California Geologic Energy Management (CalGEM) Well Screening and Prioritization Methodology

Executive Summary

The California Geologic Energy Management's (CalGEM's) proposed well screening and prioritization methodology ranks and prioritizes wells for state plugging and abandonment that may pose the greatest risk to public health, safety, and the environment, while also taking into consideration the concerns of the local jurisdictions and communities, practical considerations, and economic efficiencies associated with the ordering of well abandonments.

This methodology has been developed in preparation for California's expanded state abandonment operations supported by significant and unprecedented federal and state funding and is informed by several public engagement sessions already held to date. CalGEM intends for the results of applying the screening to wells in the State's inventory to serve as an important first step in helping prioritize orphan wells for plugging and abandonment. This screening aims to prioritize wells for which data indicates they may pose a greater risk to people or the environment—either due to their location near communities and environmental assets, including vulnerable communities and sensitive environments, or due to the physical nature of the well itself.

CalGEM's current proposed methodology consists of two phases: (1) an initial technical screening of the wells informed by the regulatory criteria found in California Code of Regulations, title 14, section 1772.4 ("Section 1772.4") and data from CalEnviroScreen 4.0, which identifies communities heavily burdened by pollution and socioeconomic disadvantage; and (2) a secondary screening that will incorporate local government and public feedback on the provisional ranking and prioritization of the well inventory and consider practical factors to ensure efficient allocation of resources to plug and abandon wells. Engagement with local governments and the public on their local priorities, as well as practical considerations such as location and access, and consideration of geographic balance, is proposed in order to inform the identification of projects for state abandonment.

To ensure a robust, transparent, and fair process, CalGEM seeks additional public input and comment on the draft methodology before finalizing and publishing the methodology later this year. To facilitate meaningful engagement, CalGEM has developed three scenarios for using the initial screening tool in order to demonstrate the impact weighing different criteria have on well rankings, and to facilitate feedback on which important values should be emphasized when prioritizing wells. The three scenarios aim to emphasize minimizing risks to disadvantaged communities (Scenario 1); minimizing risks to communities and sensitive environments (Scenario 2); and

addressing wells more likely to have physical integrity issues (Scenario 3). The public will also be able to view the results of these scenarios on a GIS map online at CalGEM's website. CalGEM seeks feedback from the public on the scenarios and weighting, as well as feedback on other considerations that should be taken into account when considering and proposing projects for state abandonment.

Following a public workshop and public comment period on the screening methodology, CalGEM will take that input and use it to finalize an initial screening tool. It will also hold a series of local government and community engagements through Fall 2022 to learn more about local priorities. The input from this public process will inform the development of a draft Expenditure Plan, which will outline a framework for expending state and federal funds across multiple years. This draft Expenditure Plan is expected to be released for public comment no later than early 2023.

Background

California's oil industry is more than 150 years old, but production operations peaked in 1985 and have been in decline ever since. This decline has led to more wells being taken out of production. California has also seen an increase in orphan and deserted wells.

Orphan wells are those wells for which there is no responsible, solvent operator present to maintain, repair, or plug and abandon them. Orphan wells can pose a threat to public health, safety, and the environment. They can leak oil, emit greenhouse gases, and pose physical hazards. Because there is no responsible operator, orphan wells are left to the State to remediate and permanently seal or plug and abandon. Deserted wells are wells that have not been maintained in compliance with CalGEM's regulations and are determined to be deserted as demonstrated through a final plugging and abandonment order. Deserted wells have not yet been definitively determined to be orphan because a determination of financial resources held by legally responsible current or prior operators has not yet been completed. If the operator does not plug and abandon the wells in accordance with the order, CalGEM has the authority to plug and abandon deserted wells—and has authority to recoup costs from any solvent responsible operator that is identified. If there are no solvent responsible operators, CalGEM will generally refer to the wells as orphan.

CalGEM has been issuing contracts to plug and abandon orphan and deserted wells for many years, but with limited funding to date. Since fiscal year 2016/2017, CalGEM has expended more than \$9.3 million to plug and abandon more than 70 wells. There are more than 5,300 orphan or likely orphan wells

¹ CalGEM Orphan Wells Screening Scenarios Map: https://cadoc.maps.arcgis.com/apps/webappviewer/index.html?id=b65ba00d139845f9810f7c96f2e09c30

across the state and CalGEM projects the cost to plug and abandon them could be nearly \$1 billion. As such, new federal funding offers an unprecedented investment in tackling the public health and environmental risks posed by orphan and deserted wells, as well as the \$100 million over 2 years secured in the 2022-23 State Budget.

The proposed methodology described herein will enable CalGEM to systematically and efficiently manage that investment to address the wells that may pose the greatest risk to public health, safety, and the environment.

Initial Technical Screening Process

The initial technical screening is intended to evaluate the potential risk the well may pose to public health, safety, and the environment. The technical criteria included in the evaluation cover four key categories: surface study, downhole study, other potential hazards, and impacts on disadvantaged communities. Each category identifies the specific attributes and variables associated with a well that can speak to its location, condition, and other important risk factors.

In order to compare the wells across the criteria, CalGEM will create a composite relative risk score by assigning a risk score ranging from 0-5 points for each factor. The points are then aggregated to establish an overall score for each well that correlates to the potential risk the well may pose. The higher the score, the greater the potential risk. Furthermore, the wells are categorized into five tiers 1-5, with tier 1 representing the highest risk wells. CalGEM staff have developed 3 scenarios comprised of different weights across the criteria, in order to facilitate meaningful public engagement on which values to emphasize when prioritizing wells for abandonment. The scoring varies in each scenario to emphasize the risk based on each of the following: (1) Impact on Disadvantaged Communities (2) Proximity to Communities and Sensitive Environments; and (3) Well Condition.

More detail regarding the rationale behind the points associated with the criteria in each of the scenarios is provided in the scenario descriptions below. Further explanation on how scores are aggregated and applied to well rankings is also provided below.

Screening Methodology

Well Information

During its review, CalGEM gathers information that, while not scored, is important to identifying the well and future plugging and abandonment work.

- **API Number:** The 10-digit API number of the well. At the time an oil or gas well is drilled, it is assigned a unique 10-digit API number to identify and track the well.
- Field: The name of the oil and gas field in which the well is located. The field is an area boundary, characterized by similar geological properties.

- **Well Designation:** The well name. In addition to the 10-digit API number, oil and gas wells are also typically assigned a name. When discussing a well, it is easier to refer to the name, rather than the API.
- **Operator Code:** A unique numerical code CalGEM assigns to identify the operator of an oil or gas well.
- Operator Name: The name of the last known operator of the well, according to CalGEM's records.
- District: The CalGEM District in which the well is located.
- Latitude & Longitude: Location of the well, including if the well location coordinates have been validated by CalGEM during field inspections, as six-digit decimal degrees, non-projected, Latitude and Longitude, in the Geographic Coordinate System (GCS) NAD83.
- Well Management Map: A link to CalGEM's internal Geographic Information System (GIS) map with multiple layers to show where the well is located on Earth and the surrounding area. CalGEM uses the information to help complete the Surface Study.
- **Plug Back Depth:** The depth of any plugback that meets regulation standard; it is considered the effective bottom depth of the well.
- **Partial Abandonment Depth:** The depth of any plug used to partially abandon the well or the effective depth of the well.
- **Total Depth:** The bottom or lowest point in the subsurface at which the well was drilled to.
- **Wellbore Path:** The subsurface path of the well providing measured depth and both inclination and azimuth measurements.

Surface Study

CalGEM conducts a review of the surface location and conditions for each well at the surface to assess potential risks associated with the well, including potential access issues. CalGEM utilizes GIS maps to conduct an initial review of the well's location and the accessibility of the well. Prior to plugging and abandonment work taking place, the well's location and accessibility are verified through field inspections.

Key criteria for the surface study include:

• Wellhead Location: Evaluation of whether the well is critical, in an urban area, or is environmentally sensitive. A higher risk score will be assigned to a well that falls into these categories because the well has a greater potential impact to health, public safety, and the environment in the event of a failure either at the surface or subsurface. Generally, these designations are defined by the wellhead's distance to a building, airport

runway, public street, highway, railway, waterways, public recreational facility, officially recognized wildlife preserve, public recreational area, environmentally sensitive habit, or a well located in the coastal zone. (Cal. Code of Regulations, tit. 14, §§ 1720, subd. (a); 1760, subds. (f), (y).)

More specifically, a critical well means a well within 100 feet of public street, railway, body of water, public recreational facility, or wildlife preserve; or within 300 feet of building and airport. While a well with an environmentally sensitive wellhead has a wellhead that is within the coastal zone, 200 feet away from wildlife preserve, environmentally sensitive habitat, or waterbody; or 300 feet from any public recreational area or buildings. And a well is within an urban area if the well is within 300 feet of an area with at least twenty-five business establishments, residences, or combination thereof.

- Geologic Hazards: Evaluation of whether the well is located in an area of known geologic hazard, such as subsidence, landslides, or there is a history of damage due to seismicity. A higher risk score will be assigned to a well which may have its surface equipment damaged or become buried and inaccessible at the surface. The geologic hazards are identified from the CalGEM Hazard Management map, which relies upon data from the California Geological Survey hazard maps.
- Wellhead Pressure: Evaluation of whether the well has pressure in the
 casing or tubing at the surface or is open to the atmosphere. A higher risk
 score is assigned to a well with high pressure in the tubing or casing or that
 is open to the surface because the well has a greater risk of spill from an
 uncontrolled release, or risk that fluid will flow out of the wellbore, due to
 the risk of well failure over time.
- Wellsite Accessibility: Evaluation of whether the well has surface obstacles or other impediments preventing access to the wellhead, including but not limited to buildings or structures, surface-use activities, irrigation systems, roads, terrain, or restricted access. For purposes of the initial screening, wellhead accessibility is based on review of aerial photos on the CalGEM GIS map. A higher risk score is assigned to a well with impediments to surface access because the well poses a greater risk to health, public safety, and the environment, especially in urban areas, as access for plugging and abandonment is difficult, or even infeasible.
- Presence of Production Facilities: This criterion refers to any equipment
 attendant to oil and gas operations that are present at the well site. The
 presence of this equipment, like pipelines or tanks connected to the well,
 increases the potential risk of soil contamination and has the potential to
 cause harm by virtue of the equipment not being secured.
- Jurisdiction: Evaluation of whether the well is located on BLM, Tribal, or State land. Where the well is located is important for coordinating

plugging and abandonment work when a group of wells cross jurisdictional boundaries. Such coordination allows for savings associated with rig mobilization costs and access.

Downhole Study

CalGEM reviews the information available about the subsurface ("downhole") conditions for each well to assess potential risks associated with the integrity of the well and identify any known downhole issues that would make it difficult to plug and abandon the well, such as known holes in casing, collapsed casing, stuck rods, packer, or fish or junk in the hole.

- **Well Damage Depth:** Evaluation of whether the well has known downhole issues that would make it difficult to plug and abandon, such as damage, known hole in casing, or collapsed casing. Such damage may influence flow in the well and compromise the mechanical integrity of the well.
- Junk or Fish Depth: Evaluation of whether the well has known junk, such as a stuck rod or packer, or fish. The presence of junk or fish influences flow in the well, may compromise the mechanical integrity of the well, or restrict access to the well.

Other Potential Hazards

CalGEM evaluates other critical factors that increase the risk associated with the well, such as the results of any testing performed on the well and the age of the well.

• Fluid Level Test Result: Evaluation of whether the most recent fluid level test results show that the fluid level depth inside the well is above the base of freshwater (BFW) or an underground source of drinking water (USDW). A higher risk score is assigned to those wells where the fluid level depth inside the well is above the BFW or USDW because of the increased risk of contamination if the well is leaking.

To calculate the fluid level test result, CalGEM determines the BFW, which is water that contains 3,000 mg/L TDS (total dissolved solids) or less, and the depth of any USDW, which means an aquifer or its portion which has not been approved by the United States Environmental Protection Agency as an exempted aquifer pursuant to the Code of Federal Regulations, title 40, section 144.7, and which supplies a public water system, as defined in Health and Safety Code section 116275; or contains a sufficient quantity of groundwater to supply a public water system, as defined in Health and Safety Code section 116275; and currently supplies drinking water for human consumption; or contains fewer than 10,000 mg/L TDS.

Cleanout Tag Result: Evaluation of the results of any cleanout tag
performed on the well. The cleanout tag results indicate the ability to
reach the current CalGEM-approved depth of the well, which is an
important indicator whether the well can be abandoned to current
regulatory standards, or if there is any obstruction inside the well that
would prevent the bottom of the well to be properly abandoned.

The cleanout tag result relies upon the top perforation, which is the highest point in the subsurface of the well that has been perforated or contains a slotted liner to allow an inflow of hydrocarbons or water to the well. A perforation is an access point from the wellbore to the hydrocarbon zone. A cleanout depth above the top perforation increases risk by restricting access to isolate the productive intervals.

 Casing Integrity Test Result: Evaluation of the results of any casing pressure test that has been conducted. A successful casing pressure test indicates the well is not leaking.

A failed casing pressure test indicates the well casing is leaking or cannot withstand the pressure the well is expected to be exposed to.

- Age of well. The age of the well, based upon the date the well was drilled.
 Older wells are assigned a higher risk score because age can be an
 indicator of the potential for the well to have integrity issues and may be
 at greater risk of leaking due to deterioration of the casing and
 cementing over time.
- **Number of Years Idle:** The number of years the well has been idle. A well is considered idle after 24 consecutive months of inactivity. The longer a well is idle, the greater the risk that the well may have integrity issues that may lead to the well leaking. By regulation, wells that have been idle for longer than fifteen years are required to undergo more rigorous analysis because such wells may have integrity issues and may not be viable.

Impacts on Disadvantaged Communities

To prioritize wells for abandonment in those communities that are disproportionately burdened by pollution, CalGEM will then apply information from CalEnviroScreen and SB 535 Disadvantaged Communities data.² CalEnviroScreen is a science-based screening methodology and mapping tool

² More detail on percentile methodology and list of indicators is in: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.

Final Designation of Disadvantaged Communities:

that can be used to identify California communities that are disproportionately burdened by multiple sources of pollution. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the state and identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria. This mapping tool was developed by the Office of Environmental Health Hazard Assessment, or OEHHA, an office within the California Environmental Protection Agency (CalEPA). CalEPA uses the tool to, in part, designate as disadvantaged certain communities, pursuant to SB 535.

CalGEM reviews the census tract a well is located in to identify those wells located in communities systematically burdened by pollution and populations most vulnerable to the effects of pollution.

- Total Population Percentile: This percentile reflects the total population of a particular census tract relative to others. The higher the percentile, the more populated the tract is and the more residents that could be impacted by an orphan well.
- CalEnviroScreen 4.0 Pollution Burden Percentile: This percentile is assigned to the census tract in which the well is located and assigns a higher risk score if the well is located in a census tract more exposed to and affected by pollutants. For the Pollution Burden Percentile, thirteen pollutants and environmental effect indicators are collected and assessed statewide for each census tract, scored and ranked in percentile.³ The higher the percentile value the more the census tract is exposed to and affected by pollutants.
- CalEnviroScreen 4.0 Population Characteristic Percentile. The Population Characteristic Percentile is assigned to the census tract in which the well is located and assigns a higher risk score if the well is located in a census tract where the population is more vulnerable to pollutants. The Population Characteristic Percentile evaluates sensitive populations that are at increased vulnerability to pollutants using eight physiological conditions and socioeconomic factors. Each census tract was then scored and ranked in percentile. The higher the percentile, the more vulnerable the population within that area to pollutants.
- SB 535 Disadvantaged Community data: This data is referenced to determine if the well is located in a Disadvantaged Community (DAC), as identified by CalEPA, pursuant to SB 535. In the current DAC designation,

³ More detail on percentile methodology and list of indicators is in: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf

⁴ More detail on percentile methodology and list of indicators is in: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf

released by CalEPA in May 2022, census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0, or the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores are considered Disadvantaged Communities. Other communities identified as disadvantaged in CalEPA's current DAC designation include: census tracts identified in the previous (2017) designation as disadvantaged, and lands under the control of federally recognized Tribes.

Scenario Descriptions and Scoring

Scenario 1: Impact on Disadvantaged Communities

Scenario 1 aims to prioritize wells that are located within disadvantaged communities, as identified by the CalEPA Disadvantaged Communities designtation, and may present risks to those communities if left unplugged. In this scenario, information from CalEnviroScreen and SB 535 Disadvantaged Communities data are the only criteria that are weighted up to five points, with the exception of the presence of freshwater.

Scenario 2: Proximity to Communities and Sensitive Environments.

Scenario 2 places greater emphasis on criteria that indicate the well is located near people or critical or sensitive environments that may be at risk due to orphan wells remaining unaddressed, and also emphasizes if that well is located in a disadvantaged community. It uses the same scoring as Scenario 1 but allows up to five points to each the following well location factors: whether the well is critical, in an urban area, or is environmentally sensitive. After evaluating preliminary results from Scenario 1, it was found that some census tracts are so large that wells in rural areas, away from large populations of people, are ranked highest. To further emphasize the importance a well's location has on its potential impact to health, public safety, and the environment, each of the location factor scores were increased. A well is given five points for each designation that it falls into. A well that falls into two designations is given a score of two points, and three points if falls in all three designations.

Scenario 3: Well Condition. When thinking about the risk an orphan well poses to California communities, that is largely driven by two factors: what is nearby and susceptible to that risk, and the physical state of the orphan well itself. Scenarios 1 and 2 emphasize the first factor, while Scenario 3 aims to emphasize criteria that may indicate the well is in a poor state and has a high likelihood of contaminating groundwater or leaking. It uses the same scoring as Scenario 1 but allows up to five points for subsurface conditions and other critical factors that indicate higher risks associated with the integrity of the well. These criteria include: well damage, junk or "fish" stuck in the well, casing integrity test results, wellhead pressure, number of years idle, and the age of the well. The quality and detail of the well records varies across the dataset and many older wells have very limited downhole data. While most wells have data pertaining to the well's age and long-term idle well status, less than 5 percent of wells have data

available for the other relevant criteria. Despite the data limitations, wells that are known to have conditions that may compromise the mechanical integrity of the well or obstruct access to the depths required for a proper abandonment, can be prioritized.

The table below shows the points associated with the criteria across each scenario.

Criteria	Risk Parameters	Risk Scoring/ Points		
		Scenario 1	Scenario 2	Scenario 3
Wellhead Location	None	0	0	0
	Critical	1	5	1
	Environmental Sensitive	1	5	1
	Urban	1	5	1
	Multple, 2 of 3 Designations	2	10	2
	Multiple, 3 of 3 Designations	3	15	3
Geologic Hazards	None	0	0	0
	Within a Fault Zone	1	1	1
	Within a Landslide Area	1	1	1
	Within a Seismic Hazard Zone	1	1	1
	Within 2 Hazard Areas	2	2	2
	Within 3 Hazard Areas	3	3	3
Wellhead Pressure	No Info	0	0	0
	No Pressure	0	0	0
	<200 psi	1	1	2.5
	>200 psi	2	2	5
	Open to Atmosphere	3	3	5

Wellsite Accessibility	Accessible	0	0	0
	Possible Access Restrictions to Site	1	1	1
	No Discernible Road Access	2	2	2
Production Facilities	Wellhead Not Visible	3	3	3
	No	0	0	0
Present Jurisdiction	Yes	1	1	1
	None	0	0	0
	BLM	1	1	1
	Tribal	1	1	1
	State Lands	1	1	1
Damage Depth	Enter depth	1	1	5
Fish/Junk Depth	Enter depth	1	1	5
BFW Present	No	0	0	0
Drw rieseiii	Yes	5	5	5
	Not above either BFW or USDW	0	0	0
Fluid Level Test Result	Missing BFW/USDW Value	0.5	0.5	0.5
	Above BFW	1	1	1
	Above USDW	1	1	1
	Unknown	1	1	1
	Above both BFW and USDW	2	2	2
Cleanout Tag Result	Overdue Cleanout	0.5	0.5	2.5

	Failed Cleanout	1	1	5
Casing Integrity Test Result	Pass	0	0	0
	Overdue	0.5	0.5	2.5
	Fail	1	1	5
Years Idle	Idle Years > 15	1	1	5
	Age < 25	0	0	0
Age of Well	25 < Age > 50	1	1	2.5
	Age > 50	2	2	5
Total Population Percentile	Percentile value	Percentile/40	Percentile/40	Percentile/40
		(0-2.5)	(0-2.5)	(0-2.5)
CalEnviroScreen 4.0	Percentile	Percentile/20	Percentile/20	Percentile/20
Pollution Burden Percentile	value	(0-5)	(0-5)	(0-5)
CalEnviroScreen 4.0 Population	Percentile value	Percentile/20	Percentile/20	Percentile/20
Characteristic Percentile		(0-5)	(0-5)	(0-5)
CalEnviroScreen 3.0 SB 535	No	0	0	0
Disadvantaged Community	Yes	5	5	5

Secondary Screening Process

Following the initial technical screening that will provide a provisional ranking and prioritization of the well inventory for plugging and abandonment, CalGEM will conduct a secondary screening that will incorporate local government and public feedback on the provisional ranking and prioritization of the well inventory and consider practical factors to ensure efficient allocation of resources to plug and abandon wells.

In considering such factors and local government and public feedback, the secondary screening is also intended to help break ties in the provisional ranking.

Local Concerns

Upon completion of the initial technical screening, CalGEM will post the results on its website and invite comments and feedback. Local governments and the public may provide any feedback they wish on the screened wells. In addition, CalGEM will meet with local governments with the highest numbers of orphan wells in order to identify local priorities. CalGEM will be particularly interested in learning about the following:

- Complaints or hazards: the technical screening is expected to capture
 much of the data related to risk to public health and the environment;
 however, additional information about wells and sites of particular
 concern due to complaints local government has received about the
 wells or hazards they pose will be considered.
- **Impacts on Communities:** any data or information regarding a well's impact on local communities.
- **Future Development Plans:** CalGEM will consider existing plans to redevelop areas for housing, particularly affordable housing, parks and recreation, and other commercial development.

All comments received will be recorded and cataloged and made available for public access.

Efficient use of resources

Plugging and abandonment work requires the use of a "rig." At any one time, there are a limited number of rigs available for this work. Bringing a rig to a wellsite ("mobilizing"), is a significant portion of the cost of plugging and abandonment work.

• **Well Proximity:** In order to make most efficient use of available rigs, minimize rig mobilization costs, and maximize the number of wells that can be plugged and abandoned with available funds, CalGEM will consider prioritizing a group of wells in a lease or field, regardless of score.

Accessibility of the well

Through field inspections, CalGEM will confirm that the well can be located and accessed to carry out the plugging and abandonment work.

Accessibility: CalGEM will work to confirm that the well can in fact be
located and accessed to carry out the plug and abandonment. If a well
is not locatable CalGEM will consider utilizing additional methods, such as
excavation, to try to locate the well. If the well is inaccessible, CalGEM will
assess the reason for the well inaccessibility, any monitoring needed of the
well until it becomes accessible, and a plan for abandoning the well
should it become accessible. For example, if a well is temporarily

inaccessible due to it being in an agricultural field and a crop being grown, CalGEM will develop a plan to monitor the well, if necessary, and then abandon the well once the crop has been harvested. On the other hand, if the well is inaccessible because it is located under a building, CalGEM will note the location of the well in its records and develop a plan for any monitoring that is needed and abandonment of the well, should it ever become accessible.

Conclusion

With an unprecedented infusion of state and federal funds to address California's orphan well problem, CalGEM is taking a statewide and systematic approach to identifying priority projects across the state that maximize these dollars and reduce the most risk these wells pose to California communities and environment. CalGEM welcomes comments and feedback on the proposed screening and prioritization methodology described above, to include, but not limited to, input on:

- Technical criteria
- Three scenarios and the ultimate scoring rubric for the initial screening tool
- Secondary screening approach and criteria
- Opportunities for public engagement during the screening process

Comments and questions can be submitted to calgemorphanwells@conservation.ca.gov

Following a public workshop and public comment period on the screening methodology, CalGEM will take that input and use it to finalize an initial screening tool. It will also hold a series of local government and community engagements through Fall 2022. The input from this public process will inform the development of a draft Expenditure Plan, which will outline a framework for expending state and federal funds across multiple years.