

# **Petroleum Refinery Transition to Renewable Fuel Production**



## **Report on Regulatory Processes During Conversion of Petroleum Refining to Renewable Fuel Production**

January 2024

## **Petroleum Refinery Transition to Renewable Fuel Production**

### **Message from Secretary Garcia**

In September of 2020, as California confronted the immediacy of the climate emergency in the wake of the worst wildfire season on record, Governor Newsom signed Executive Order N-79-20 requiring sales of all new passenger vehicles to be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the State be zero-emission by 2045 for all operations where feasible, in addition to other measures to eliminate harmful emissions from the transportation sector. To further those goals, the Executive Order directed CalEPA to "... expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities, while supporting community participation, labor standards, and protection of public health, safety and the environment." Governor Newsom's July 2022 letter to CARB on the draft Scoping Plan reiterated the importance of increasing the stringency of the state's controls on the carbon intensity of fuels and supporting the transition of refineries to renewable fuels production.

Over the last two years, CalEPA staff worked through the Interagency Refinery Task Force on the creation of this report focused on the transition of refineries to renewable fuels production. Staff held public meetings and heard from industry representatives for the refineries embarking on transitions, from community groups and non-governmental organizations working in this space, and from federal, state, and local regulators. This final report takes into account comments received from the public on the draft version, as well as additional stakeholder consultations. This report is just the first step in our efforts to advance refinery transitions. The real work will begin with implementation of the report's recommendations and the scaleup of clean, renewable fuels production and a longer-term transition to a fully zero-emission transportation sector, in line with the 2022 Scoping Plan.

While we work to meet our ambitious clean air and climate goals and to eliminate the tailpipe altogether, the need for cleaner liquid fuels will continue to be important for certain heavy-duty, off-road, marine, and aviation sub-sectors. Thus, transitioning existing petroleum refineries to refine renewable feedstocks to provide cleaner fuels with lower carbon, air pollution, and environmental footprints.

The transition of refineries away from petroleum-based production will have benefits for local communities in the form of reduced criteria pollutants, climate benefits, and both retaining existing and creating new high-quality jobs. We also know our policies have been models for other regions, such as Oregon and Washington, and there may be similar policies implemented as more governments pursue the inevitable transition to a zero-emission future. We intend to work with other jurisdictions, so we all get it right.

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As we embark on this process of refinery transitions, we are committed to working closely with communities and local jurisdictions to understand and mitigate impacts that could arise. We must recognize that ending our dependence on petroleum will require bold actions including supporting investments in the next generation of facilities to meet our energy needs. Effectively working through this transition will build stronger partnerships with communities that have for too long been burdened by pollution. As this report discusses, any streamlining of permitting, for example, cannot come at the expense of neighboring communities. We will continue to push to address the root causes of disparities through inclusivity in outreach and decision-making, and our programs will prioritize vulnerable communities who disproportionately bear the brunt of environmental degradation. On a related note, we must also work to ensure that the transition to and scale-up of renewable fuels does not create negative food system impacts or deforestation, which would most affect low-income communities here in the U.S. and globally.

I look forward to continuing the work of the Interagency Refinery Task Force and to supporting all stakeholders through this process that is critical to achieving our climate goals.

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## Petroleum Refinery Transition to Renewable Fuel Production

### Executive Summary

In September 2020, Governor Newsom signed Executive Order N-79-20 furthering the state's transition from its reliance on climate change-causing fossil fuels while retaining and creating jobs, spurring economic growth, and maximizing environmental, health, and safety benefits. And according to the 2022 update of CARB's Scoping Plan, California also needs to rapidly scale up renewable fuels production for transportation as we aim for a 94% reduction in demand for liquid petroleum by 2045. As the state transitions away from petroleum-based products in order to achieve its legally codified target for carbon neutrality as soon as possible and by 2045 at the latest, there is a need for the state's existing refining capacity to transition to production of fuels with lower carbon intensities.

In Executive Order N-79-20, the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency (CNRA) were specifically directed:

*"To support the transition away from fossil fuels consistent with the goals established in this Order and California's goal to achieve carbon neutrality by no later than 2045, the California Environmental Protection Agency and the California Natural Resources Agency, in consultation with other State, local and federal agencies, shall expedite regulatory processes to repurpose and transition upstream and downstream oil production facilities, while supporting community participation, labor standards, and protection of public health, safety and the environment. The agencies shall report on progress and provide an action plan, including necessary changes in regulations, laws or resources, by July 15, 2021."*

This document is part of a multiagency effort to meet the direction of Executive Order N-79-20 and provides information on regulatory processes by which existing refineries in the state may transition their production from fossil fuel to renewable energies<sup>1</sup>. These efforts will impact other moving parts in the state's journey to decarbonize transportation, such as the update of the Low Carbon Fuel Standard. CARB's updates to the program will align with the clean energy needed to support our drive toward carbon neutrality and existing statutes and regulations like Advanced Clean Cars II, Advanced Clean Fleets and Advanced Clean Trucks. This means increasing stringency and creating more credit opportunities for clean fuels while phasing down fuels used in on-road combustion.

Efforts underway in other agencies include, under CNRA, a report on remediating and repurposing oil fields, including the development of renewable energy on oil and gas fields.

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<sup>1</sup> The information provided in this document is based on regulatory agency experience involving the conversion of a petroleum refinery to a renewable fuels facility. The regulatory / permitting issues outlined may or may not apply to refinery conversion throughout all jurisdictions in California. The regulatory agencies who aided in the development of this document do not make any assurance, express or implied, for the accuracy, completeness, or any third party's use of the information provided herein. The statements provided herein shall not be relied upon for any specific application without independent verification and assessment.

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### **Interagency Refinery Task Force**

This document was developed in consultation with the Interagency Refinery Task Force (IRTF) that was formed by CalEPA following a directive from the Governor's July 2013 report on "Improving Public and Worker Safety at Oil Refineries." The Task Force membership includes ten state agencies, U.S. EPA, and local agencies from areas of the state that contain refineries. The IRTF works collaboratively to achieve the highest possible level of safety for refinery workers and local communities and prepare for and effectively respond to emergencies if they occur. CalEPA staff worked through the IRTF to (1) document the different regulatory requirements for transitioning an existing refining facility from petroleum to renewable fuels, and (2) identify recommendations for future improvements to the transition process.

### **Findings**

In working with the IRTF, CalEPA staff identified the following:

1. Communities that live and work adjacent to the refineries are key stakeholders in any transition process. Appropriate time to review and provide meaningful input should be granted to potentially impacted communities and other stakeholders. This should include early outreach during any decision-making process and should continue to throughout the process.
2. The transition from refining petroleum to renewable materials involves significant changes in a refinery's existing processes and equipment, leading to changes in the required permits with regulatory agencies such as the Certified Unified Program Agencies (CUPAs) and local air districts. Changes in production process may trigger alterations in Hazardous Materials, Hazardous Waste, California Accidental Release Program (CalARP), and Aboveground Petroleum Storage Act (APSA) permits. In addition, there may be modifications required to permits obtained through local air districts or local governments that may require an environmental analysis under the California Environmental Quality Act (CEQA).
3. The transition from refining petroleum to renewable materials may result in the production facility changing from a CalARP Program 4 (Petroleum Refinery) stationary source and CalOSHA Process Safety Management (PSM) California Code of Regulation (CCR) §5189.1 (refinery) designation to a CalARP Program 3 (Chemical Processing) stationary source and CalOSHA PSM CCR §5189 (non-refinery) designation, if the facility is no longer identified as a petroleum refinery according to the North American Industry Classification System (NAICS), which was developed as the standard for use by federal agencies in classifying business establishments for the collection, analysis, and publication of statistical data. This determination requires site-specific evaluation of the hazardous properties and volume of fuels produced by the facility.

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4. The changes in permitting described above require regulatory agencies to determine the appropriate regulatory scheme for the modified processes at each refinery before specific permit decisions can be made. Based on data related to the transitioning of two refineries to produce renewables, permitting processes can be lengthy. There is currently no process by which the review of permits related to renewables, or transitions away from traditional petroleum refining, is prioritized relative to other permits.

### **Recommendations**

To achieve the highest possible level of safety for communities, the workforce and the environment, to promote consistency of law and regulation throughout the state, and to improve efficiency of government, CalEPA staff have the following recommendations:

1. The IRTF will be utilized as the mechanism to inform and update all participating agencies and stakeholders (including, but not limited to, community representatives, non-governmental organizations, labor organizations, refineries, etc.) on any refinery in the process of converting from petroleum refining to renewable fuel production. This will allow all participating agencies and stakeholders the ability to:
  - a. Stay informed on current issues,
  - b. Ask clarifying questions on areas of concern,
  - c. Comment on areas of concern.
2. All regulatory agencies alerted to a transition by a refinery from petroleum refining to renewable fuel production should:
  - a. Discuss the notification with IRTF participating agencies and stakeholders,
  - b. Create a workgroup of regulatory agencies having jurisdiction over the specific refinery for information exchange and general coordination.
3. All regulatory reviews and processes at the state and local level should be followed to ensure:
  - a. Protection of public health and safety, worker safety, and the environment,
  - b. All law and regulation standards and requirements have been attained,
  - c. Public consultation has been requested for permit decisions.
4. All regulatory reviews and permitting should be made in a timely manner to expedite the process in accordance with Executive Order N-79-20. CalEPA will work with the Governor's Office of Business Development (GO-Biz) to identify opportunities to work with facilities and associated regulatory agencies on permit streamlining or prioritized processing.
5. CalEPA will identify state agency contacts as resources for local planning agencies if specific issues arise during a permitting process. For example, if a permitting agency has questions about the Low Carbon Fuel Standard, CalEPA will request CARB assistance for the permitting agency.

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6. CalEPA routinely meets with public and community groups to discuss pertinent issues and concerns that arise concerning refineries. CalEPA shall continue this practice through the IRTF and will expand outreach to more communities that live and work adjacent to the refineries for engagement.
7. CalOSHA will review the anticipated hazardous properties and volume of fuels and develop recommendations regarding facilities' compliance with either PSM CCR §5189.1 (refineries) or §5189 (non-refineries). This will inform decisions regarding the application of either CalARP Program 4 or CalARP Program 3.



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**Action Plan**

To ensure continued progress, CalEPA will lead the collaborating agencies in the following Action Plan:

	<b>Lead Agency</b>	<b>Collaborating Agencies</b>	<b>By When</b>
1. The IRTF will be utilized as the forum to inform and update all participating agencies and stakeholders of any refinery engaged in the conversion process	CalEPA	Members and stakeholders of the Interagency Refinery Task Force (IRTF)	Ongoing
2. Creation of regulatory agency workgroup to support refinery transition	CalEPA	IRTF	Upon notification of transition
3. Coordination with the Governor's Office and sibling agencies on ongoing permit streamlining	CalEPA	GO-Biz	October 2023
4. Provide opportunities for public engagement through the IRTF	CalEPA	Members of IRTF	Ongoing
5. Review and update report and action plan findings	CalEPA	Members of IRTF, California Natural Resources Agency, GO-Biz	Biennially beginning July 2025
6. Identify state agency contacts as resources for local planning agencies if specific issues arise during a permitting process	CalEPA	Members and stakeholders of the IRTF	Ongoing

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### **Stakeholder Perspectives**

CalEPA held meetings and engaged in discussions with labor organizations and community groups. Stakeholders included the BlueGreen Alliance, Community Energy Resource, Natural Resources Defense Council, Rodeo Citizens Association, San Francisco Baykeeper, Stand Earth, Sunflower Alliance, and other interested individuals from impacted communities.

In the meetings CalEPA held with labor organizations, worker representatives expressed safety concerns with the change of process and the need for additional training of staff. They also expressed concern over the possible reduction in staffing for the workforce.

The majority of community groups and individuals represented expressed concern over the Executive Order's call for expediting regulatory processes, especially when considering the CEQA review process. Participants also expressed concern that projects may result in multiple new and in some cases greater environmental impacts, including many that appear likely to be significant in the absence of measures to lessen or avoid them. The participants recommended additional time to ensure all safety and environmental impacts have been considered, along with the types of mitigation that may be necessary. Additionally, it was recommended to solicit comments from impacted communities on regulatory reviews prior to finalization.

One commenter raised the possibility that renewable fuel production could increase a refinery's carbon dioxide emissions, depending on the feedstock used. The commenter expressed the view that this issue should be evaluated in the CEQA review process.

There was concern expressed for the final repurposing of refinery land as well. Executive Order N-79-20 also requires all new sales of passenger and light truck vehicles to be 100% zero emission by 2035 and 2045 for heavy trucks and buses. This may lead to the closure of certain refineries due to lower demand for produced fuels. It was recommended that regulations should be drafted and implemented to ensure repurposing of refinery land to more environmentally friendly uses.

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### Background

The replacement of fossil fuels with renewable fuels has the ability to decrease greenhouse gas (GHG) and conventional pollutant emissions. To incentivize the production of renewable fuels, the US Environmental Protection Agency's **Renewable Fuel Standard** (RFS) Program requires that 36 billion gallons of renewable fuel replace or reduce the quantity of petroleum-based transportation fuel, jet fuel, or heating oil by 2022, with RFS standards for 2023, 2024 and 2025 proposed in December 2022.

Under the AB 32 Scoping Plan, the California Air Resources Board (CARB) identified the Low Carbon Fuel Standard (LCFS) as one of the nine discrete early action measures to reduce California's greenhouse gas (GHG) emissions that cause climate change. The LCFS is a key part of a comprehensive set of programs in California to cut GHG emissions and other smog-forming and toxic air pollutants by improving vehicle technology, reducing fuel consumption, and increasing transportation mobility options. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits.

In particular, CARB's LCFS incentivizes the production and use of drop-in fuels derived from renewable and sustainable feedstocks with the goal of reducing greenhouse gas emissions. Renewable diesel is important from the perspective of achieving our federal and state air quality mandates, contributing to state and national efforts to reduce greenhouse gases, energy independence, and supporting traditional petroleum companies in transitioning to cleaner fuels. Under the flexibility of the LCFS, producers of renewable diesel can be located within California or out of state.

In California, use of renewable diesel has grown by 528% between 2013 and 2019. In 2019, it displaced 618 million gallons of conventional diesel. For example, Marathon and Phillips 66 are pursuing permits to modify their existing refineries in California to produce a combined total of 1.5 billion gallons of renewable diesel per year once fully operational by 2024 (both facilities are discussed later in this report). The LCFS provides an important opportunity for companies transitioning to production and delivery of sustainable fuels as we transition to a green economy.

Governor Newsom's Executive Order N-79-20 also recognizes the importance of continuing to reduce the carbon intensity of the transportation fuels and directs CARB to develop and propose strategies to continue the State's current efforts to reduce the carbon intensity of fuels beyond 2030 with consideration of the full life cycle of carbon. As such, the 2022 AB 32 Scoping Plan Update evaluated the role of the LCFS post-2030 and continued reduction in carbon intensity.

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In addition, in his July 2022 letter to the CARB Chair, Governor Newsom requested that the Board evaluate and propose a more stringent LCFS. The same letter requested CARB to increase the aviation clean fuel target. Both of these requests reinforce the importance of refinery transitions and were reflected in the final 2022 Scoping Plan Update.

Historically, petroleum refineries convert crude oil into useful fuel products such as naphtha, gasoline, diesel, heating oil, jet fuel, and liquified petroleum gas (LPG). Processes in the production of these petroleum-based fuels (hydrotreating and separation processes) can be used in the production of renewable fuels as well, making petroleum refineries excellent candidates for conversion to renewable fuel facilities.

### **Interagency Refinery Task Force**

Following a directive from Governor Brown's July 2013 report on "Improving Public and Worker Safety at Oil Refineries," CalEPA formed an Interagency Refinery Task Force (IRTF) in August 2013. The Task Force membership includes ten state agencies, U.S. EPA, and local agencies from areas of the state that contain refineries (a full list of the entities represented in the IRFT can be found in Appendix A). The goal of establishing the IRTF was to achieve the highest possible level of safety for refinery workers and local communities and prepare for and effectively respond to emergencies if they occur.

To meet the direction provided in the Governor's Executive Order (N-79-20), CalEPA staff used the IRTF as an advisory body to compile information on the status of the three refineries currently in the process of transitioning from petroleum-based refining to the production of renewable fuels.

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### Refineries in the State

There are fifteen refineries operating in California. The table below provides the location, the type of product being refined, and the state regulatory scheme under which each operates.

<b>Refinery &amp; Location</b>	<b>Product</b>	<b>Unified Program Agency</b>	<b>Air District</b>	<b>Cal OSHA</b>
Chevron Richmond	Petroleum	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Phillips 66 Rodeo	Petroleum / in transition to renewable fuels production	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Marathon Martinez	In transition to renewable fuels production / petroleum refining shut down in 2020 except terminal operations	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
PBF Martinez	Petroleum	Contra Costa County Health Services Hazardous Materials Program	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Valero Benicia	Petroleum	Solano County Environmental Health	Bay Area Air Quality Management District	Northern California Process Safety Management Unit
Chevron El Segundo	Petroleum	City of El Segundo	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Marathon Wilmington	Petroleum	City of Los Angeles Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit

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<b>Refinery &amp; Location</b>	<b>Product</b>	<b>Unified Program Agency</b>	<b>Air District</b>	<b>Cal OSHA</b>
<b>Refinery &amp; Location</b>	<b>Product</b>	<b>Unified Program Agency</b>	<b>Air District</b>	<b>Cal OSHA</b>
Phillips 66 Wilmington	Petroleum	City of Los Angeles Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Valero Wilmington	Petroleum	City of Los Angeles Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
PBF Torrance	Petroleum	LA County Fire / Torrance Fire	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Paramount Oil Paramount	Renewable fuels	LA County Fire, Health Hazardous Materials Division	South Coast Air Quality Management District	Southern California Process Safety Management Unit
Marathon Carson	Petroleum	LA County Fire, Health Hazardous Materials Division	South Coast Air Quality Management District	Southern California Process Safety Management Unit
ALON Bakersfield	Transitioning to renewable fuels	Kern County Environmental Health	San Joaquin Valley Air Pollution Control District	Southern California Process Safety Management Unit
Kern Oil Bakersfield	Petroleum	Kern County Environmental Health	San Joaquin Valley Air Pollution Control District	Southern California Process Safety Management Unit
Phillips 66 Santa Maria	Petroleum - shut down in January 2023	San Luis Obispo County Environmental Health	San Luis Obispo County Air Pollution Control District	Southern California Process Safety Management Unit

*A map of refinery locations can be found in Appendix C.*

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### Refineries Transitioning to Renewables

There are 4 facilities within the state that have formally notified regulatory agencies that they are beginning the transition to renewable fuels:

- The Marathon Martinez Refinery in Contra Costa County had been idling since April 2020 and operating only as a terminal. Completion of the Martinez Refinery Renewable Fuels Project would allow for the production of renewable diesel, propane and naphtha. The units that are not targeted as part of the conversion have been completely de-commissioned, purged and cleaned.
  - Contra Costa County's Board of Supervisors approved the Final Environmental Impact Report (FEIR) for the project on May 3, 2022.
  - The Bay Area Air Quality Management District (BAAQMD) approved the issuance of a final permit for the Renewables Fuels Project on August 30, 2022.
- AltAir/World Energy's Paramount Refinery in Los Angeles County. This facility is in the process of conversion to the production of renewable jet fuel and diesel.
  - Following appropriate consultations with the South Coast Air Quality Management District (SCAQMD), Paramount City Council (the Lead Agency) certified the final Supplemental Environmental Impact Report (SEIR) for the AltAir Renewable Fuels Project on April 11, 2022.
  - Environmental groups have filed a lawsuit alleging that the SEIR was "legally deficient."
- Phillips 66 Rodeo Refinery in Contra Costa County will continue to operate as a petroleum refinery while undergoing the conversion process. The project allows for the production of renewable diesel, naphtha and jet fuel.
  - Contra Costa County DCD is the CEQA Lead Agency and the County Board of Supervisors approved the FEIR on May 3, 2022.
  - In June 2022, BAAQMD issued Phillips 66 with a notice of violation for producing renewable diesel without modifying its air quality permit for producing diesel from petroleum.
- Global Clean Energy Holdings LLC has reported in their Securities and Exchange Commission (SEC) filings that work is underway at the idle Bakersfield refinery formerly owned by Delek Holdings and Alon Refining. Production of renewable diesel was earlier scheduled to commence during the second half of 2022 but is now expected to start in Q2 2023.

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### **Current Regulatory Framework for Refineries**

Refineries in California are currently subject to federal, state, and local regulations. This document will reflect pertinent regulatory information concerning the conversion under the local regulatory Certified Unified Program Agencies (CUPAs), California Air Resources Board (CARB), local air quality management districts, California Division of Occupational Safety and Health Administration (CalOSHA), and other regulatory agencies involved in the oversight of refineries. A full listing of the potential regulatory and permit requirements for a refinery can be found in Appendix B.

### **Unified Program**

The Unified Program is implemented at the local level by government agencies certified by the California Secretary for Environmental Protection. The local CUPA is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for six program elements within its jurisdiction. Most CUPAs have been established as a function of a local environmental health or fire department. There are 83 CUPAs around the state.

The state agency partners involved in the Unified Program have the responsibility of setting program element standards, working with CalEPA on ensuring program consistency and providing technical assistance to the CUPAs. The Unified Program consolidates the administration, permits, inspections, and enforcement activities of the following six programs:

- **Hazardous Materials Business Plan (HMBP) Program.** The purpose of the HMBP program is to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials. It also satisfies community right-to-know laws. This is accomplished by requiring businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 Code of Federal Regulation (CFR), Part 355, Appendix A) to submit information in a Hazardous Materials Business Plan to the CUPA.
- **Hazardous Waste Generator Program.** Hazardous wastes may be a liquid, solid or sludge. The wastes may be by-products of manufacturing processes or material that has been determined by the generator to be no longer usable. The CUPA is charged with overseeing the Hazardous Waste Generator Program. The purpose of this program is to ensure that all hazardous wastes generated by businesses are properly handled, recycled, treated, stored, and disposed.
- **Aboveground Petroleum Storage Act (APSA) Program.** The APSA program regulates tank facilities that are subject to the federal Spill Prevention Control and Countermeasure rule or tank facilities with an aggregate storage capacity of 1,320 gallons or more of petroleum in aboveground



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storage containers or tanks with a shell capacity equal to or greater than 55 gallons. The purpose of the APSA program is to protect public health and safety and the environment from releases of petroleum from large aboveground tanks.

- **Underground Storage Tank (UST) Program.** An underground storage tank (UST) is defined by law as "any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground" (certain exceptions apply). The purpose of the UST Program is to protect public health and safety and the environment from releases of petroleum and other hazardous substances from USTs. There are four program elements: (1) leak prevention, (2) cleanup, (3) enforcement, and (4) tank tester licensing.
- **California Accidental Release Prevention Program (CalARP).** CalARP is the state version of the Federal Risk Management Program and requires the submittal of a Risk Management Plan (RMP). The goal of the CalARP Program is to reduce the likelihood and severity of consequences of extremely hazardous materials releases. CalARP requires certain facilities which handle specified chemicals in listed threshold quantities to take specified actions to proactively prevent and prepare for chemical accidents. RMPs include descriptions of these prevention programs as well as information on accidental hazardous material releases in the Offsite Consequence Analysis (OCA).

### **California Air Resources Board (CARB)**

CARB is charged with protecting the public from the harmful effects of air pollution and with developing programs and actions to fight climate change. From requirements for clean cars and fuels to adopting innovative solutions to reduce greenhouse gas emissions, California has pioneered a range of effective approaches that have set the standard for effective air and climate programs for the nation and the world.

CARB's mission is to promote and protect public health, welfare, and ecological resources through effective reduction of air pollutants while recognizing and considering effects on the economy. CARB is the lead agency for climate change programs and oversees air pollution control efforts in California to attain and maintain health-based air quality standards.

### **Local Air Districts**

California's 35 local Air Districts are responsible for regional air quality planning, monitoring, and stationary source and facility permitting. The districts administer air quality improvement grant programs and are CARB's primary local partners in efforts to ensure that all Californians breathe clean air.

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### **California Division of Occupational Safety and Health (DOSH, commonly known as CalOSHA)**

The Division of Occupational Safety and Health (DOSH), better known as CalOSHA, sets and enforces workplace safety and health standards; provides outreach, education, and assistance; and issues permits, licenses and certifications. The CalOSHA Process Safety Management (PSM) unit enforces its 2017 PSM refinery safety regulation (CCR) §5189.1) at the state's 14 petroleum refineries, and it enforces a less comprehensive, 1992 PSM regulation (CCR §5189) at approximately 18,000 chemical plants. The PSM unit conducts process safety inspections; investigates process incidents; issues citations for violations of CalOSHA's PSM regulations; defends citations under appeal; and, in the event of an imminent process hazard, issues Orders Prohibiting Use, which prohibit a unit from restarting until process hazards have been abated to the satisfaction of CalOSHA.

### **Potential Regulatory and Permit Implications of the Facility Conversion Process**

The process of conversion from petroleum to renewable fuels will span the different laws, regulations, and regulatory agencies described above. This section provides pertinent regulatory information concerning the conversion under the local regulatory CUPAs, CARB, local air quality management districts, and other regulatory agencies involved in the oversight of refineries.

### **Certified Unified Program Agency Involvement**

The conversion of a petroleum refinery to a renewable fuel facility may have regulatory impacts pertaining to permitting through the local CUPA. The changes in facility processes may require updates to existing information on file with the CUPA, and in certain cases, permit modifications may be required. Below are high-level considerations to be addressed when transitioning from petroleum refining to renewable fuels.

- **Hazardous Materials Business Plan Program**
  - Any change to the facility's use or storage of hazardous materials inventory requires that the Hazardous Materials Business Plan to be updated.
  - Changes to the facility may require revisions to the Site Maps listed in the current Hazardous Materials Business Plan accepted by the CUPA – including annotating intermediate storage areas during the decommissioning process.
  - Changes to the facility may require revisions to the Emergency Response Plan, including the potential reduction of emergency response personnel, on-site fire suppression resources, and the impacts to mutual aid agreements.
- **Hazardous Waste Generator Program**
  - Transitioning from petroleum production to renewable fuels can cause a change to the Standard Industrial Classification (SIC) code designation of the facility. When a facility no longer has a

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petroleum refining SIC Code, the facility may be disqualified from specific exemptions/exclusions provided by statute and/or regulation. Many refinery-specific exemptions and exclusions can be found in the California HSC, Section 25143.2. Refineries often use these exemptions/exclusions to recycle and treat waste.

The conversion, idling, and/or decommission of a unit may generate large amounts of hazardous waste (e.g., catalyst waste, tank bottoms/heals, etc.) over a short period of time, which may lead to possible storage, disposal, and accumulation time problems. Based on these accumulation amounts and timeframes, a facility may even change Hazardous Waste generation categories (Small Quantity Generator, Conditionally Exempt Small Quantity Generator, Large Quantity Generator, Episodic Large Quantity Generator) resulting in changes to regulatory requirements.

- Hazardous materials / wastes should be removed from equipment and tanks that will be decommissioned, idled, or reused. All contaminated equipment, structures, and soils need to be properly disposed of or decontaminated by removing all hazardous waste and residues.
- A large number of hazardous waste tanks may need to be properly cleaned and closed.
- Treatment of Hazardous Waste (also known as the Tiered Permitting Program).
  - Potential closure of tiered-permitting treatment units. Treatment units may continue to be used during the unit decommissioning process. Waste determination applies at the point of generation. New treatment permits may be required if refinery exemptions are lost, waste inputs change, etc.
  - As a result of the conversion process, facilities may sell, recycle, or dispose of materials that were previously used/reused on site. Waste determinations must be made and documentation to support exclusion/exemption claims may be required.
- **Aboveground Petroleum Storage Act Program**
  - Aboveground containers and/or tanks in an underground area along with associated piping containing 100% non-petroleum products (e.g., vegetable oils, rendered animal fats, waste cooking oils, etc. that do not contain “crude oil, or a fraction thereof, that is a liquid at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute pressure”) previously subject to APSA laws may no longer be subject to APSA.
    - These aboveground containers and associated piping may still be subject to the Federal Spill Prevention, Control, and

## **Petroleum Refinery Transition to Renewable Fuel Production**

Countermeasure (SPCC) rules and regulations. Under APSA, the term “petroleum” means crude oil, or a fraction thereof, that is *liquid* at 60°F temperature and 14.7 psi. Under the [federal SPCC rule](#), the term “petroleum oil” is not limited to a liquid at 60°F and 14.7 psi. Under the federal SPCC rule, petroleum oil means petroleum in any form, including but not limited to crude oil, fuel oil, mineral oil, sludge, oil refuse, and refined products (40 CFR 112.2). The federal SPCC rule does not address *de minimis* concentration in its definition of oil, other than the determination that the oil could be reasonably expected to be discharged into or upon navigable waters or adjoining shorelines in quantities that may be harmful, as described in [40 CFR 110.3](#) (violates water quality standards or causes a sheen, sludge or emulsion – referred to as [the “sheen rule”](#)).

- **Underground Storage Tank Program**
  - Underground storage tanks that previously contained a hazardous substance as defined by California HSC Section 25281 (h) are still subject to closure, release reporting, and corrective action requirements outlined in Title 23, CCR, Division 3, Chapter 16, Articles 6 and 11.
- **California Accidental Release Prevention Program (CalARP)**
  - Depending on the origination materials used in the production (also known as “feedstock”), renewable fuels may not have the sulfur-containing compounds contained in the petroleum production process.
  - Depending on the feedstock of the renewable fuel production, the Offsite Consequence Analysis (OCA) may require changes or updates. For instance, possible hazards may now be limited to flammable substances and not necessarily a toxic substance issue.
  - The facility Risk Management Plan will require updates to OCA and possible other prevention programs.
  - Possible generation of propane or butane as a by-product of the refining/separation process.
  - With the elimination of petroleum-based materials, and the change of the NAICS Code to a non-petroleum-based processing category, the facility would not be under the Program 4 (Petroleum Refinery) requirements under the CalARP program. The facility most likely will move to the Program 3 (Chemical Processing) requirements of the CalARP program, although this will depend on the hazardous properties and volume of fuels produced by the facility and will require further evaluation.

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### **Air Quality Permitting Considerations**

The conversion of a petroleum refinery to a renewable fuel facility may involve several additions and/or modifications impacting air quality that an Air District may need to consider prior to permitting such facilities. A summary of the possible modifications to the facility that may affect air quality and related issues is provided below:

- Existing equipment serving crude oil processing (process units, heaters, load/unload racks and storage tanks) may need to be shut down.
- Possible construction of a new Hydrogen Generation Unit, and/or increased hydrogen delivered to the facility.
- Possible installation of new process units, such as Renewable Fuels Unit, Pre-Treatment Unit, Wastewater Treatment, and other supporting facilities such as Pretreat Unit, Propane Recovery Unit, Hydrogen Sulfide Recovery Unit, Sour Water Stripper, Wastewater Treatment Unit, Acid Gas Disposal, Amine/Fuel Gas Treating, Amine Regeneration, etc.
- Potential installation of new flare and flare gas recovery to support existing, new, and modified process units.
- Possible construction of new heaters to support Renewable Fuels Unit and Hydrogen Generation Unit.
- Possible installation of Selective Catalytic Reduction (SCR) to existing combustion sources to reduce nitrogen oxide (NO<sub>x</sub>) emissions.
- Repurposing (modifications and adjustments to throughput and commodities) of existing fixed and floating roof storage tanks (new tanks likely not required as part of the conversion).
- Repurposing (modifications and adjustments to throughput and commodities) of existing loading/unloading racks.
- Renewable fuels feedstocks may have noticeable odor and may require additional controls on the feedstock storage tanks and/or loading racks.
- Modifications to existing process units, supporting units and equipment, such as reactors, separators, stripper towers, fractionation towers, vessels, heat exchangers, pumps, and compressors.
- Possible modifications to existing cooling towers to reduce drift.
- The converted facility is not likely to be subject to any NSPS regulations for Petroleum Refinery (Subpart J, Ja, GGG, GGGa, QQQ, etc.).
- Transition from petroleum fuels to renewable fuels may involve a CEQA review. CEQA review would generally be required for government projects (e.g., permitting decisions) associated with refinery conversion. If conversions result in significant impacts on the environment, for instance by increasing pollution emissions, feasible mitigation would be required.

## Petroleum Refinery Transition to Renewable Fuel Production

### CalOSHA Issues

In 2017, CalOSHA implemented a substantial revision to its PSM regulation for petroleum refineries (CCR §5189.1), which closely tracks the CalARP Program 4 regulation. The 24-part PSM regulation, “*Process Safety Management for Petroleum Refineries*,” modernized process safety at refineries by requiring comprehensive PSM programs that, for example:

1. Involve employees in decision-making,
2. Integrate inherent safety into corrective actions,
3. Ensure transparency and accountability,
4. Improve Process Hazard Analyses (PHAs),
5. Identify and mitigate damage mechanisms,
6. Assess and improve safety culture,
7. Integrate and improve human factors,
8. Schedule and implement corrective actions,
9. Protect contractor employees,
10. Incorporate industry-wide best practices.

The PSM and CalARP refinery regulations established a common framework for managers to invest in process safety and build their PSM programs over time, and they improved agency cooperation among CalEPA, CalOSHA, local CUPAs and U.S. EPA in training, inspections, and enforcement.

When refineries convert from petroleum to renewable fuel production, it is important that they continue to be covered by the PSM and CalARP regulations because the fuels they produce will continue to be flammable.

The largest refineries might need to be covered by CalOSHA's 2017 PSM regulation for petroleum refineries (CCR §5189.1) and CalARP Program 4, depending on the volume of fuels they produce; however, because the regulations specifically apply to petroleum refineries, not to renewables, it might be necessary for California to take special action to ensure these refineries continue to comply as they transition. This could be accomplished by conditioning the issuance of permits on the refiner's certification of continued compliance, for example.

## **Petroleum Refinery Transition to Renewable Fuel Production**

### **Findings**

Through working with the IRTF, CalEPA staff identified common themes from the three refineries that have begun the process of conversion.

1. Communities that live and work adjacent to the refineries are key stakeholders in any transition process. Appropriate time to review and provide meaningful input should be granted to potentially impacted communities and other stakeholders. This should include participation early in any decision-making process and should continue to throughout the process.
2. The transition from refining petroleum to renewable materials involves significant changes in a refinery's existing processes and equipment, leading to changes in the required permits with regulatory agencies such as the Certified Unified Program Agencies (CUPAs) and local air districts. Changes in production process may trigger alterations in Hazardous Materials, Hazardous Waste, California Accidental Release Program (CalARP), and Aboveground Petroleum Storage Act (APSA) permits. In addition, there may be modifications required to permits obtained through local air districts or local governments that may require an environmental analysis under the CEQA, which will consider all potential impacts.
3. The transition from refining petroleum to renewable materials may result in the production facility changing from a CalARP Program 4 (Petroleum Refinery) stationary source and CalOSHA PSM CCR §5189.1 (refinery) designation to a CalARP Program 3 (Chemical Processing) stationary source and CalOSHA PSM CCR §5189 (non-refinery) designation, if the facility is no longer identified as a petroleum refinery according to the North American Industry Classification System (NAICS), which was developed as the standard for use by federal agencies in classifying business establishments for the collection, analysis, and publication of statistical data. This determination requires site-specific evaluation of the hazardous properties and volume of fuels produced by the facility.
4. The changes in permitting described above require regulatory agencies to determine the appropriate regulatory scheme for the modified processes at each refinery before specific permit decisions can be made. While there have been no specific reports of delays in the review and determination process for these permits, the process can be lengthy. There is currently no process by which the review of permits related to renewables or transitions away from traditional petroleum refining, is prioritized relative to other permits.

## Petroleum Refinery Transition to Renewable Fuel Production

### Recommendations

To achieve the highest possible level of safety for communities, workforces and the environment, to promote consistency of law and regulation throughout the state, and to improve efficiency of government, CalEPA staff have the following recommendations:

1. The IRTF will be utilized as the mechanism to inform and update all participating agencies and stakeholders (including, but not limited to, community representatives, non-governmental organizations, labor organizations, refineries, etc.) on any refinery in the process of converting from petroleum refining to renewable fuel production. This will allow all participating agencies and stakeholders the ability to:
  - a. Stay informed on current issues,
  - b. Ask clarifying questions on areas of concern,
  - c. Comment on areas of concern.
2. All regulatory agencies alerted to a transition by a refinery from petroleum refining to renewable fuels should:
  - a. Discuss the notification with all IRTF participating agencies and stakeholders,
  - b. Create a workgroup of regulatory agencies having jurisdiction over the specific refinery for information exchange and general coordination.
3. All regulatory reviews and processes should be followed to ensure:
  - a. Protection of public health and safety, worker safety, and the environment,
  - b. All law and regulation standards and requirements have been attained,
  - c. Public consultation has been requested for permit decisions.
4. All regulatory reviews and permitting should be made in a timely manner to expedite the process in accordance with Executive Order N-79-20. CalEPA will work with the Governor's Office of Business and Economic Development (GO-Biz) to identify opportunities to work with facilities and associated regulatory agencies on permit streamlining or prioritized processing.
5. CalEPA will identify state agency contacts as resources for local planning agencies if specific issues arise during a permitting process. For example, if a permitting agency has questions about the Low Carbon Fuel Standard, CalEPA will request CARB assistance for the permitting agency.
6. CalEPA routinely meets with public and community groups to discuss pertinent issues and concerns that arise concerning refineries. CalEPA shall continue this practice through the IRTF and will expand outreach to more communities that live and work adjacent to the refineries for engagement.
7. CalOSHA will review the anticipated hazardous properties and volume of fuels and develop recommendations regarding facilities' compliance with either PSM CCR §5189.1 (refineries) or §5189 (non-refineries). This will inform decisions regarding the application of either CalARP Program 4 or



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CalARP Program 3.

### **Conclusion**

This report is meant to be a living document and updated as laws or regulations change, new information becomes available, or any other changes in circumstance occur. Consultation and coordination amongst regulatory agencies, industry, and stakeholders have been the basis for the information provided herein. Discussions with regulatory agencies overseeing the conversions of the Paramount, Marathon and Phillips 66 Refineries have been greatly beneficial in forecasting potential issues in the future. The current findings do not point to any need for changes to laws and regulations. Continued collaboration with stakeholders during Interagency Refinery Task Force meetings, as well as other additional outreach, will aid in expediting the permitting process while still ensuring the utmost public, worker, and environmental safety achievable.

## **Petroleum Refinery Transition to Renewable Fuel Production**

### **Appendix A – Members of the Interagency Refinery Task Force (IRTF)**

#### **State and Federal Agencies**

- California Environmental Protection Agency (CalEPA)
- California Air Resources Board (CARB)
- Department of Toxic Substances Control (DTSC)
- State Water Resources Control Board (SWRCB)
- Department of Industrial Relations (DIR), Division of Occupational Safety and Health (CalOSHA)
- Governor's Office of Emergency Services (CalOES)
- California Department of Public Health (CDPH)
- California Emergency Medical Services Authority (EMSA)
- Office of the State Fire Marshal (OSFM)
- U.S. Environmental Protection Agency Region 9

#### **Certified Unified Program Agencies with Refineries**

- Contra Costa County Health Services Hazardous Materials Programs
- El Segundo Fire
- Kern County Environmental Health
- Los Angeles County Fire
- City of Los Angeles Fire
- San Luis Obispo County Environmental Health
- Solano County Environmental Health

#### **Local Air Pollution Control Districts with Refineries**

- Bay Area Air Quality Management District
- San Joaquin Valley Air Pollution Control District
- San Luis Obispo County Air Pollution Control District
- South Coast Air Quality Management District

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**Appendix B – Regulatory and Permitting Framework for Refineries in California**

Regulation/Activity	Agency/Department	Requirement	Purpose
<b>Safety and Prevention</b>			
Process Safety Management (PSM)	Labor/DIR/CalOSHA	Statewide	To prevent release of hazardous chemicals that could expose employees and others to serious hazards.
California Accidental Release Prevention Program (CalARP) Risk Management Plan	CalEPA (oversight/CUPA certification, state regulatory agency) CUPAs (implementation/enforcement)	Statewide	To prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases occur, and to satisfy community right-to-know law.
Industrial Safety Ordinance (ISO)	Contra Costa County & City of Richmond	Contra Costa County	To prevent accidental release of hazardous chemicals and minimize the damage if releases occur. To add additional requirements to support supplement the PSM and RMP.
Air Permit	Air Pollution Control Districts	Statewide	To write and enforce rules on air emissions, including from tanks, pipes, vents, and flares. To require ambient air monitoring and accidental release prevention plans.
<b>Emergency Response</b>			
Area Plans	CalEPA/CUPAs	Statewide	Local government blueprints for response to a hazardous materials release or threatened release. Must include requirements for multi-agency notification and coordination, impact minimization and emergency response.
Hazardous Materials Business Plans	CalEPA/CUPAs	Statewide	Submitted annually by facilities that handle hazardous materials. Must identify hazardous materials at the facility, prepare a site map, develop an emergency response plan, and implement and employee training program.
State Emergency Response Commission (SERC); Local Emergency Planning Committees (LEPCs)	CalOES (lead state agency)	Statewide	Serve as a forum for stakeholders and agencies to work together on training and other hazardous materials emergency planning activities.

# Petroleum Refinery Transition to Renewable Fuel Production

## Appendix C – Map of Refineries in California

