of the Health and Safety Code. (Section 6010.10)</p>	
7	Consumption	Fuel tax exemption for aircraft jet fuel used by common carriers and the military	State_CA	Tax expenditure	<p>Air common carriers engaged in the business of transporting persons or property for compensation under certification of public necessity by the state, national, or any foreign government, persons engaged in the business of constructing or reconstructing aircraft, and the United States armed forces are exempt from the tax on aircraft jet fuel (Revenue and Taxation Code 7389). This is distinct from the more general tax exemption for aviation fuel used in international flights discussed elsewhere.</p> <p>Activities by one government entity are often treated as tax-exempt by other levels of government. Where the taxes act as user fees to fund related infrastructure or sector-specific remediation, the exemptions can be problematic because all vehicles -- regardless of the tax status of their owner -- are contributing to the need to repair existing infrastructure or build new.</p>	
7	Consumption	Fuel tax exemption for fuel used by transit districts and schools	State_CA	Tax expenditure	<p>Diesel fuel purchased by certain public transit agencies, school districts, and common carriers is taxed at a reduced rate of 1 cent per gallon (Revenue and Taxation Code Sections 8655, 60039, and 60502.2). This type of exemption is sometimes granted because the vehicles are government funded or non-profit; however, the vehicles are still using and degrading roads that need to be funded for upkeep. Thus, the reduction, rather than full elimination, of fuel taxes for these groups is interesting.</p>	
7	Consumption	Low carbon fuel standards	State_CA	Induced transfer	<p>Like the Renewable Portfolio Standard, California's Low Carbon Fuel Standard (LCFS) creates an induced transfer between producers of a targeted non-standard motor fuel sold at an above-market price and consumers. The LCFS established a trading mechanism designed to reduce the CO2 intensity of the State's fuel mix using a competitive system between options based on state regulatory criteria on specific options. Those options have historically included subsidies via the LCFS to some fossil fuels, including fossil CNG, fossil LNG. Additional research would be needed to evaluate whether any flows to electricity, renewable diesel, and alternative aviation fuels are also in part supporting fossil fuels.</p> <p>In January 2019, a Carbon Capture and Sequestration (CCS) Protocol was agreed for the LCFS. This allows transportation fuels, including fossil fuels, to earn LCFS credits if their lifecycle emissions have been reduced through CCS. This included processes sequestering carbon on shore, in depleted oil and gas reservoirs, or in reservoirs used for enhanced oil recovery (CARB 2018). However, a state ban on CO2-EOR was enacted in 2022, which appears to remove that option under LCFS (Grove and Peridas 2023: 24). Capture facilities generate the LCFS credits for CCS projects, although the associated storage facility must also be a co-applicant (they do not need to be co-located.) Direct air capture facilities do not need to be located in the State to generate credits – they can be anywhere in the world – but must comply with the CCS Protocol, including monitoring of CO2 storage for up to 100 years. (IEA 2021).</p> <p>The state subsidy through LCFS will be additive to large federal subsidies to CCUS and residual subsidies to fossil fuels and related fossil fuel infrastructure.</p>	1

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7	Consumption	Exemption from sales and use taxes for fuel sold to common carriers (combined state and local revenue foregone)	Potentially large	Oil				
7	Consumption	Exemption from sales and use taxes for the transfer of title to pollution control infrastructure	Unknown.	Would apply to a variety of pollution control investments, not just in fossil fuels.				
7	Consumption	Fuel tax exemption for aircraft jet fuel used by common carriers and the military						
7	Consumption	Fuel tax exemption for fuel used by transit districts and schools						
7	Consumption	Low carbon fuel standards	Likely to grow over time; current levels low or zero. Current LCFS carbon credits are worth about \$67/ton as of early March 2023; this is down from close to \$200/ton two years ago (NESTE 2023). However, program amendments being considered by CARB would cause these values to surge to more than \$450/MT in 2030 per CARB estimates before declining again (Grove and Peridas 2023: 12). This would be in addition to 45Q tax credits at the federal level.	A wide range of transport drive train technologies; CCS protocol will more centrally benefit fossil fuels.				

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7	Consumption	Exemption from sales and use taxes for fuel sold to common carriers (combined state and local revenue foregone)	CA TE Budget 2022-23, p. 12.												
7	Consumption	Exemption from sales and use taxes for the transfer of title to pollution control infrastructure	CDTFA 2022, pp. 9, 46.												
7	Consumption	Fuel tax exemption for aircraft jet fuel used by common carriers and the military	CA TE Budget 2022-23, pp. 13, 69.												
7	Consumption	Fuel tax exemption for fuel used by transit districts and schools	CA TE Budget 2022-23, pp. 13, 69.												
7	Consumption	Low carbon fuel standards													

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7	Consumption	Exemption from sales and use taxes for fuel sold to common carriers (combined state and local revenue foregone)	229	491	525	561	823							
7	Consumption	Exemption from sales and use taxes for the transfer of title to pollution control infrastructure	Data not available											
7	Consumption	Fuel tax exemption for aircraft jet fuel used by common carriers and the military	23	26	26	27	27							
7	Consumption	Fuel tax exemption for fuel used by transit districts and schools	17	17	17	17	17							
7	Consumption	Low carbon fuel standards												

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7	Consumption	One-year diesel fuel sales tax pause	State_CA	Tax expenditure	Sales of diesel fuel are exempted from the 3.9375-percent General Fund sales tax rate from October 1, 2022 to September 30, 2023. (Revenue and Taxation Code Section 6357.4) The hundreds of millions in lost revenues, normally used to fund transportation purposes, will come from the general fund instead.	2
7	Consumption	Reduced sales tax rate on gasoline	State_CA	Tax expenditure	Gasoline in California faces a current sales tax of 2.25%, versus 7.25% on other goods and services. This implies a large subsidy, though gasoline also pays an excise tax of \$0.539 per gallon making the evaluation more complicated. State transportation infrastructure is normally funded via fuel taxes and tolls. The motor fuels taxes are most often based on volume (e.g., an excise tax), value (e.g., a sales tax) or a mix of both (the approach used in California). Regardless of the mix, if residual deficits in funding to build, maintain, and repair the infrastructure remain, one can view the fuel taxes as being too low. This is the case even within California, which has one of the highest total fuel taxes in the country; indeed, taxes on diesel, gasoline and highway use collected \$8.5 billion during FY21/22 for transport and highway uses (CDTFA 2023b). California's State Highway System Management Plan found annual funding deficits of \$6.2 billion in their 2021 report, and a lower \$5.0 billion in their just-released draft 2023 report (Caltrans 2021: 6, 2023: 6). A more detailed review would be needed to identify particular infrastructure types driving the shortfalls, and also to evaluate funding shortfalls associated with rail, water, and air transport modes which are also often funded using taxes on fuels consumed by carriers in those sectors.	2
7	Refining and conversion	Renewable Portfolio Standards	State_CA	Induced transfer	Renewable Portfolio Standards are a policy instrument viewed as an "induced transfer." Statutory requirements establish market carve-outs for specifically-targeted resources and allow those resources to enter the marketplace even at prices above the market clearing price absent this policy. The result is a transfer between consumers (who pay above-market prices for the power) and producers (who earn that incremental price and therefore can bring to market technologies that are not yet fully competitive). In some states, eligibility criteria for the RPS allow fossil fuel resources (such as waste coal) to participate. California has allowed some marginal resources such as methane from farms and landfills (FWW 2019), biomass black liquor and conversion of municipal solid waste (CEC 2023c), all situations where large industries should simply have managed their own pollutants without an RPS subsidy. However, At present, California does not seem to allow fossil fuel resources within the RPS (CEC 2017, CEC 2023c). Should modifications begin to allow fossil resources with associated carbon capture to qualify, this issue should be revisited.	
7	Consumption	Sales and use tax exemption for FF used by water common carriers	State_CA	Tax expenditure	Sale of fuel and petroleum products is exempt from sales and use tax when sold to a water common carrier for immediate shipment outside the state (Revenue and Taxation Code Section 6385). Unlike the aviation exemptions that are limited to trips outside of the United States, this exemption seems to include waterborne commerce serving other US states. Since fuel taxes on ships and boats are often used to fund waterborne shipping related infrastructure; and since there are widely deployed methods for truckers to pay fuel taxes that get allocated across states based on their actual travel patterns using GPS transponders, a full exemption here doesn't seem to make sense. This would particularly be true if there are residual shortfalls in infrastructure funding that are shifted onto general taxpayers.	2

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7	Consumption	One-year diesel fuel sales tax pause	Large, but time-limited.	Diesel fuel				
7	Consumption	Reduced sales tax rate on gasoline	Large. The shortfalls in highway funding relate not just to tax levels on gasoline, but also those applied to other motor fuels including diesel, biofuel blends, and vehicle charges on electric vehicles.	Primarily gasoline.				
7	Refining and conversion	Renewable Portfolio Standards	None	Does not seem to allow any fossil-based technologies.				
7	Consumption	Sales and use tax exemption for FF used by water common carriers	Large	Oil	Yes, sunsets 1/1/24			State sales and use tax expenditure rept (p.12) lists rev loss (ostensibly for 2022) at \$53m, lower than what is shown here.

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7	Consumption	One-year diesel fuel sales tax pause	CA TE 2022-23, pp. 12, 64.												
7	Consumption	Reduced sales tax rate on gasoline		https://www.cdtfa.ca.gov/taxes-and-fees/sales-tax-rates-for-fuels.htm											
7	Refining and conversion	Renewable Portfolio Standards													
7	Consumption	Sales and use tax exemption for FF used by water common carriers	CA TE 2022-23, pp. 12, 60.												

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7	Consumption	One-year diesel fuel sales tax pause	0	0	273	112	0							
7	Consumption	Reduced sales tax rate on gasoline												
7	Refining and conversion	Renewable Portfolio Standards												
7	Consumption	Sales and use tax exemption for FF used by water common carriers	50	83	62	32	0							

Title	Link (all live as of 24 August 2023)
AB (2022). Assembly Bill 205 of the California Assembly, "Energy," approved by the Governor 30 June 2022.	https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB205
Achakulwisut, Ploy, Peter Erickson and Doug Koplow (2021). "Effect of subsidies and regulatory exemptions on 2020–2030 oil and gas production and profits in the United States," <i>Environmental Research Letters</i> , 29 July.	https://iopscience.iop.org/article/10.1088/1748-9326/ac0a10
AG Comments (2023). The Attorneys General of California, New Mexico, Colorado, Connecticut, Maryland, New Jersey, New York and Oregon, "Comments on the Proposed "Waste Prevention, Production Subject to Royalties, and Resource Conservation" Rule, 87 Fed. Reg. 73,588, Regulation Identifier Number: 1004–AE79," to Laura Daniel-Davis, Principal Deputy Assistant Secretary for Land and Minerals Management, U.S. Department of the Interior, 30 January.	https://oag.ca.gov/system/files/attachments/press-docs/BLM%20Waste%20Prevention%20Rule%20Multistate%20Comment%20FINAL.pdf
AK DOR (2022). Alaska Tax Division, Department of Revenue, "Annual Report 2022."	https://tax.alaska.gov/programs/documentviewer/viewer.aspx?1779r
Alexander, Ann (2022). "California Refiners' Price Gouging: The Worst Whodunit Ever," NRDC export blog, 14 November.	https://www.nrdc.org/experts/ann-alexander/california-refiners-price-gouging-worst-whodunit-ever
Biesecker, Michael and Wieffering, Helen (2022). "Hidden Menace: Massive methane leaks speed up climate change," AP, 28 July.	https://apnews.com/article/science-texas-trending-news-climate-and-environment-0eb6880f7c4532a845155a3bd44c2e4b
BLM (2022). US Bureau of Land Management, "Instruction Memorandum: Impacts of the Inflation Reduction Act of 2022 (Pub. L. No. 117-169) to the Oil and Natural Gas Leasing Program," 21 November.	https://www.blm.gov/policy/im-2023-008
BLM (2023). US Bureau of Land Management, "California Oil and Gas," accessed 7 February	https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/about/california
BLM (2023b). US Bureau of Land Management. "General Oil and Gas Leasing Instructions," accessed 7 February.	https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/general-leasing
Bucks, Dan (2019). "A Fair Return for the American People: Increasing Oil and Gas Royalties from Federal Lands," witness at a hearing on <i>Fossil Fuel Development: Protecting Taxpayers and Eliminating Industry Giveaways</i> held by the House Natural Resources Subcommittee on Energy and Mineral Resources of the House Committee on Natural Resources, 24 September.	https://www.congress.gov/116/meeting/house/109987/witnesses/HHRG-116-II06-Wstate-BucksD-20190924-SD002.pdf
CA Budget (2022). Schedule 12B at 2023-24 Governor's Budget, Revenues to Excluded Funds	https://ebudget.ca.gov/2023-24/pdf/BudgetSummary/BS_SCH12B.pdf
CA Budget (2022a). California Department of Finance, "2022-23 Governor's Budget: Natural Resources," released 10 January.	https://ebudget.ca.gov/2022-23/pdf/GovernorsBudget/3000.pdf
CA Budget (2023). California Department of Finance, "2023-24 Governor's Budget: Fund Conditions," index page.	https://ebudget.ca.gov/budget/2023-24/#/FundIndex
CA Budget (2023). California Department of Finance, "2023-24 Governor's Budget: Natural Resources," released 10 January.	https://ebudget.ca.gov/2023-24/pdf/GovernorsBudget/3000.pdf
CA budget schedule 10 (2022). "Schedule 10 at 2023-24 Governor's Budget: Summary of Fund Condition Statements."	https://ebudget.ca.gov/2023-24/pdf/BudgetSummary/BS_SCH10.pdf

Title	Link (all live as of 24 August 2023)
CA Conservation (2023). California Department of Conservation, "State Oil and Well Plug and Abandonments," accessed 6 March.	https://www.conservation.ca.gov/calgem/Pages/State-Abandonments.aspx
CA Department of Community Services and Development (2023). "Low Income Home Energy Assistance Program," accessed 26 January.	https://www.csd.ca.gov/pages/liheaprogram.aspx
CA Department of Conservation (2023). "Assessment Process: Oil and Gas Assessment Rate per Fiscal Year," accessed 20 February.	https://www.conservation.ca.gov/calgem/for_operators/Pages/Assessments.aspx
CA DOF (2022). California Department of Finance. "Budget Change Proposal - Cover Sheet, Energy Reliability, Relief and Clean Energy Investments FY 2022-23".	https://esd.dof.ca.gov/Documents/bcp/2223/FY2223_ORG3360_BCP6164.pdf
CA LAO (2/9/23). California Legislative Analyst's Office, "The 2023-24 Budget: Department of Community Services and Development, 9 February.	https://lao.ca.gov/Publications/Report/4674
CA LAO letter (2021). California Legislative Analyst's Office, letter from Gabriel Patek and Kelly Martin Bosler to Rob Bonta, Attorney General, 23 November.	https://lao.ca.gov/ballot/2021/210538.pdf
CA sales and use (2022). California Department of Tax and Fee Administration, <i>Sales and Use Taxes: Tax Expenditures</i> , December.	https://www.cdtfa.ca.gov/formspubs/pub61.pdf
CA State Board of Equalization (2018). "California Property Tax: An Overview," December.	https://www.boe.ca.gov/proptaxes/pdf/pub29.pdf
CA State Lands Commission (2023). "Information on State Tidelands Oil & Gas Leases," accessed 20 February.	https://www.slc.ca.gov/oil-and-gas/information-on-state-tidelands-oil-gas-leases/
CA TE report, 2022-23. "Tax Expenditure Report 2022-23," California Department of Finance.	https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Revenue_and_Taxation/TaxExpenditureReport.pdf
CalCompetes Grants program, California Franchise Tax Board, program overview (accessed 7 January 2023) and excel dataset of awards.	https://www.ftb.ca.gov/about-ftb/newsroom/tax-news/january-2022/california-competes-grant-program.html
CalCompetes tax credit program, California Franchise Tax Board, program overview (accessed 7 January 2023) and excel dataset of tax credit grantees.	https://business.ca.gov/california-competes-tax-credit/
CalEPA (2015). California Environmental Protection Agency, letter from Matthew Rodriguez, Secretary for Environmental Protection to Anita Marangoly George, Senior Director, Energy and Extractives Global Practice, The World Bank Group, 28 December.	https://www.energy.ca.gov/sites/default/files/2019-12/2015-12-28_CalEPA_Letter_to_The_World_Bank_Group_Support_of_Zero_Routine_ada.pdf
California State Land Commission (2019). "The State Lands Commission terminated three offshore oil and gas leases and a pipeline right of way lease, press release, 28 June.	https://www.slc.ca.gov/oil-and-gas/the-state-lands-commission-terminated-three-offshore-oil-and-gas-leases-and-a-pipeline-right-of-way-lease-today/
Caltrans (2021). California Department of Transportation, "2021 State Highway System Management Plan," June 1.	https://dot.ca.gov/-/media/dot-media/programs/asset-management/documents/2021-shsmp-final-10-06-21-a11y.pdf
Caltrans (2023). California Department of Transportation, "DRAFT 2023 State Highway System Management Plan," 8 February.	https://dot.ca.gov/-/media/dot-media/programs/asset-management/documents/2023_shsmp_draft_02-09-2023_1000.pdf
CARB (2018). California Air Resources Board, "Carbon Capture and Sequestration Protocol under the Low Carbon Fuel Standard," 13 August.	https://ww2.arb.ca.gov/sites/default/files/2020-03/CCS_Protocol_Under_LCFS_8-13-18_ada.pdf

Title	Link (all live as of 24 August 2023)
CARB (2022). California Air Resources Board, "Major Sources of Crude Supplied to California," December update.	https://ww2.arb.ca.gov/sites/default/files/2022-12/fig8_0.xlsx
Carbon Tracker ARO Portal, state profiles as of September 2020, accessed 9 January 2023.	https://carbontracker.org/aro-portal-state-profiles/
CCST (2018). California Council on Science and Technology, "Orphan Wells in California: An Initial Assessment of the State's Potential Liabilities to Plug and Decommission Orphan Oil and Gas Wells," November.	https://ccst.us/wp-content/uploads/CCST-Orphan-Wells-in-California-An-Initial-Assessment.pdf
CCST phase 2 (2019). California Council on Science and Technology, "An Assessment of Oil and Gas Water Cycle Reporting in California: Evaluation of Data Collected Pursuant to California Senate Bill 1281, Phase 2 Report," August. Not released until November 2021.	https://ccst.us/wp-content/uploads/CCST-SB-1281-Phase-II-Full-Report-FINAL.pdf
CDTFA (2023). California Department of Tax and Fee Administration, "Energy Resources	https://www.cdtfa.ca.gov/taxes-and-fees/energy-res-surcharge-electrical.htm
CDTFA (2023b). California Department of Tax and Fee Administration, Special Fund Revenue	https://www.cdtfa.ca.gov/dataportal/dataset.htm?url=AdminSumRevenTaxes
CEC (2017). California Energy Commission, RPS Eligibility Guidebook, Ninth Edition Revised, 27 April.	https://efiling.energy.ca.gov/getdocument.aspx?tn=217317
CEC (2023). California Energy Commission, "California's Oil Refineries," accessed 7 February.	https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries
CEC (2023b). California Energy Commission, "California's Terminal Facilities," accessed 2 March.	https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-terminal-facilities
CEC (2023c). California Energy Commission, "California's Renewables Portfolio Standard (RPS) Public Search Options," accessed 24 August 2023.	https://rps.energy.ca.gov/Pages/Search/SearchApplications.aspx
Cocklin, Jamison (2022). "U.S. Export-Import Bank May Help More LNG Terminals Get Built," Natural Gas Intelligence, 14 April.	https://www.naturalgasintel.com/u-s-export-import-bank-may-help-more-lng-terminals-get-built/
Cox, John (2022). "State welcomes federal dollars for helping plug orphan oil wells," <i>The Bakersfield Californian</i> , 24 April.	https://www.bakersfield.com/news/state-welcomes-federal-dollars-for-helping-plug-orphan-oil-wells/article_b33f4026-c65b-11ec-9c3e-b35a96afe5d2.html
CSG (2022). Council of State Governments, "The Book of the States," 2021 Edition, Volume 53.	https://www.nga.org/wp-content/uploads/2022/10/CSG-book-of-the-states-2021.pdf
Danforth, Evelyn (2021). "Proposition 13, Revisited," <i>Stanford Law Review</i> , V. 73, February 2021.	https://review.law.stanford.edu/wp-content/uploads/sites/3/2021/02/Danforth-73-Stan.-L.-Rev.-511.pdf
DOE (2022). US Department of Energy, Office of Fossil Energy. "California Natural Gas Flaring and Venting Regulations," June.	https://www.energy.gov/sites/default/files/2022-06/2022-california-state-profile_0.pdf
EIA (2022). "Table CT1. Energy Consumption Estimates for Selected Energy Sources in Physical Units, 1960-2020, Alaska," December update.	https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_use/total/use_tot_AKa.html&sid=AK
EIA (2023). US Energy Information Administration, "California Federal Offshore Crude Oil Estimated Production from Reserves," accessed 7 February.	https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RCCR10R5F_1&f=A
EIA (2023a). US Energy Information Administration, "Natural Gas Vented and Flared," accessed 1 March.	https://www.eia.gov/dnav/ng/NG_SUM_LSUM_A_EPG0_VGV_MMCF_A.htm

Title	Link (all live as of 24 August 2023)
EIA (2023b). US Energy Information Administration, "Natural Gas Gross Withdrawals and Production," accessed 1 March.	https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_a.htm
EIA (2023c). Alaska Field Production of Crude Oil, accessed 25 January.	https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPAK2&f=A
FracTracker (2022). FrackTracker Alliance, "FracTracker Finds Widespread Hydrocarbon Emissions from Active & Idle Oil and Gas Wells and Infrastructure in California," 22 August.	https://www.fracktracker.org/2022/08/fracktracker-finds-widespread-hydrocarbon-emissions-from-active-idle-oil-and-gas-wells-and-infrastructure-in-california/
Fuhrmann, Lisa (2022). <i>Crossing the Fenceline: Critical Reforms to California's Petroleum Refinery Emissions Monitoring Law</i> , Earthjustice	https://earthjustice.org/sites/default/files/files/fenceline_2022.pdf
FWW (2019). Food and Water Watch, "California Leads: How to Break Fossil Fuel Dependence in the Golden State," September.	https://www.foodandwaterwatch.org/wp-content/uploads/2021/03/rpt_1908_ca-newsom-web.pdf
GAO (2022). US Government Accountability Office, Decarbonization Status, Challenges, and Policy Options for Carbon Capture, Utilization, and Storage, GAO-22-105274, September.	https://www.gao.gov/assets/gao-22-105274.pdf
Goodin, Andrea (2020). Earthjustice, "Comments Letter on Financial Responsibility Requirements Under CERCLA Section 108(b) for Facilities in the Petroleum and Coal Products Manufacturing Industry," to Charlotte Mooney, US EPA, Office of Resource Conservation and Recovery, 21 February.	Provided by author.
Greig, Chris and Pascale, Andrew (2021). Princeton's Net-Zero America study - Annex I: CO2 Transport and Storage Infrastructure transition analysis, 6 August.	https://netzeroamerica.princeton.edu/img/NZA%20Annex%20I%20-%20CO2%20transport%20&%20storage.pdf
Gross, Liza (2022). "A California Water Board Assures the Public that Oil Wastewater Is Safe for Irrigation, But Experts Say the Evidence Is Scant," <i>Inside Climate News</i> , 6 February.	https://insideclimatenews.org/news/06022022/a-california-water-board-assures-the-public-that-oil-wastewater-is-safe-for-irrigation-but-experts-say-the-evidence-is-scant/
Gross, Liza (2022b), "Why Did California Regulators Choose a Firm with Ties to Chevron to Study Irrigating Crops with Oil Wastewater?," <i>Inside Climate News</i> , 27 February.	https://insideclimatenews.org/news/27022022/california-produced-water-gsi-chevron-kern-county/
Gross, Liza and Aldhous, Peter (2022). "Drought-Wracked California Allows Oil Companies to Use High-Quality Water. But Regulators' Error-Strewn Records Make Accurate Accounting Nearly Impossible," <i>Inside Climate News</i> , 18 September.	https://insideclimatenews.org/news/18092022/drought-wracked-california-allows-oil-companies-to-use-high-quality-water-but-regulators-error-strewn-records-make-accurate-accounting-nearly-impossible/
Grove, Benjamin and Peridas, George (2023). "Sharing the Benefits: How the Economics of Carbon Capture and Storage Projects in California Can Serve Communities, the Economy, and the Climate," May. Lawrence Livermore National Laboratory, LLNL-TR-848983	https://gs.llnl.gov/sites/gsl/files/2023-05/ca-ccs-economic-study-report.pdf
Hope, Lawrence (2002). The Evolution of Security at California's Marine Oil Terminal," Marine Facilities Division of the California State Lands Commission.	https://www.slc.ca.gov/wp-content/uploads/2018/08/PF2002-Homeland-Evolution.pdf
Iak, Matthew (2021). "(Missed) Opportunity Zones – Why Investors Should Take Note," <i>Oilman Magazine</i> , 3 September.	https://oilmanmagazine.com/article/missed-opportunity-zones-why-investors-should-take-note/

Title	Link (all live as of 24 August 2023)
Idaho Department of Lands (2020). "Research for Rulemaking Docket 20-0302-2001: Corporate Guarantees and Self-Insurance as Financial Assurance, 10 July.	https://www.idl.idaho.gov/wp-content/uploads/sites/2/2020/07/Corporate-Guarantee-Info_2020_07.pdf
IEA (2021). International Energy Agency. "California Low Carbon Fuel Standard," last updated 12 October. Accessed 11 January 2023.	https://www.iea.org/policies/11671-california-low-carbon-fuel-standard
JCT (2022). US Joint Committee on Taxation, "Estimates Of Federal Tax Expenditures For Fiscal Years 2022-2026," December.	https://www.jct.gov/publications/2022/jcx-22-22/
Kearney, Laila and Volcovici, Valerie (2021). "150 years of spills: Philadelphia refinery cleanup highlights toxic legacy of fossil fuels," <i>Reuters</i> , 16 February.	https://www.reuters.com/article/us-usa-energy-refinery-cleanup-insight/150-years-of-spills-philadelphia-refinery-cleanup-highlights-toxic-legacy-of-fossil-fuels-idUSKBN2AG12O
LA EDC (2019). Los Angeles Economic Development Corporation. <i>Oil & Gas In California: The Industry, Its Economic Contribution and User Industries at Risk</i> , July. Funded by the Western States Petroleum Association.	https://laedc.org/wpcms/wp-content/uploads/2022/08/LAEDC_WSPA_FINAL_20190814.pdf
LA Times Editorial Board (2022). "Editorial: Gov. Newsom's plan to prevent power outages has a big downside: fossil fuels," <i>Los Angeles Times</i> , 24 June.	https://www.latimes.com/opinion/story/2022-06-24/california-electricity-reliability-reserve
Miller, Jeremy (circa 2011), "The Colonization of Kern County," Orion Magazine.	https://orionmagazine.org/article/the-colonization-of-kern-county/
Nemec, Rich (2020). "California Resources Bankruptcy Said Unlikely to Impact Abandoned Well Cleanup," Natural Gas Intel, 12 October.	https://www.naturalgasintel.com/california-resources-bankruptcy-said-unlikely-to-impact-abandoned-well-cleanup/
NESTE (2023). "California Low Carbon Fuel Standard Credit price," accessed 6 March.	https://www.neste.com/investors/market-data/lcfs-credit-price#bd671848
NRDC (2022). Merrian Borgeson and Victoria Rome, Natural Resources Defense Council, "OPPOSE UNLESS AMENDED: Opposition to DWR investments and project 'certification' in the Energy Trailer Bills (AB 205/SB 122)," letter submitted to Governor Gavin Newsome and key Congressional members, 29 June.	https://drive.google.com/file/d/1t2pKMs3ZZdC_QuLqZ_RhPve29LKCiQRM/view
Opportunity DB (2023). The Opportunity Zones Database, "List of Kern County, California Opportunity Zones & OZ Funds," accessed 7 February.	https://opportunitydb.com/counties/kern-county-california/
Patek, Gabriel and Bosler, Keely Martin (2019). Letter to Attorney General Xavier Becerra rewiing A.G. File No 19-0008, Amendment 1 related to taxation of commercial property, CA Legislative Analysts Office, 2 October.	https://lao.ca.gov/ballot/2019/190523.pdf
PESP (2020). Private Equity Stakeholder Project, "Fossil Fuel Investments - Largest Private Equity Managers," February.	https://pestakeholder.org/wp-content/uploads/2020/05/PE-investments-in-fossil-fuels-021420.pdf
Poten and Partners (2022). "Alaska LNG to Tap US Loan Guarantee as it Targets SPAs," LNG in World Markets,	https://agdc.us/wp-content/uploads/2022/12/LNGWM-Alaska-LNG-Report.pdf
Princeton (2021). Net-Zero America: Potential Pathways, Infrastructure, and Impacts - Final Report, 29 October. Full citation: E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, EJ Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, Net-Zero America: Potential Pathways, Infrastructure, and Impacts, Final report, Princeton University, Princeton,NJ, 29 October 2021.	https://www.dropbox.com/s/ptp92f65lgds5n2/Princeton%20NZA%20FINAL%20REPORT%20%2829Oct2021%29.pdf?dl=0

Title	Link (all live as of 24 August 2023)
Quiroga, Cesar (2017). TAMEST Shale Task Force: Impacts to Transportation Infrastructure and Critical Needs, April.	https://tamest.org/wp-content/uploads/2017/04/cesar-quiroga-presentation.pdf
Raimi, Daniel and Newell, Richard (2016). "US State and Local Oil and Gas Revenues," Resources for the Future Discussion Paper, RFFDP16-50, November.	https://media.rff.org/documents/RFF-DP-16-50.pdf
Raimi, Daniel and Newell, Richard (2016b). "Local fiscal effects of oil and gas development in eight states," Duke University Energy Initiative, May.	https://energy.duke.edu/sites/default/files/attachments/2a.%20Local%20fiscal%20effects%20of%20oil%20and%20gas%20development%20in%20eight%20states%20FINAL.pdf
Ramseur, Jonathan (2022). "Inflation Reduction Act Methane Emissions Charge: In Brief," US Congressional Research Service, R47206, 29 August update.	https://crsreports.congress.gov/product/pdf/R/R47206
Rehies-Boyd, Catherine (2013). "Think California is too general with oil companies? Think again," Los Angeles Times, 24 December.	https://www.latimes.com/opinion/la-xpm-2013-dec-24-la-ol-oil-severance-tax-blowback-20131224-story.html
San Joaquin Valley Air Pollution Control District (2022). "Rule 4460 Petroleum Refinery Fence-line Air Monitoring Plan Guidelines," October 20.	https://ww2.valleyair.org/media/vy4jehuv/rule-4460-guidelines-final.pdf
Shultz, Jim (2020). "How Prop. 13 gave California's richest corporations a multibillion-dollar tax break they didn't want," Cal Matters, 17 August.	https://calmatters.org/commentary/my-turn/2020/08/how-prop-13-gave-californias-richest-corporations-a-multibillion-dollar-tax-break-they-didnt-want/
Sierra (2020). Sierra Club, "The Risk of Unplugged Wells for California's Taxpayers: California Resources Corporation—A Case Study."	https://www.sierraclub.org/sites/default/files/blog/2335%20CRC-Wells_Report_02_high.pdf
Sjoberg Evashenk Consultants, "Performance Audit of the Underground Storage Tank Cleanup Fund," prepared for the California State Water Resources Control Board, March.	https://www.waterboards.ca.gov/water_issues/programs/ustcf/docs/audit/ustcf_report_03_08_2021.pdf
St. John, Jeff (2022). "California's plan to avoid blackouts relies on fossil fuels as last resort," Canary Media, 25 May.	https://www.canarymedia.com/articles/policy-regulation/californias-plan-to-avoid-blackouts-relies-on-fossil-fuels-as-last-resort
Tam, Laura (2017). "How Can the Bay Area's Aging Oil Refineries Meet California's New Climate Goals?" SPUR 8 February.	https://www.spur.org/news/2017-02-08/how-can-bay-areas-aging-oil-refineries-meet-californias-new-climate-goals
TAMEST (2017). The Academy of Medicine, Engineering and Science of Texas (TAMEST), Task Force on Environmental and Community Impacts of Shale Development in Texas, Environmental and Community Impacts of Shale Development in Texas.	https://tamest.org/wp-content/uploads/2017/07/Final-Shale-Task-Force-Report.pdf
US DOE (2022, state). US Department of Energy, "FY 2023 Budget Request, State Table," accessed 1 March.	https://www.energy.gov/sites/default/files/2022-04/doe-fy-23-budget-state-table.pdf
US Foreign-Trade Zones Board (2020). "81st Annual Report of the Foreign-Trade Zones Board to the Congress of the United States," November.	https://www.trade.gov/sites/default/files/2020-11/AR-2019.pdf
US Foreign-Trade Zones Board (2022). "83rd Annual Report of the Foreign-Trade Zones Board to the Congress of the United States," August.	https://www.trade.gov/sites/default/files/2022-08/AR-2021_0.pdf
US Treasury (2021). Tax Expenditures for FY 2023, Descriptive text and excel table, released Dec. 2021.	https://home.treasury.gov/system/files/131/Tax-Expenditures-FY2023.xlsx
US Treasury (2023). Tax Expenditures for FY 2024, Descriptive text and excel table, March update.	https://home.treasury.gov/system/files/131/Tax-Expenditures-FY2024-update.xlsx

References

Version date : 8/23

Title	Link (all live as of 24 August 2023)
Valley Air (2019). "Rule 3200: Petroleum Refinery Community Air Monitoring Fees," adopted 19 December.	https://www.valleyair.org/rules/currnrules/3200.pdf