CONTRA COSTA COUNTY

AGENDA

Hazardous Materials Commission

Thursday, June 26, 2025 **4:00 PM** **777 Arnold Dr., Martinez, CA 94553 - Paramount Room**
Zoom: https://zoom.us/j/93502466349
Phone: 1 (669) 900-6833
Meeting ID: 935 0246 6349

Chair: Mark Hughes
Vice Chair: Fred Glueck

Agenda Items: Items may be taken out of order based on the business of the day and preference of the Committee

1. Roll Call and Introductions

2. CONSIDER approval of the April 24, 2025 Hazardous Materials Commission meeting minutes. **25-2592**

Attachments: April 24 2025 HMC Draft Meeting Minutes

3. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to two minutes).

4. RECEIVE a report from the Operations Committee.

5. RECEIVE a report from the Hazardous Materials Programs.

NEW BUSINESS

6. RECEIVE a presentation from Ashwin Jadhav and Derek Phelps of Twelve Co., The Carbon Transformation Company on decarbonizing aviation. **25-2593**

Attachments: Contra Costa (6-26-25) Final_Twelve Co

7. RECEIVE a presentation from each of the Hazardous Materials Commission student interns: Aimee Benedict and Alex Gomez. **25-2594**

Attachments: HMC INTERNSHIP PRESENTATION - Gomez
HMC INTERNSHIP PRESENTATION - Benedict

8. DISCUSS the June 11th meeting with Supervisor Shanelle Scales-Preston and topics of interest for the commission.

9. Reports from Commissioners on items of Commission interest.

10. Plan next meeting agenda.

The next meeting is currently scheduled for July 24, 2025 at 4:00 PM.

Adjourn

The Committee will provide reasonable accommodations for persons with disabilities planning to attend the Committee meetings. Contact the staff person listed below at least 72 hours before the meeting. Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the County to a majority of members of the Committee less than 96 hours prior to that meeting are available for public inspection at 1220 Morello Avenue, Suite 200, Martinez, CA 94553, during normal business hours. Staff reports related to items on the agenda are also accessible online at www.contracosta.ca.gov. If the Zoom connection malfunctions for any reason, the meeting may be paused while a fix is attempted. If the connection is not reestablished, the committee will continue the meeting in person without remote access. Public comment may be submitted via electronic mail on agenda items at least one full work day prior to the published meeting time.

For Additional Information Contact: Adam Springer at 925-655-3216

1025 ESCOBAR STREET
MARTINEZ, CA 94553

CONTRA COSTA COUNTY

Staff Report

File #: 25-2592 **Agenda Date:** 6/26/2025 **Agenda #:** 2.

Advisory Board: Hazardous Materials Commission
Subject: April 24, 2025 Hazardous Materials Commission Meeting Minutes
Presenter: Commission Chair

Information:
Attached to this agenda item is the draft meeting minutes for the April 24, 2025 Hazardous Materials Commission.

Recommendation(s)/Next Step(s):
CONSIDER approval of the April 24, 2025 Hazardous Materials Commission meeting minutes.

Meeting Minutes - Draft

CONTRA COSTA COUNTY Hazardous Materials Commission

Thursday, April 24, 2025 **4:00 PM** **777 Arnold Dr., Martinez, CA 94553 - Paramount Room**
Zoom: https://zoom.us/j/93502466349
Phone: 1 (669) 900-6833
Meeting ID: 935 0246 6349

Chair: Mark Hughes
Vice Chair: Fred Glueck

The meeting was called to order at 4:07 PM.

Agenda Items: Items may be taken out of order based on the business of the day and preference of the Committee

1. Roll Call and Introductions

Commissioners Present:Fred Glueck, Mark Hughes, Eduardo Martinez, Ronald Chinn, Maureen Brennan, Jamin Pursell, Lisa Martell, Julian Vinatieri, Jim Payne, Marielle Boortz, Madeline Kronenberg (online)
Staff Present: Breanna Lingenfelter, Adam Springer
Public Present Online: Jim Hosler, Devra Lewis, Salvador Moralez, Cathy Ivers, George Carter, Andrea Bailey, Shoshanna Wechsler, Tania Puliod, Aimee Benedict

2. The commissioners present voted to approve the March 27, 2025 Hazardous Materials Commission meeting minutes.
   Motion: Jim Payne
   Second: Fred Glueck

3. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to two minutes).

There were not any comments made by members of the public.

4. The commissioners present received a report from the Operations Committee Chair Marielle Boortz.
   Key points:
   No updates from the Hazardous Materials Programs regarding current hydrogen projects - will not invite a guest speaker for this topic. Plan to invite a guest speaker from West County Waste Water (Cheryl Sudduth) to discuss sea level rise & another from Aaron Weiner regarding county water treatment and natural levees. Continued working on the logistics of holding a public forum September 11, 2025.

5. The commissioners present received a report from the Hazardous Materials Programs Assistant Director Adam Springer.
   Key points:
   Oversight Committee has been established for the MRC incident, they have received the independent risk assessment and will review
   Contra Costa Health Hazardous Materials Programs submitted comments on the proposed CalEPA Cal ARP rulemaking.

NEW BUSINESS

6. The commissioners present received a presentation on pipeline safety from Jim Hosler of CAL FIRE.

7. The commissioners present discussed updates to the 2025 Hazardous Materials Commission Priorities including scheduling for guest speakers.
   Key points:
   May meeting - presentations from student interns
   June meeting - presentation from Twelve Co
   Will reach out to contact at DTSC for presentation regarding draft hazardous waste management plan

8. The commissioners present discussed the student intern research project topics and provided guidance as needed.
   Key points:
   Aimee is meeting with county's CORE team to share data regarding the homeless population living in close proximity to refineries and other potentially toxic sites; concerns around these vulnerable individuals living in impacted zones; notification systems for this population and strategies for sheltering in place

9. Reports from Commissioners on items of Commission interest.

10. Plan next meeting agenda.

The next meeting is currently scheduled for May 22, 2025 at 4:00 PM.

Adjourn
The meeting was adjourned at 5:20 PM.

File #: 25-2593 **Agenda Date:** 6/26/2025 **Agenda #:** 6.

Advisory Board: Hazardous Materials Commission
Subject: Presentation from Twelve Co.
Presenter: Ashwin Jadhav and Derek Phelps

Information:
Attached to this agenda item is a PowerPoint presentation from Twelve Co. on decarbonizing aviation.

Recommendation(s)/Next Step(s):
RECEIVE a presentation from Ashwin Jadhav and Derek Phelps of Twelve Co., The Carbon Transformation Company on decarbonizing aviation.

twelve | a world made from air

CONTRA COSTA HEALTH

Hazardous Materials Commission

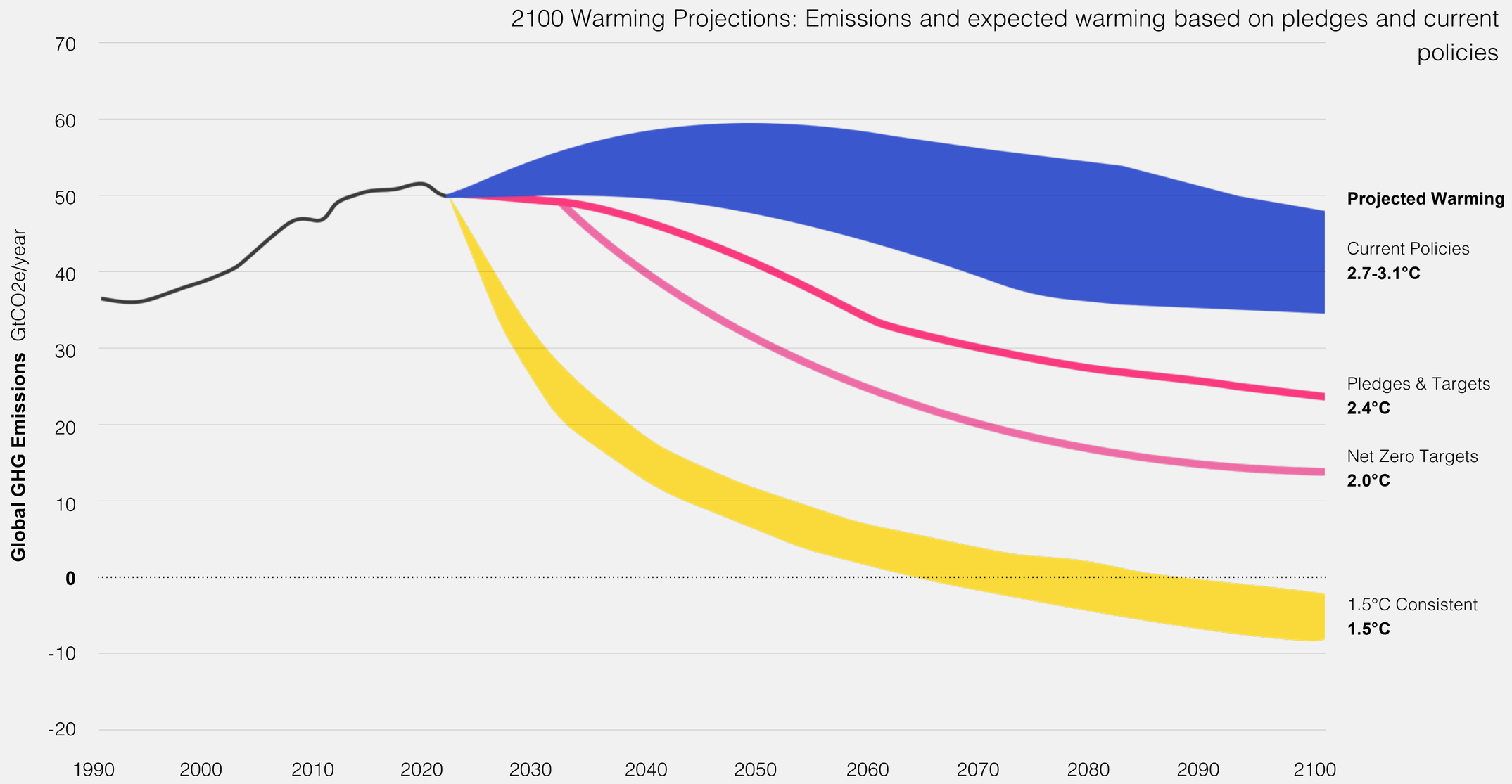
Ashwin Jadhav and Derek Phelps

June 26, 2025

we need to decarbonize aviation to meet climate goals

twelve

twelve



Source: Climate Action Tracker

we're the carbon transformation company

e·jet®

eFuels for transportation and logistics

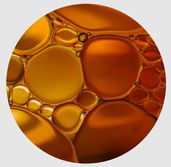
e·naphtha™

eChemicals for carbon negative feedstocks

CO2Made®

CO2Made® products from brands you love

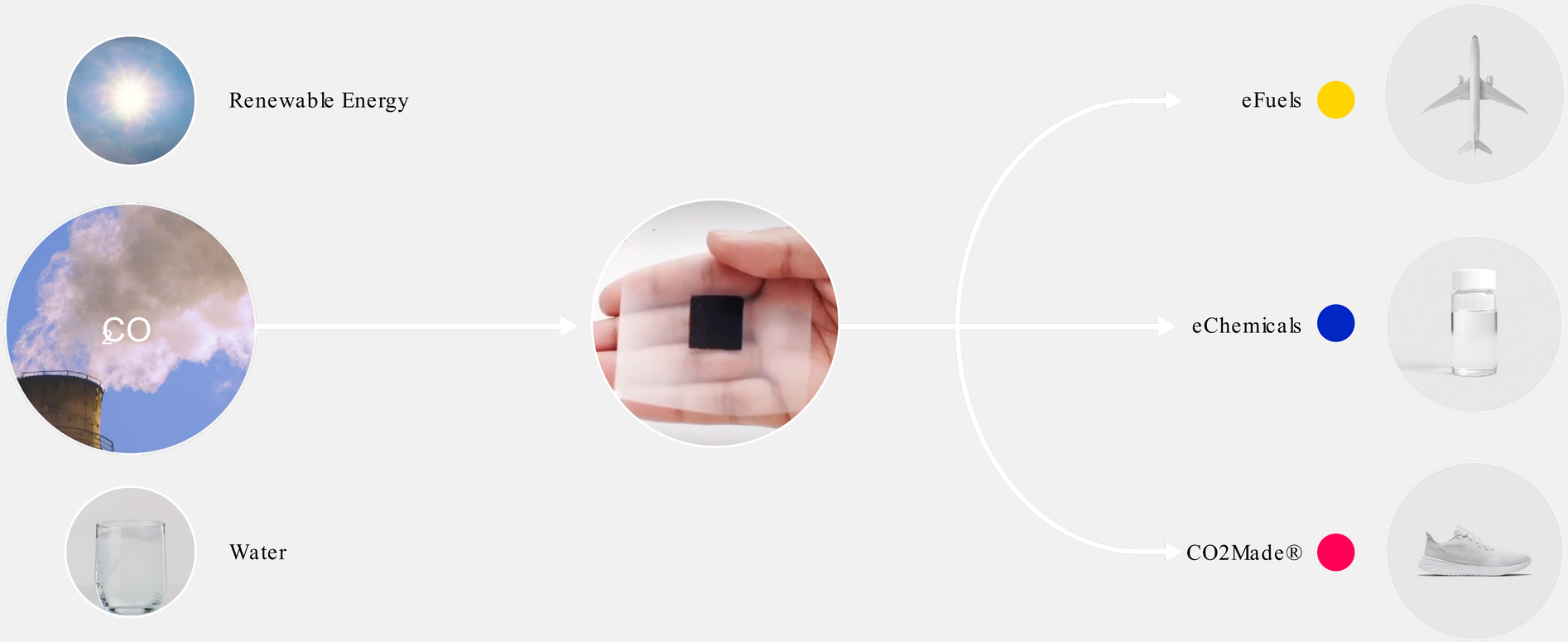
SAF landscape

				
	HEFA- The Fats Way	**Alcohol-to-jet[1] - The Corn Way**	**Gasification - The Waste Way**	**Power-to-liquid - The Air Way**
Opportunity	Safe, proven, and scaleable technology	Potential in the mid-term, however significant techno-economical uncertainty	Potential in the mid-term, however significant techno-economical uncertainty	Proof of concept 2025+, primarily where cheap, high-volume electricity is available
Technology Maturity	Mature	Commercial pilot	Commercial pilot	In development
Feedstock	Waste and residue lipids, purposely grown oil energy plants[2] Transportable with existing supply chains Potential to cover 5-10% of total jet fuel demand	Ethanol pathway High availability of cheap feedstock, but fragmented collection and distribution	Agricultural and forestry residues, municipal solid waste[5], and purposely grown cellulosic energy crops[6] High availability of cheap feedstock, but fragmented collection and distribution	CO_2 and green electricity Unlimited potential via direct air capture Point source capture is bridging the technology
% LCA GHG (Reduction vs fossil jet)	**73-84%**[3]	**85-94%**[4]	**85-94%**	**99%**[7]

1. Ethanol route; 2. Oilseed bearing trees on low-ILUC degraded land or as rotational oil cover crops; 3. Excluding all edible oil crops; 4. Excluding all edible sugars; 5. Mainly used for gas/FT; 6. As rotational cover crops; 7. Up to 100% with a fully decarbonized supply chain

Source: CORSIA; RED II; De Jong et al. 2017; GLOBIUM 2015; ICCT 2019; E4tech 2020; Hayward et al. 2014; ENERGINET renewables dialogue; Van Dyk et al. 2019; Umweltbundesamt 2016

carbon transformation | CO2 to products



CO2 | water | renewable energy

CO2 is captured from biogenic industrial emissions and from direct air capture, drawing down existing CO2 in the atmosphere

carbon transformation

Our carbon transformation technology, the Opus™ System, is a CO2 electrolyzer that transforms CO2, water, and renewable energy into essential carbon-based products

eProducts

eFuels for air, land, and sea; eChemicals for carbon fossil free feedstocks, and CO2Made® consumer products from brands we love

modular technology enables rapid scaling

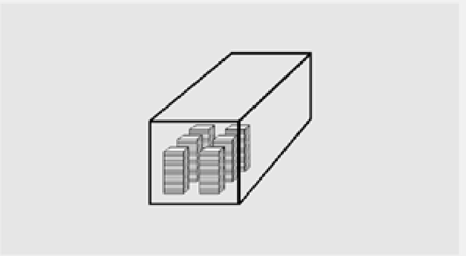
1
the shiny black leaf

Our core carbon transformation technology is the Membrane Electrode Assembly (MEA) which uses a novel CO2-reducing catalyst to electrify CO2 and water producing only oxygen and synthesis gas

2
the stack

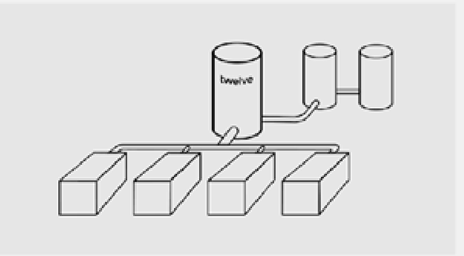
The Stack is a highly modular repeating sequence of MEAs and electrolyzer hardware to allow for controlled electrical current, CO2, and water to flow across each membrane

3
opus™



Opus is our industrial scale carbon transformation platform. It can plug into industrial systems using CO2 from point of emissions or from direct air capture

4
airplant®



AirPlant is our carbon transformation plant that can produce both E-Jet® SAF as well as E-Naphtha™

pilot products

Mercedes-Benz

World’s first CO2Made®
car parts

Mercedes-Benz

World’s first CO2Made®
PU Foam

US Air Force

World’s first jet fuel
made from CO2

Tide

World’s first
CO2Made® formate

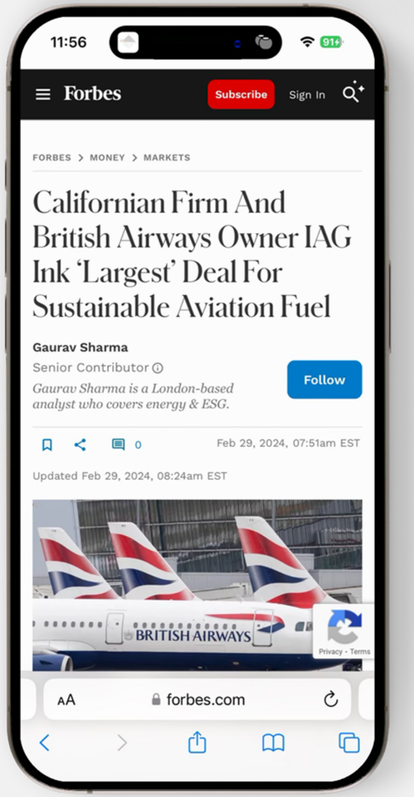
Pangaia Labs

World’s first CO2Made®
Sunglasses

an unprecedented eSAF partnership

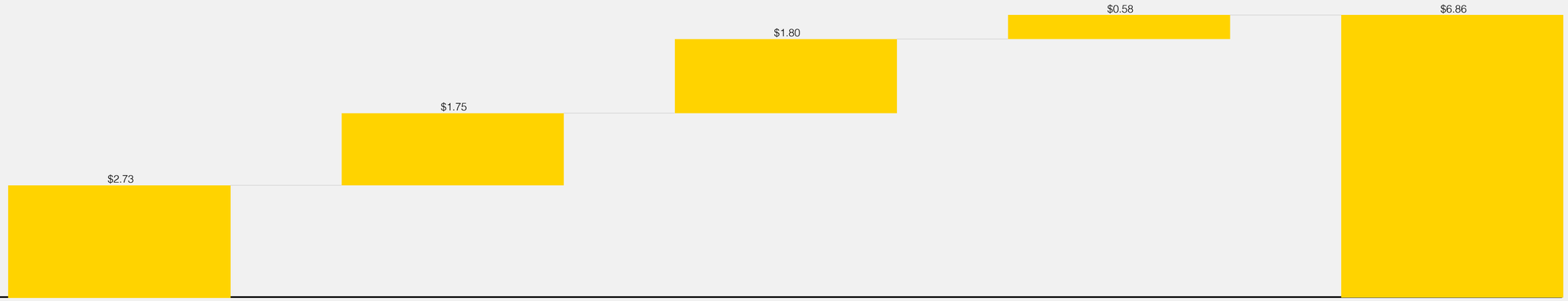
twelve x Alaska AIRLINES x Microsoft

largest eSAF deal ever



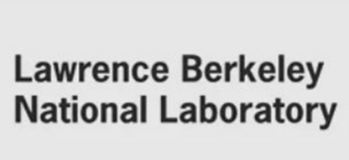
Twelve x IAG
14 Year
1 Billion Liters
Largest eSAF deal ever

How do government incentives work?

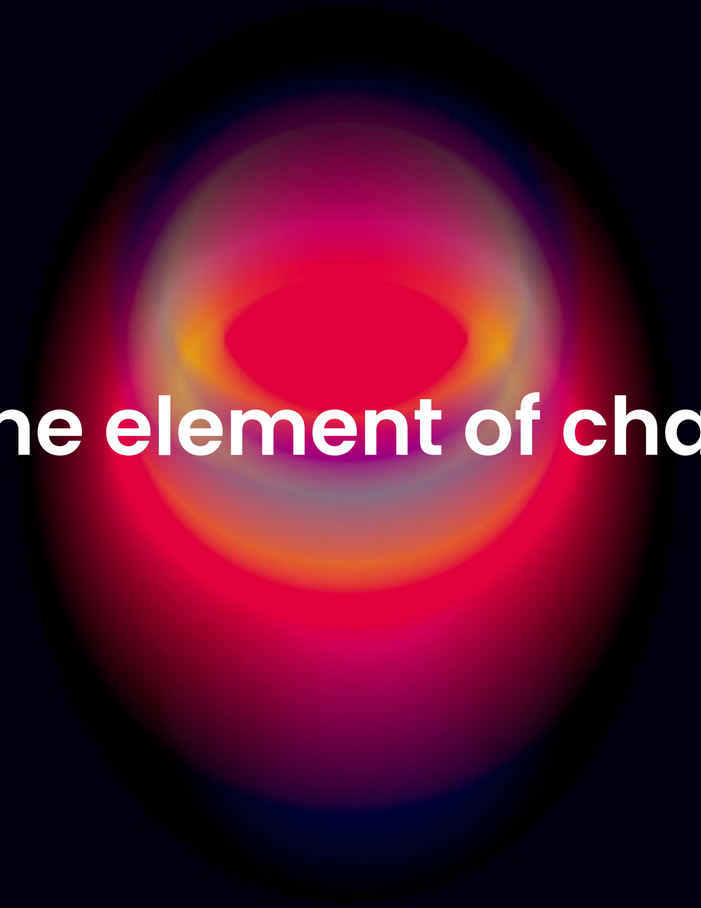


Incentive ($/gal of Fuel)				
Legislation	45V Hydrogen Production Tax Credit	45Z Clean Fuel Production Tax Credit	State-level incentives, i.e. WA	45Q
Incentive	up to $3/kg-$H_2$	Up to $1.75/gal	Up to $2/gal	$60/tonne-CO2
Conversion	0.91 kg-H2/gal	90% emissions reduction → $1.42/gal	90% emission reduction → $1.8/gal	9.58 kg CO2/gal
Expiration	2043, credits last for 10 years after COD of projects started before 2033	2027, expected to extend	n/a	2045, credits last for 12 years after COD of projects started before 2033

our investors and partners



Cumulative investments inclusive of Series C raise: $800 million



be the element of change

appendix

sustainable aviation fuel timeline

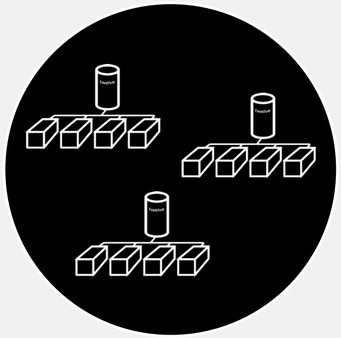
2025

Takeoff

2026/2027

Mass Production

2028+



Multiple AirPlants

delivering jet fuel made from air

production

E-Jet® is produced in Moses Lake plant

shipping

eSAF shipped via truck and JetA shipped via pipeline

blending

Fuel is blended at terminal

delivery

Fuel is shipped to Seattle-Tacoma Airport

fueling

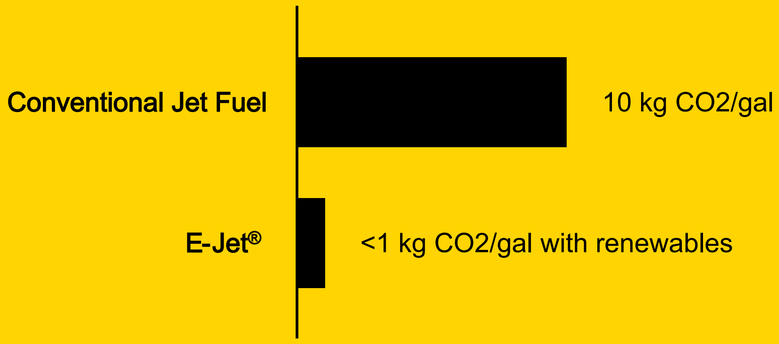
Storage, Tracking & Into-Wing Delivery

jet fuel made from air

First E-Jet customer: **US Air Force**
Fuel delivered and tested: **Summer 2021**

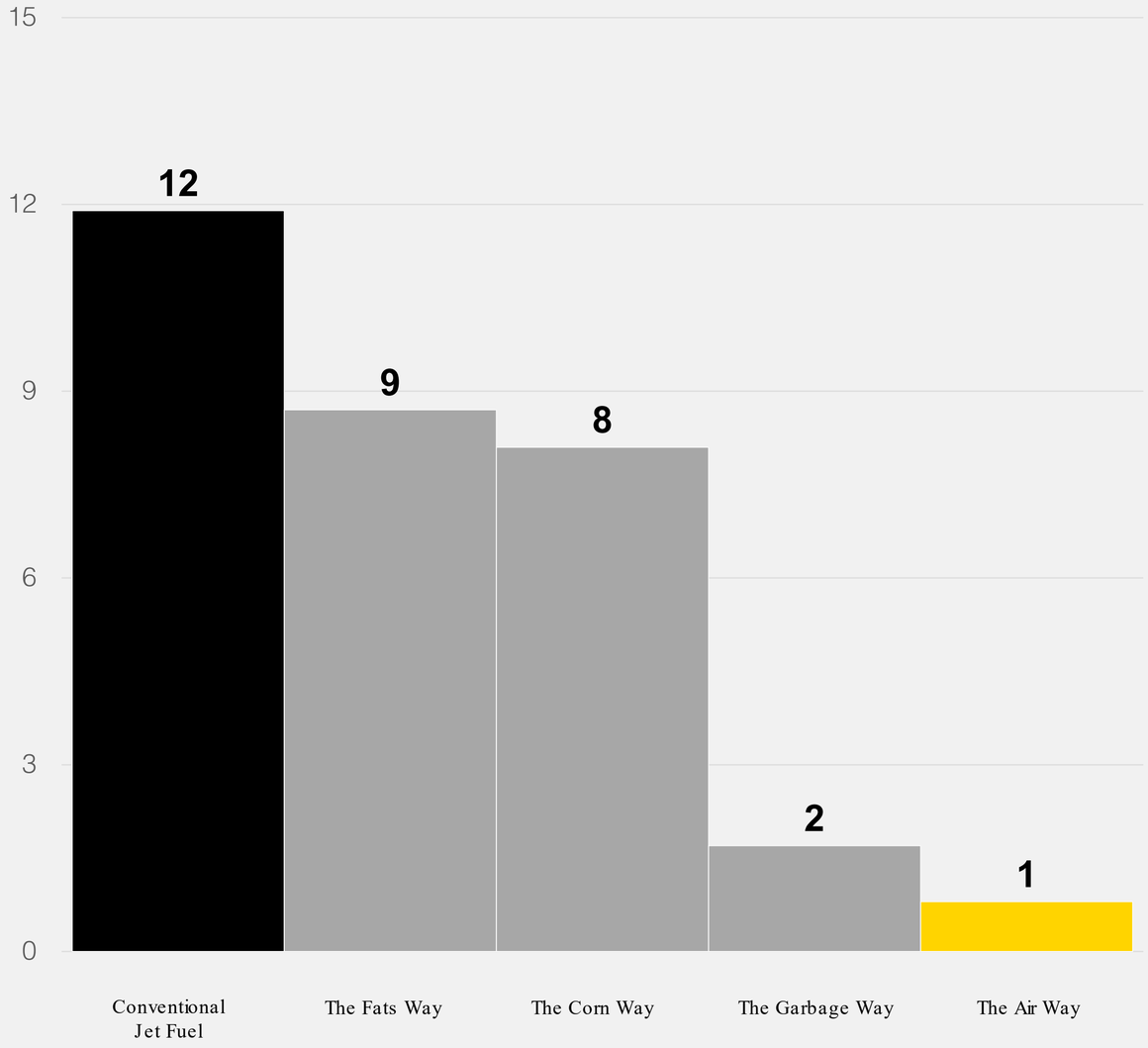
90%

Up to 90% lower emissions
than conventional jet fuel



e·jet®

making jet fuel from air significantly reduces carbon dioxide emissions

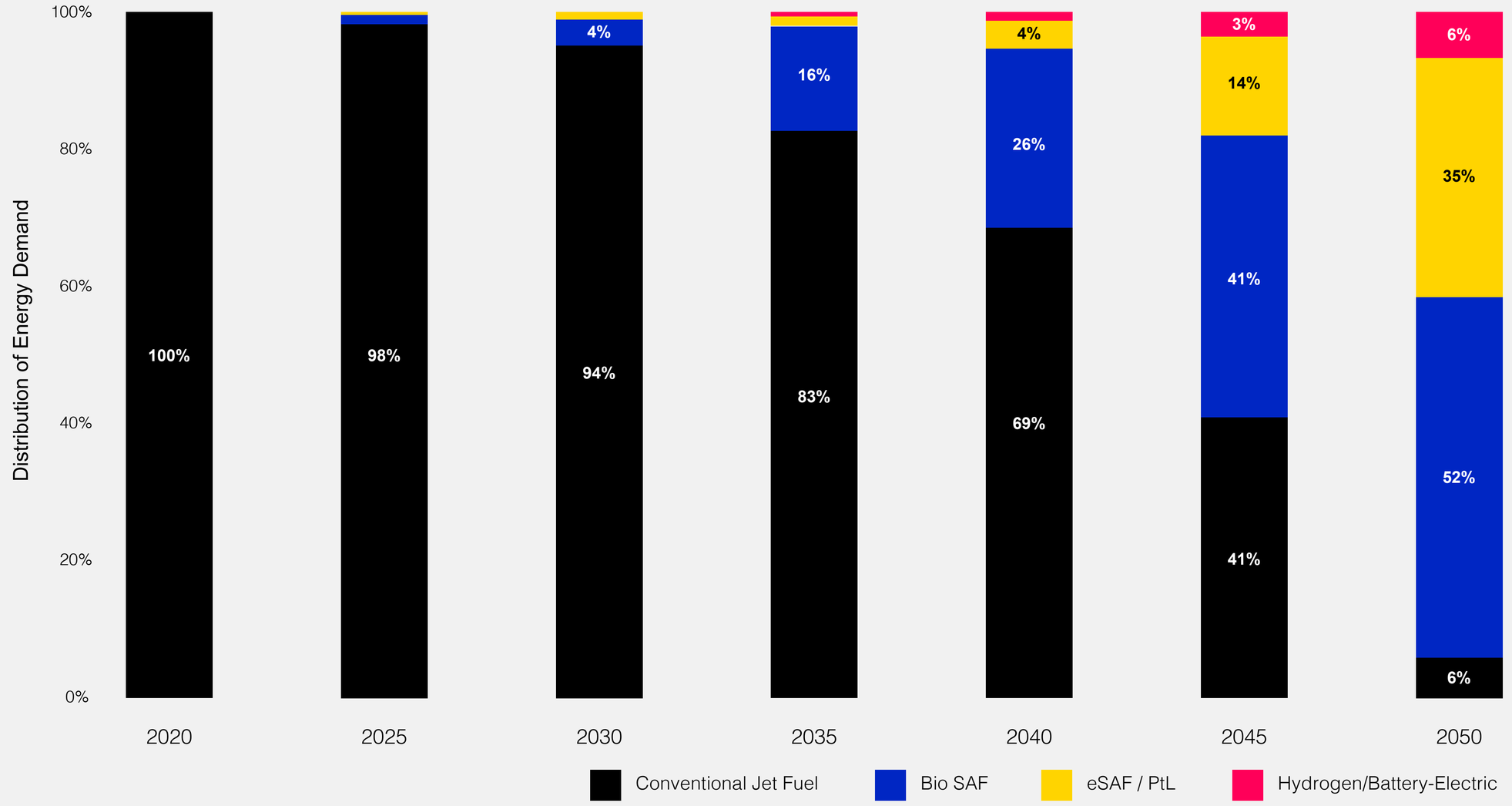


twelve

90%

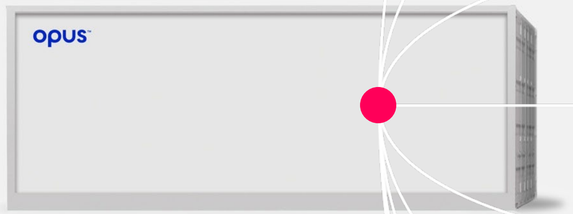
E-Jet has up to 90% lower emissions than conventional jet fuel

increasing demand for power-to-liquid SAF

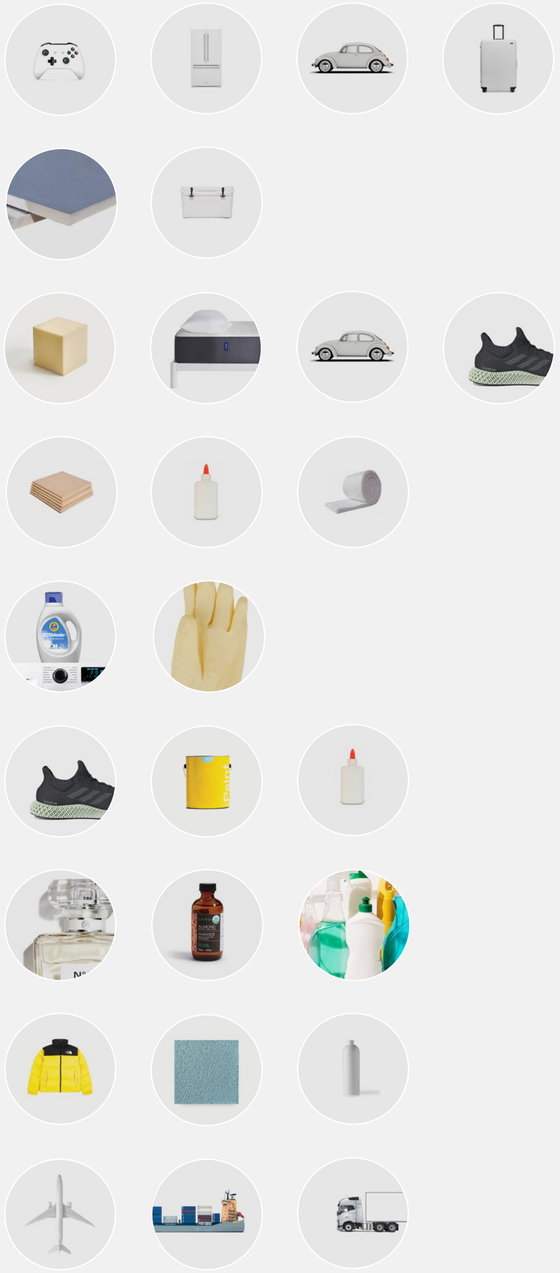


Source: IATA Sustainability and Economics

e·naphtha™

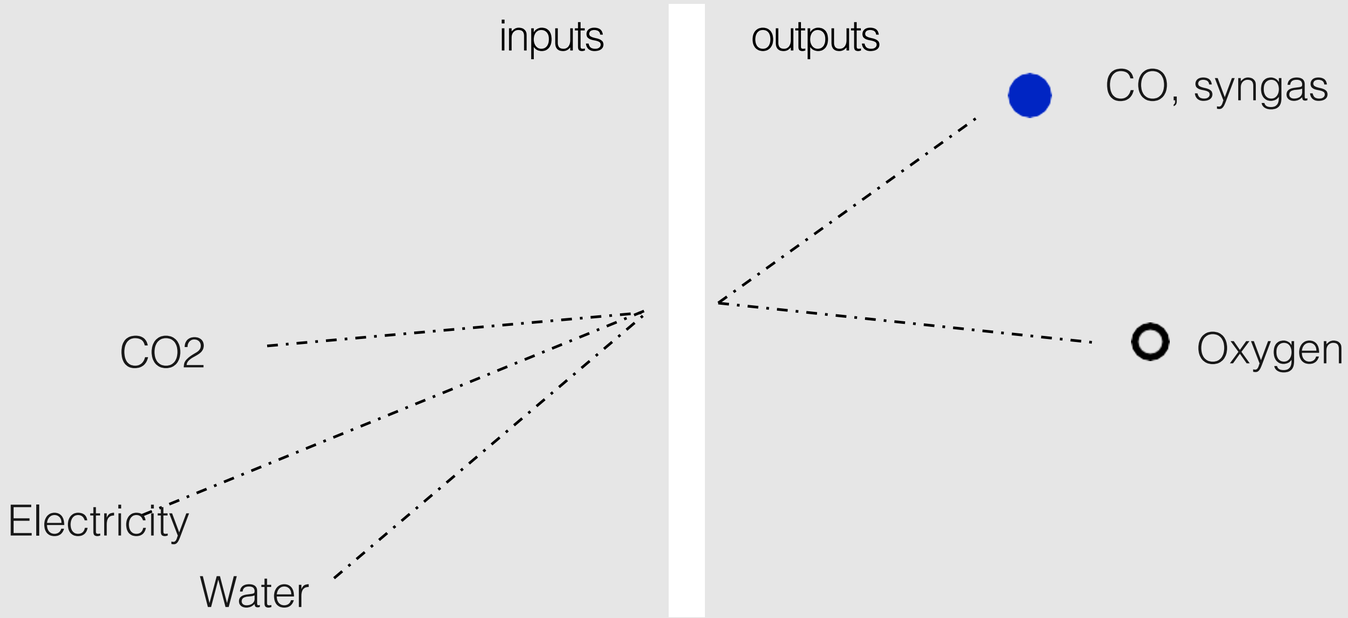


Polycarbonate	Electronics, Appliances, Automotive, Protective Shells
	Rigid PU Foam: Insulation, Food Storage
MDI, TDI, PMPPI	Flex PU Foam: Mattresses, Automotive, Footwear
Methanol (from Syngas)	Wood Laminates, Adhesives, Insulation, Plywood
Formic Acid	Detergents, Natural Latex
Acetic Acid	Footwear, Paints, Adhesives
Oxo Alcohols	Fragrances, Flavorings, Solvents
Onsite CO	Food Packaging, Nickel Treatment, R&D
Ethylene Glycols	Polyethylene Terephthalate for Fibers, Films, and Bottles
Transportation Fuels	Jet fuel, Diesel



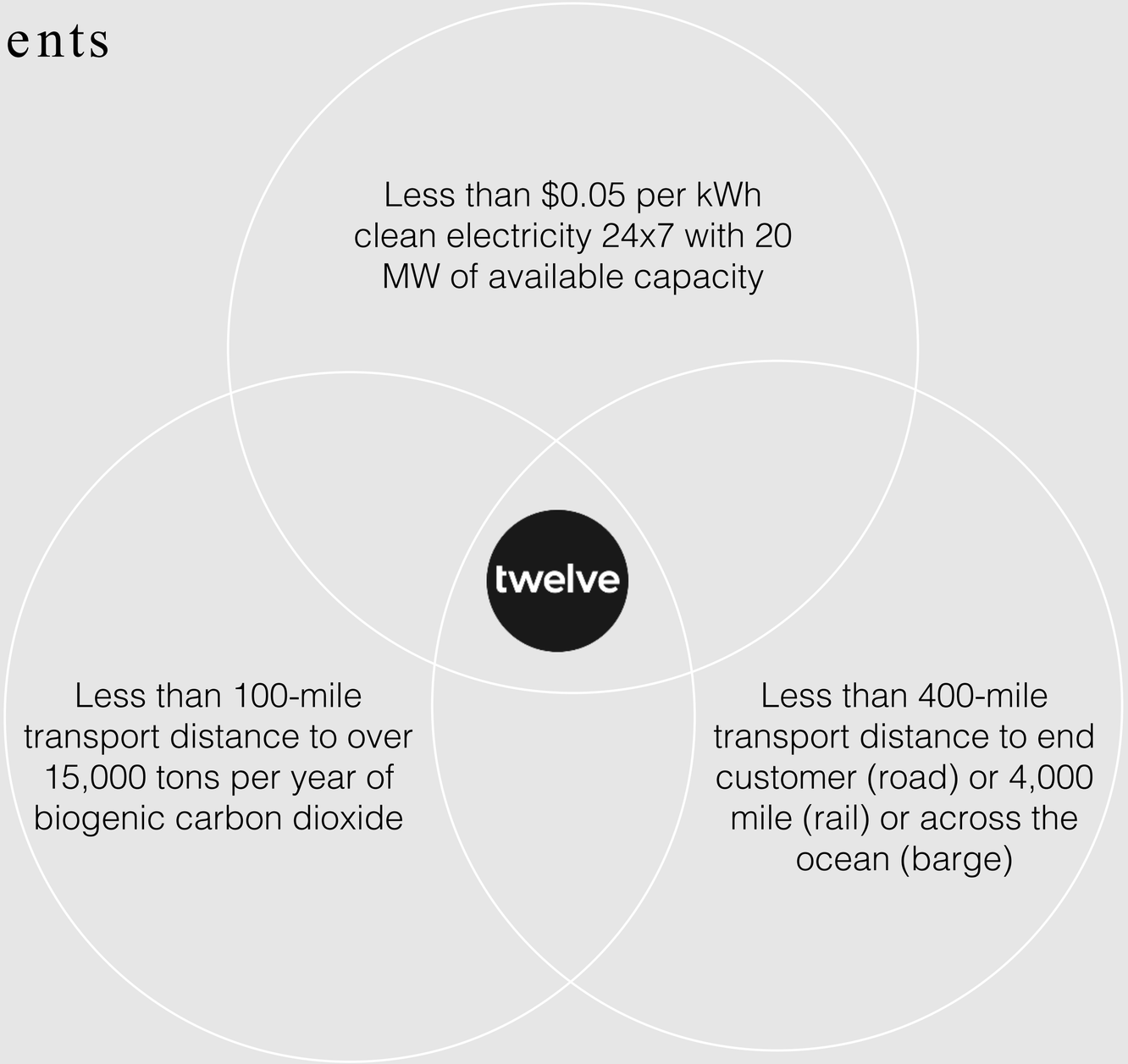
twelve

we transform CO_2 into ingredients for chemicals, materials, and fuels



process: a platform technology that enables PEM electrolyzers to make carbon-based products

project requirements



File #: 25-2594 **Agenda Date:** 6/26/2025 **Agenda #:** 7.

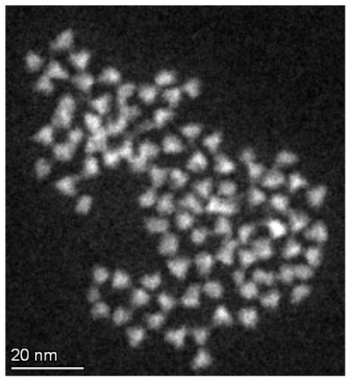
Advisory Board: Hazardous Materials Commission
Subject: Student Intern Final Presentations
Presenter: Aimee Benedict and Alex Gomez

Information:
Attached to this agenda item are two PowerPoint presentations from the Hazardous Materials Commission student interns.

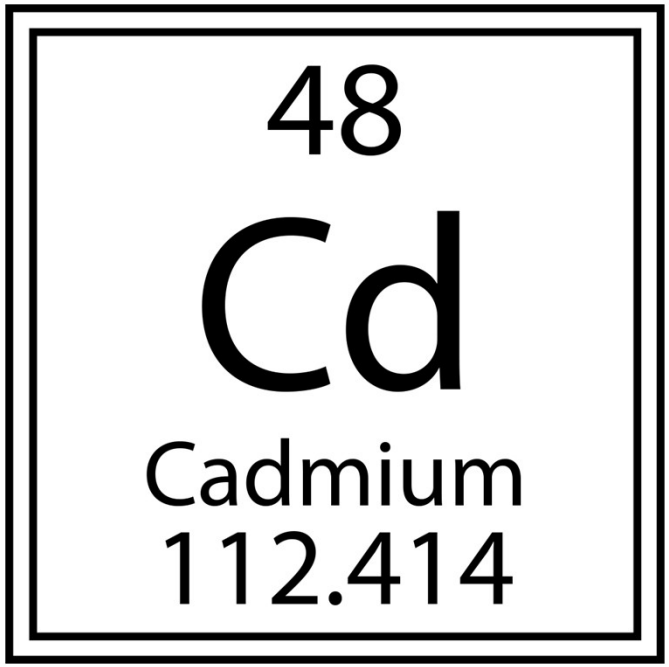
Recommendation(s)/Next Step(s):
RECEIVE a presentation from each of the Hazardous Materials Commission student interns: Aimee Benedict and Alex Gomez.

Cadmium and VOC Bioremediation in the Richmond Zeneca Site

BY ALEXANDER GOMEZ



Introduction



Background Information about Cadmium

- Cd has gotten worldwide attention for its large accumulation in agricultural soils and its anthropogenic activities.
- Cadmium contamination in soil is a global issue, and has many negative side effects on our agricultural yields, oceanic toxicity, and human health

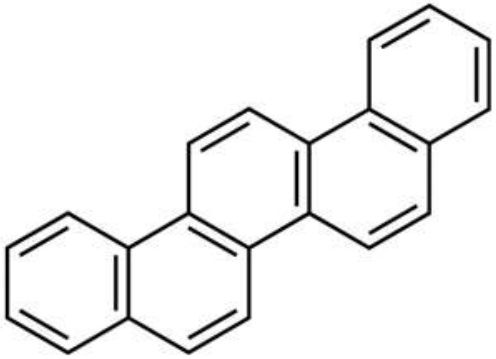

(Richmond Progressive Alliance, 2021)

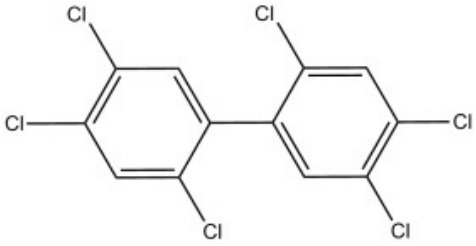
Zeneca Site: Location

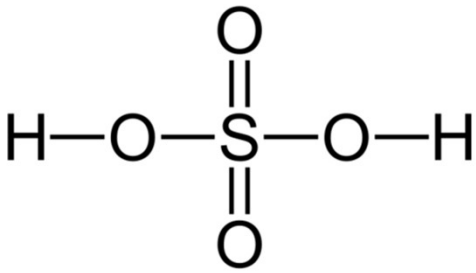
- Heavily contaminated site
- Richmond Shoreline
- Potential for housing use,
  - But lacks environmental safety.

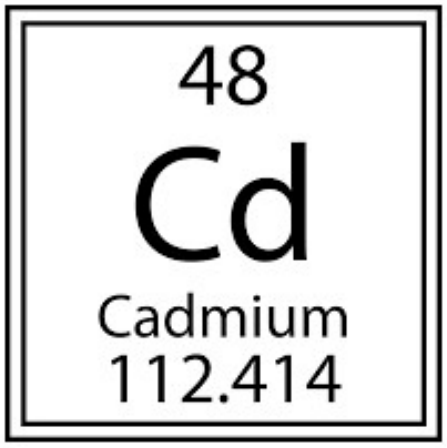
Richmond Zeneca Site

- Manufacturing site for:
  - Sulfuric Acid
  - Pesticides
  - Fungicides
- Found in Soil:
  - Heavy metals (Cadmium compounds amongst many others)
  - Pesticides
  - Sulfuric Acid
  - VOCs
  - PCBs, PAHs (harmful aromatics)









Current Efforts at Zeneca Site

- REMOVAL OF CONTAMINATED SOILS
- SEDIMENT CAP REPLACEMENT
- POST REMEDIAL GROUNDWATER, SURFACE WATER, AND STORMWATER MONITORING
- POST REMEDIAL AIR MONITORING

(Richmond Side, 2024)

Who Could Be Affected?

- Current nearby residents
- Possible homeless populations near the Zeneca site
- Future homeowners
- Surrounding shoreline wildlife
- Nearby Community Workers

Testimony from Community Member

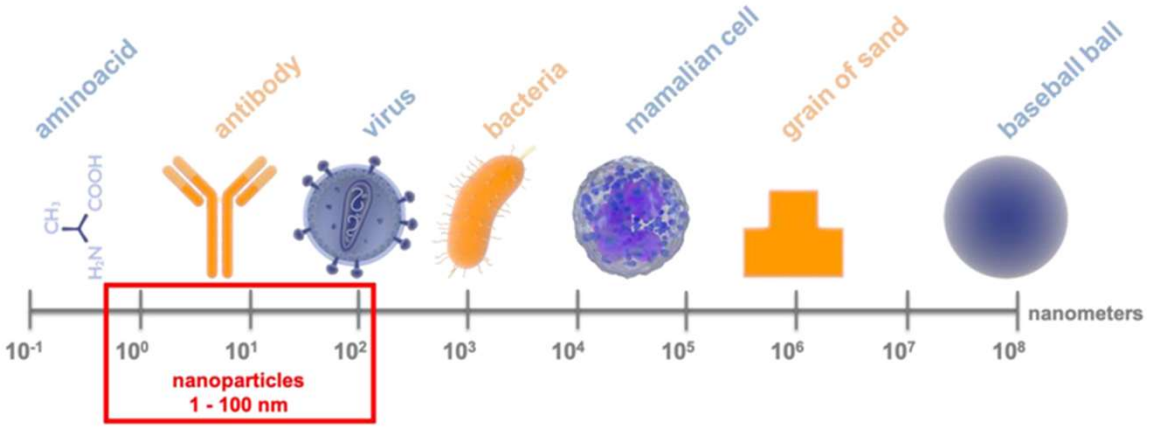
"An unusual number of tumors, cancers and illnesses surfaced among 24 individuals out of 300 working full time in the neighborhood within a two year period. Of the 24 individuals, 11 are dead. Maybe some of those could be considered normal. I do not consider my case normal [...] I missed three days of work for illness in more than 25 years of professional work. A silent, insidious and deadly toxic exposure altered and damaged my genetic code, allowing these tumors to grow unfettered."

-Sherry B. Padgett< Berkeley Daily Planet, 11-9-2004

Health Inequities At Play

- Built Environment
- Lifestyle (for some)
- Healthcare Access for affected residents and victims

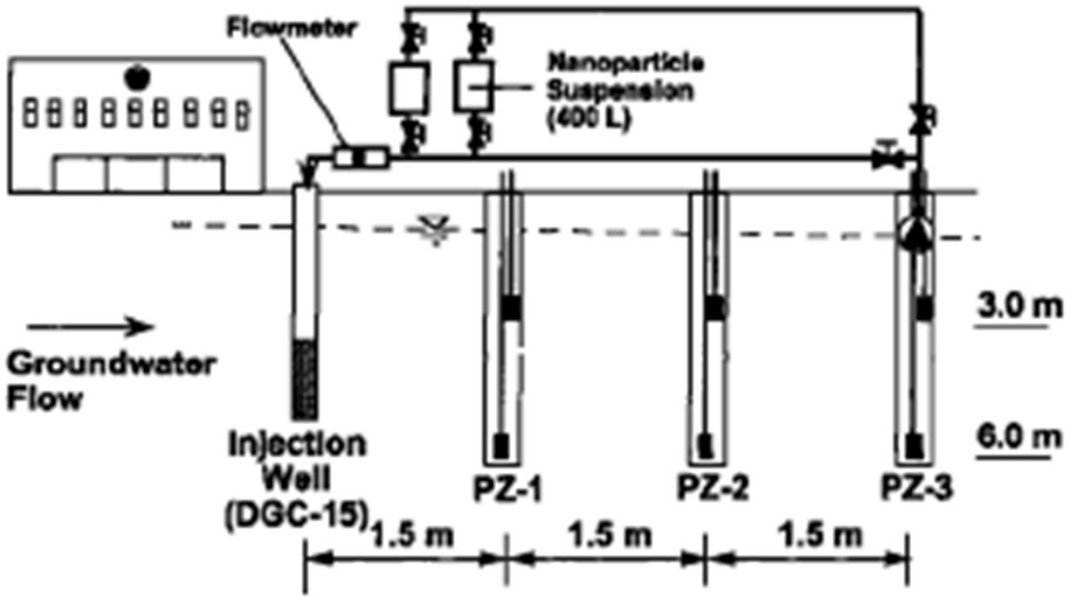
Possible Solution(s): Nanoparticles



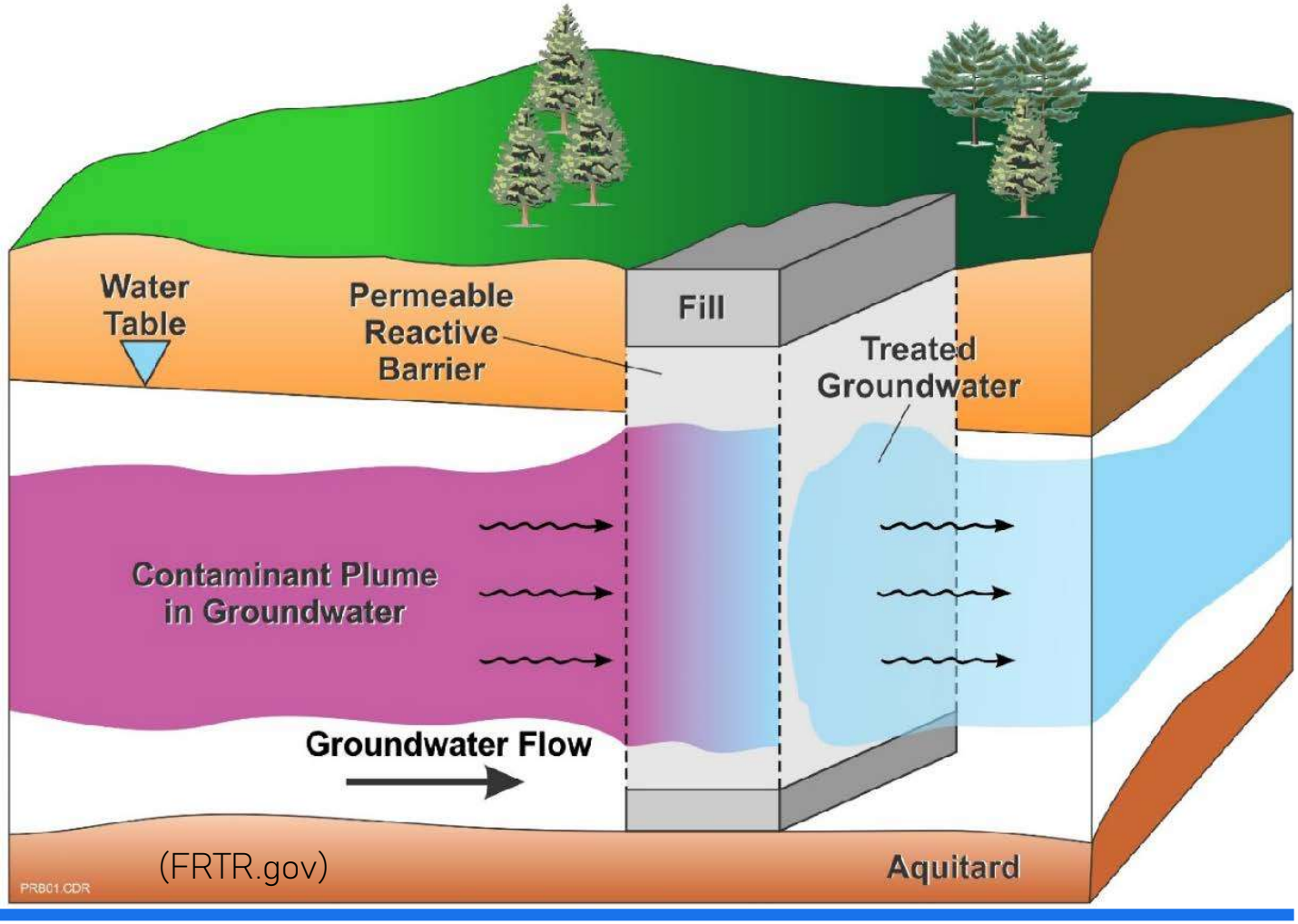
(Steckiewicz, et al. 2020)

- Range between 1 and 100 nanometers
- Size of a nanoparticle impacts its properties
  - Example: Quantum Dots' light emission is proportionate to the size it is.

Zero Valence Iron Permeable Reactive Barriers



(Galdames. et al. 2020)



(FRTR.gov)

Permeable Reactive Barriers

- Used for treating groundwater
- In situ soil treatment is very promising as it requires little alteration of soil structure and integrity.
- BUT presents issues with lower remediation potential because of varying contaminant levels.
  - Zero Valence Iron (ZVI) is implemented to these systems to amend these issues.

Review

Zero-Valent Iron Nanoparticles for Soil and Groundwater Remediation

Alazne Galdames [1], Leire Ruiz-Rubio [1,2,*], Maider Orueta [3], Miguel Sánchez-Arzalluz [3] and José Luis Vilas-Vilela [1,2]

- Inert state of Iron (Fe0)
- Modular in how it can be applied (naturally polymerized NZVI)
- Inexpensive, nontoxic, moderate reducing agent.
- When paired with water, can form hydrogen peroxide, which then gets reduced back to water.
  - This property allows it to be a strong oxidative capability to degrade organic contaminants and metals

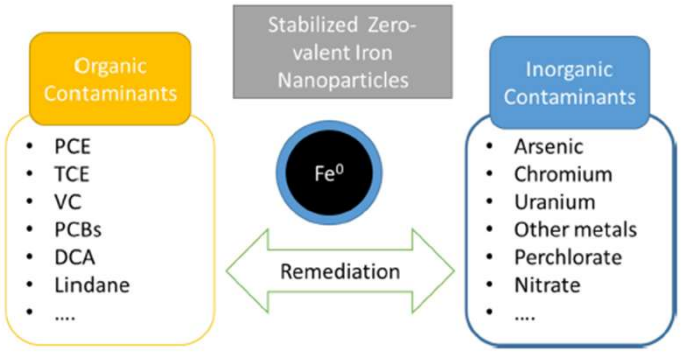


Figure 7. Summary of the main contaminants remediated with stabilized NZVI.

$$Fe^0 + O_2 + 2H^+ \rightarrow Fe^{2+} + H_2O_2$$

$$Fe^0 + H_2O_2 + 2H^+ \rightarrow Fe^{2+} + 2H_2O$$

$$Fe^{2+} + H_2O_2 \rightarrow Fe^{3+} + \cdot OH + OH^-$$

(Galdames. et al. 2020)

NZVI in PRB Technology

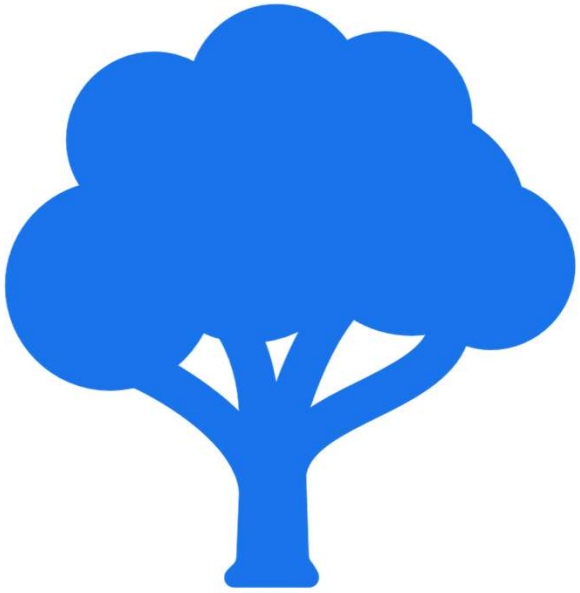
Table 6. Summary of pilot and full-scale tests for polymer coated NZVI particles.

Pollutants	Conc. Decrease	Addition Method	Site	Comments	Location	Reference
Chlorinated compounds	>90%	Injection in two phases		30 days	Hamilton Township, New Jersey (USA)	[32]
TCA, DCE, TCE, PCE	80–90%	n/a	Soil	n/a	Naval Air Engineering Station of Lakehurst (USA)	[98]
TCA, DCE, TCE, PCE	80–90%	n/a	Soil	n/a	Naval Air Station of Jacksonville (USA)	[98]
PCE	90%	n/a	Soil	2 years after, more reduction	Bornheim, Germany (Europe)	[137]
PCE, TCE, DCE	60–75% for Horice and 90% for Pisecna	Injection (82 injection wells)	Soil	n/a	Czech Republic (Horice and Pisecna)	[137]
Chlorinated compounds	>90%	n/a	n/a	30 days	Hamilton Township, New Jersey (USA)	[32]

"Some pilot and full-scale tests have carried out by using stabilized NZVI (Table 6). In Hamilton Township, New Jersey (USA), a remediation strategy based on this nanotechnology showed positive results. The NZVI were injected in two phases and the duration of the test was 30 days. The results showed a decrease in the concentration of chlorinated contaminants of up to 90 percent"

(Galdames et al. 2020)

Limitations

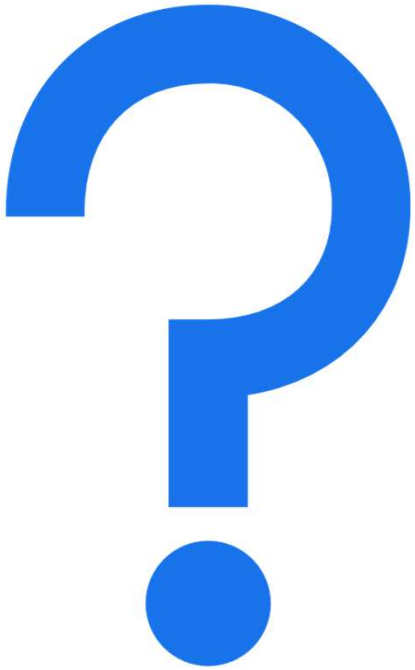


- Formation of nanoparticle aggregation
- Lack of mobility of bare NVZI
  - Where polymer coating comes in
- More analysis on potential ecological and environmental risk because of their nanoparticle scale
- Lack of studies on the ecotoxicity or bioaccumulation on pilot and complete clean up.

Conclusion

- NZVI's can be a promising solution to restoring the Richmond Zeneca site
- Provides a wide ranged list of targeted contaminants, (metals, VOCs, PCBs, etc.)
- Has a high concentration % decrease in contaminants
- Has versatile colloidal properties that can allow them to improve when treated with biodegradable polymers

Questions?



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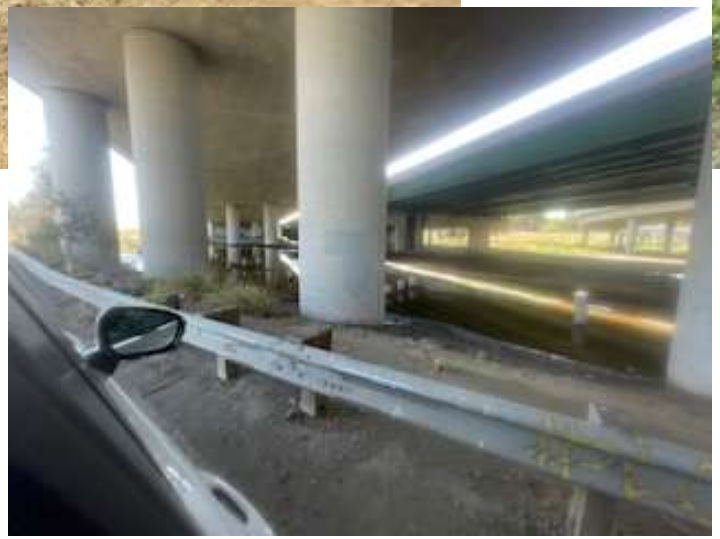
Engaging Homeless Populations During Hazardous Materials Incidents: Communication Strategies for Areas Around Refineries

Aimee Benedict, Hazardous Materials Intern

Areas surrounding refineries and factories may be impacted during an accidental release of hazardous materials, creating “impacted zones” where people cannot shelter in place.

- For example, at MRC Martinez, there are some people living near the “impacted zone” area, but more had been living there priorly. The outreach worker there noted that homeless people changed their possessions frequently and were subject to police and other types of raids, and are difficult to ascertain that they would keep devices that weren’t portable with them.
- Directly close to the site, there are no businesses to shelter in place in in case of a hazardous event.
- In case of hazardous event, outreach workers can “recommend” that people leave the area, but they can’t force them to do so.

Near Martinez Refining Company, Martinez



Receiving alerts about hazardous material events via text messaging is crucial.

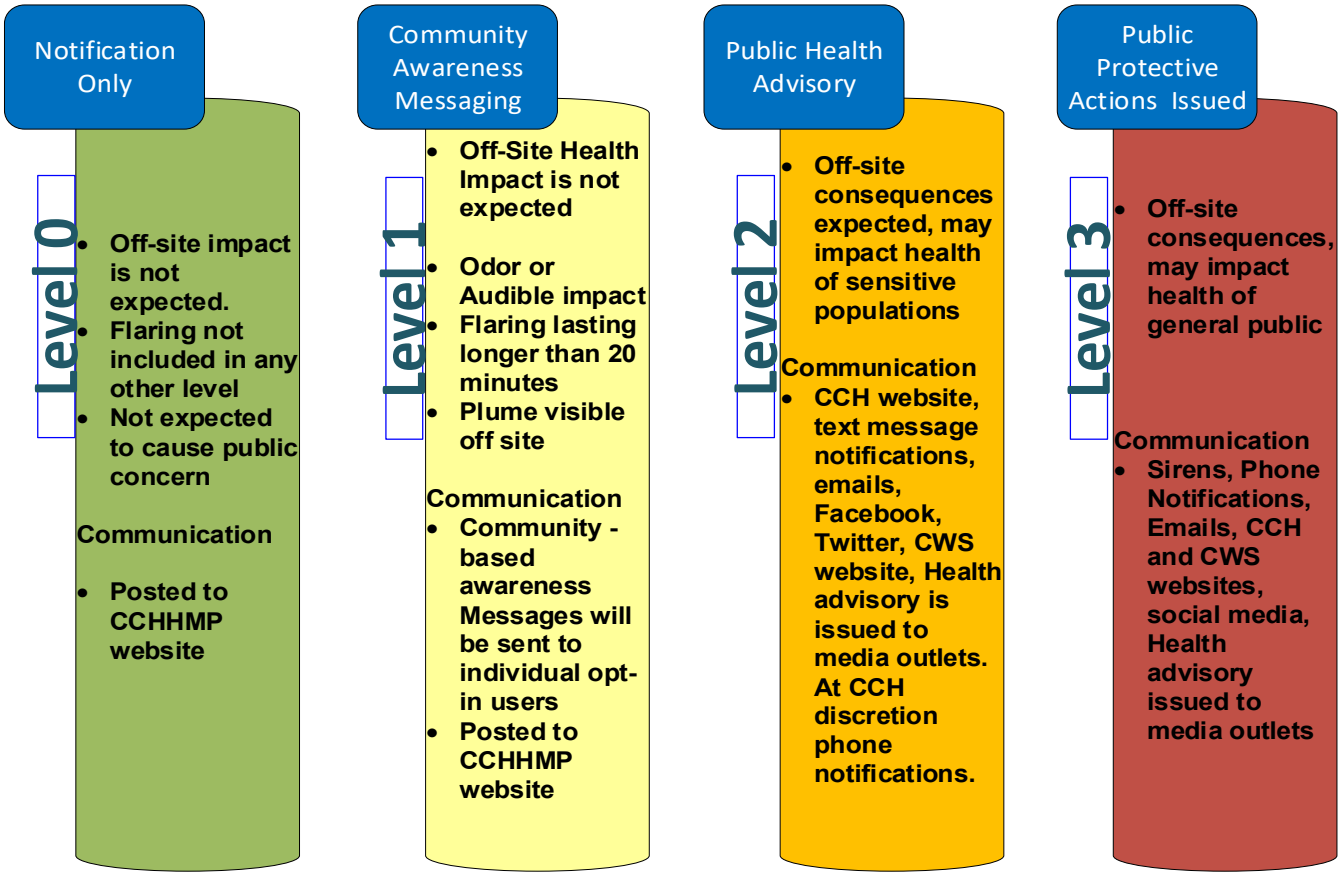
- It is important that alerts and warning system messages from the community warning systems are sent to everyone affected by the hazardous event to educate and provide information about what the messages mean. If there is an imminent threat to health and human life the two actions are to shelter in place or evacuate.
- Every cell phone that's capable of receiving a message in any direction receives a message through the Wireless Emergency Alert network.
- Hazardous Materials Incidents at facilities in Contra Costa are defined in the Hazardous Materials Notification Policy, which contains a definition of level 0, 1, 2, or level 3 incident with CWS.

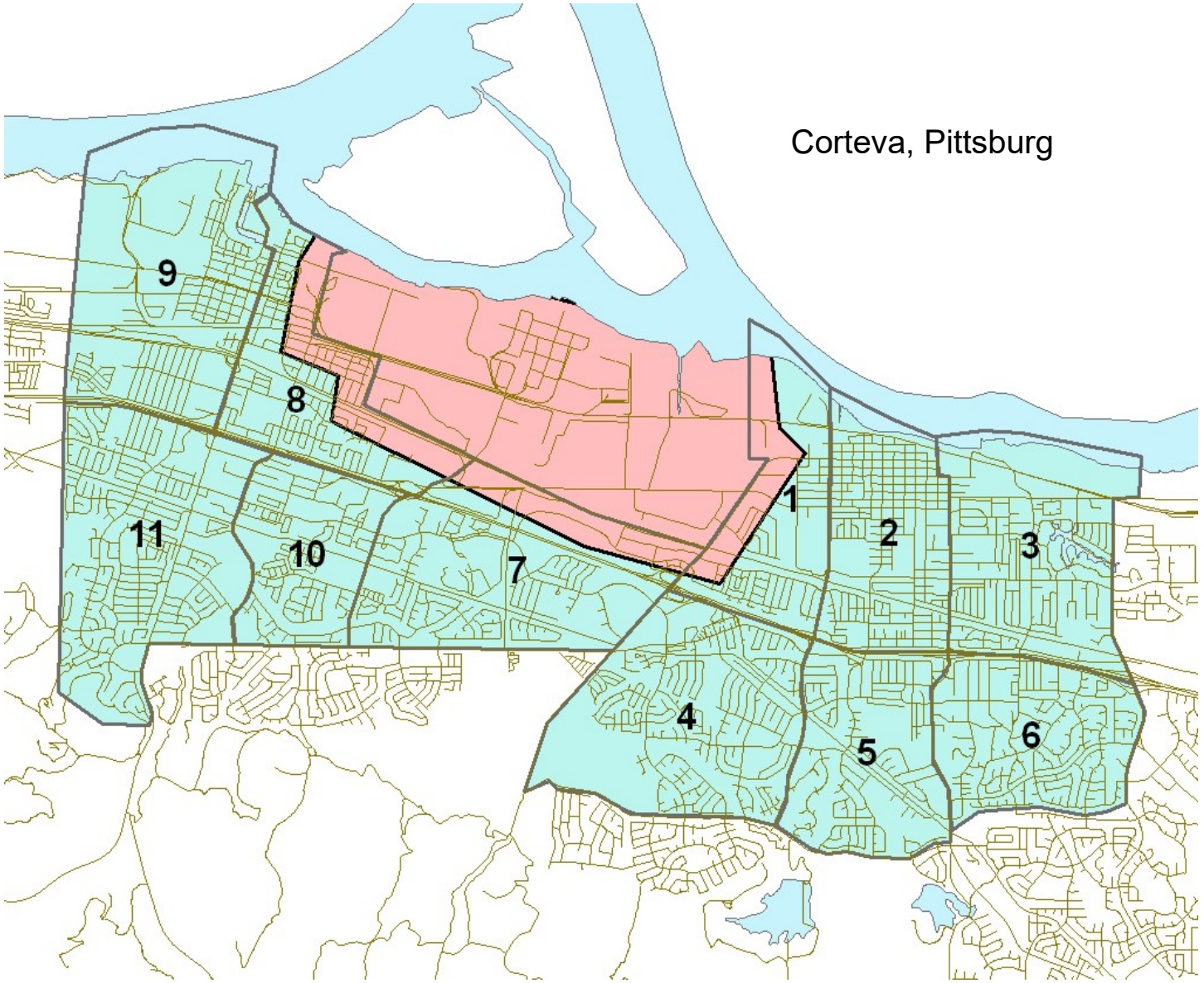
Community Warning System- CWS- messages may be sent to cell phones through text messages or other tools, including the Wireless Emergency Alert- WEA- network.

- The public should sign up for messages to enable them to receive all the messages available in the system for public notification

- The six locations considered in this survey are the Tesoro Refinery, Concord, the Rhodia Chemical Plant, Martinez, which produces sulfuric acid, the Martinez Refining Company PBF, Martinez, Chevron Refinery, Richmond, Conoco Phillips, Rodeo, and Corteva, Pittsburg, which is a pesticide company.

Hazmat Warning System Levels




Corteva, Pittsburg
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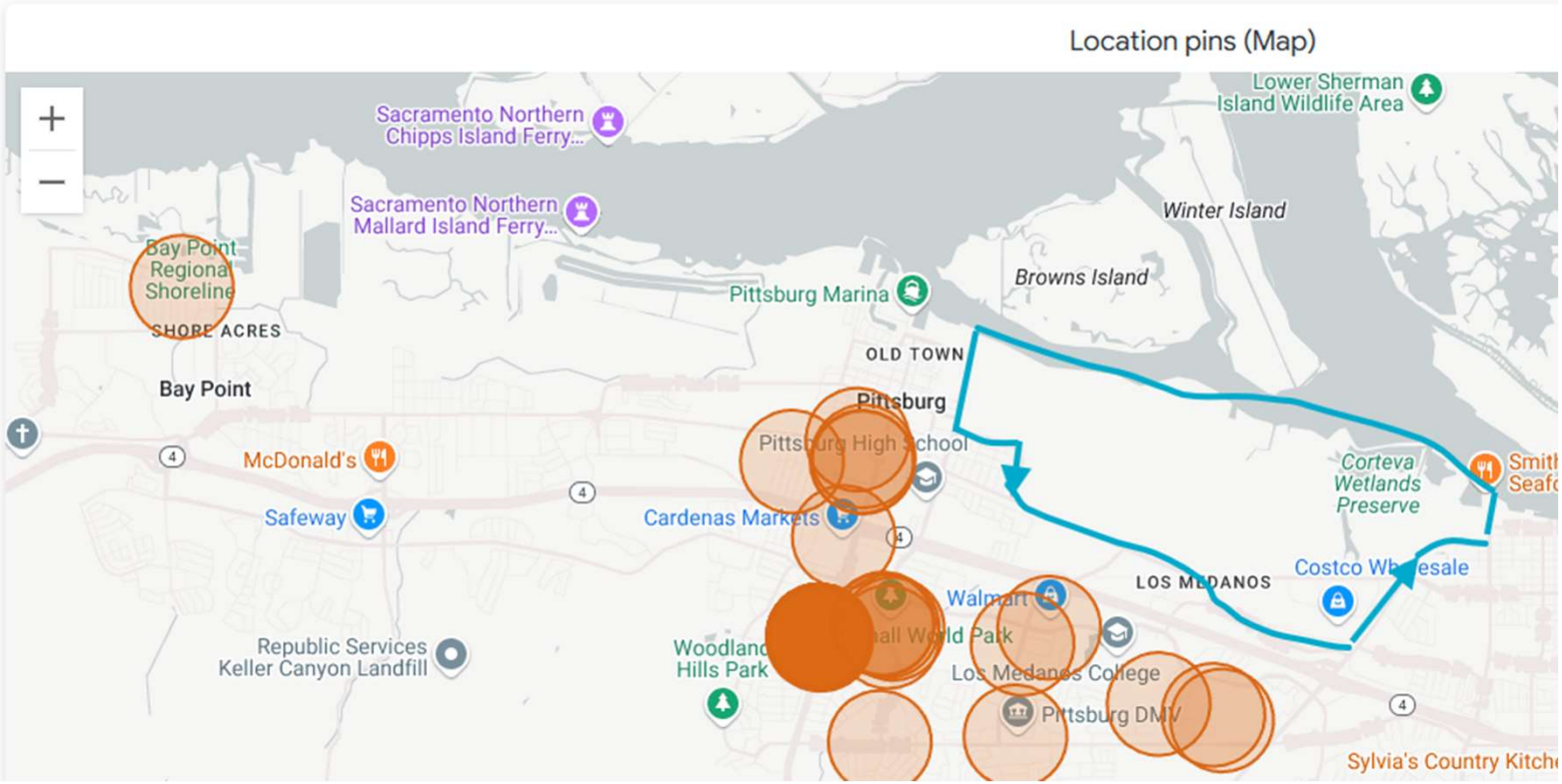
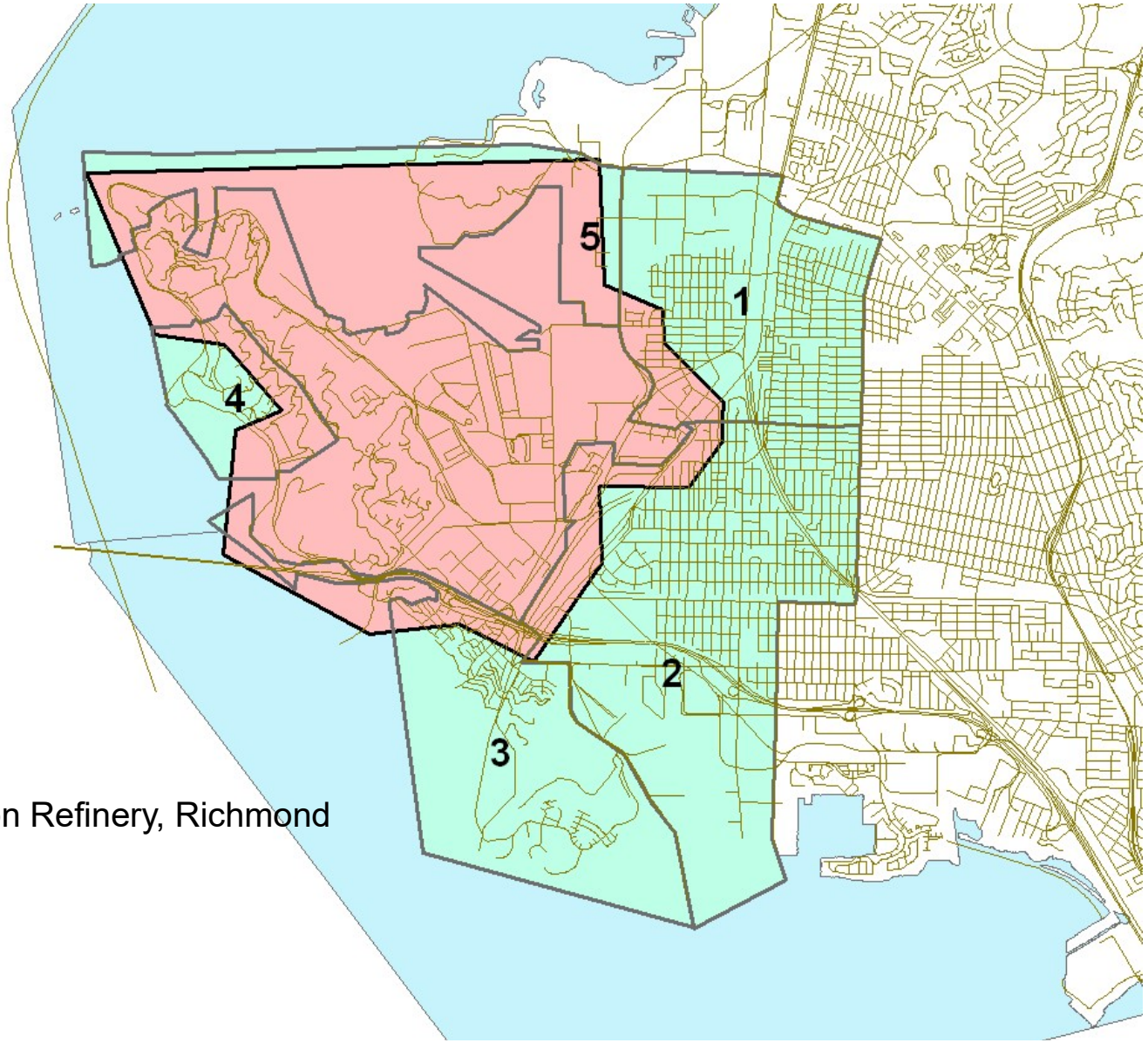
Corteva, Pittsburg.

CORE PD Report Weekly (ver2) Location pins (Map)

Contact Date	CORE Team	Contact City
is from 2025/01/01 until 2025/04/22	is any value	is Pittsburg





Chevron Refinery, Richmond

Chevron Refinery, Richmond

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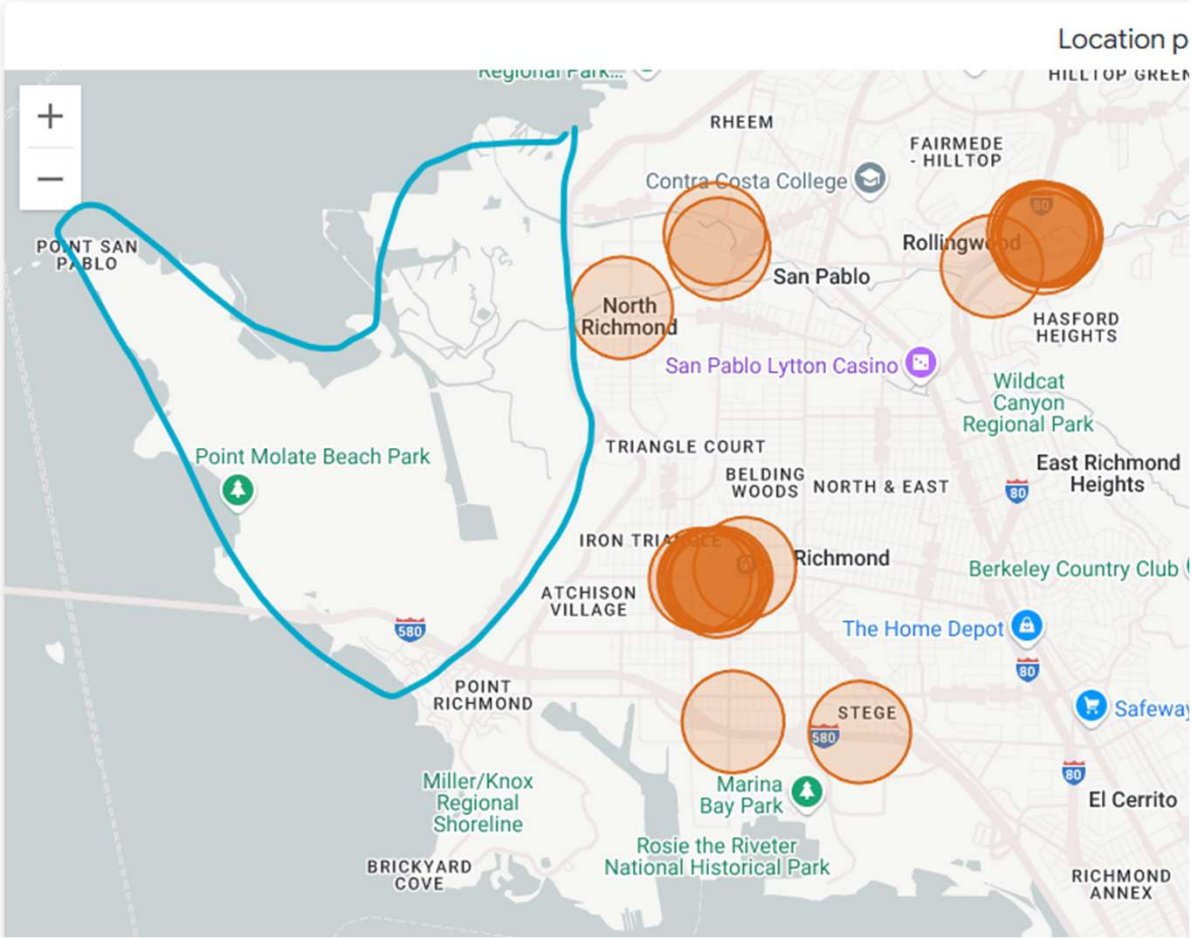
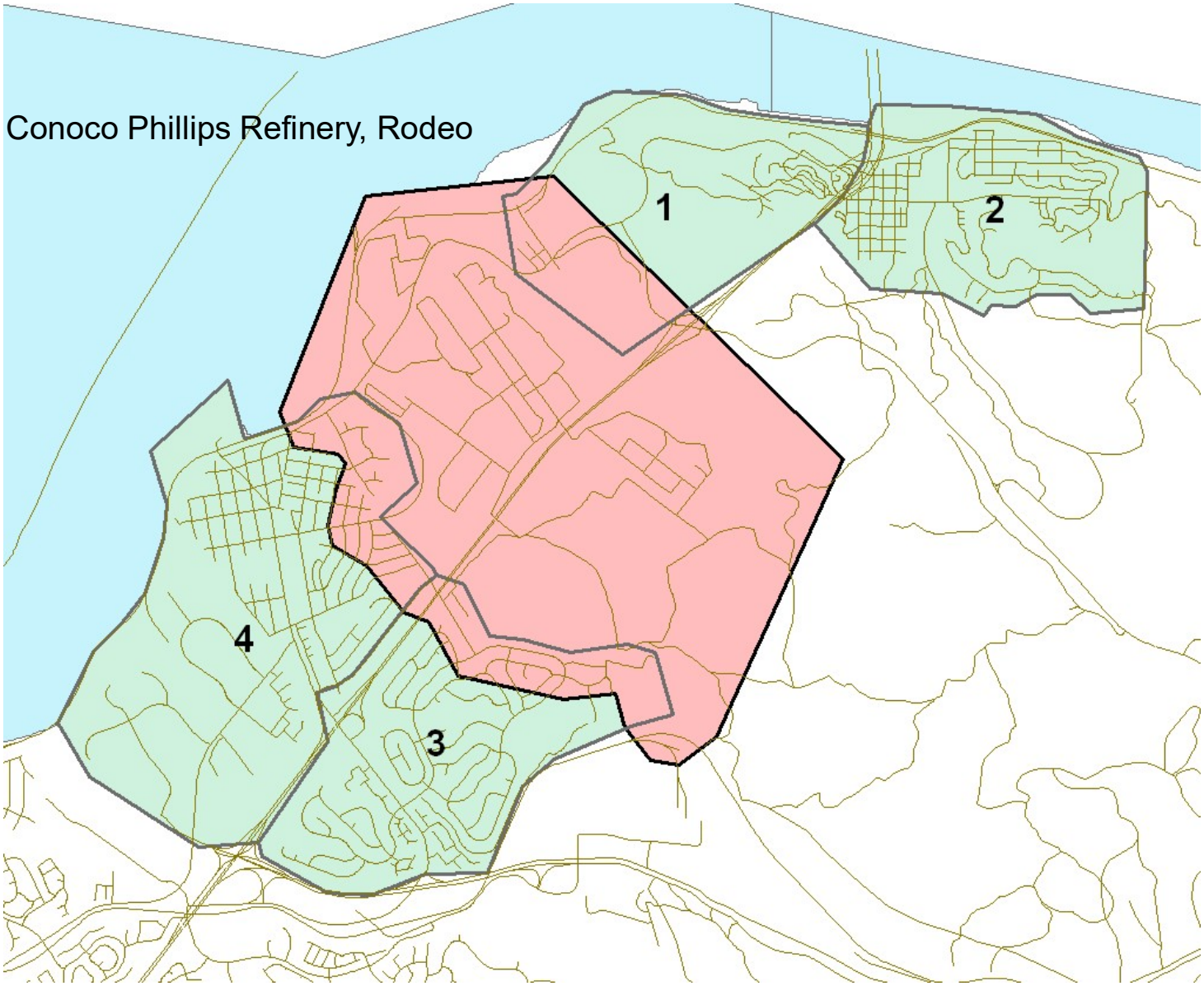
is from 2025/01/01 until 2025/04/22	is any value	is Richmond




Conoco Phillips Refinery, Rodeo
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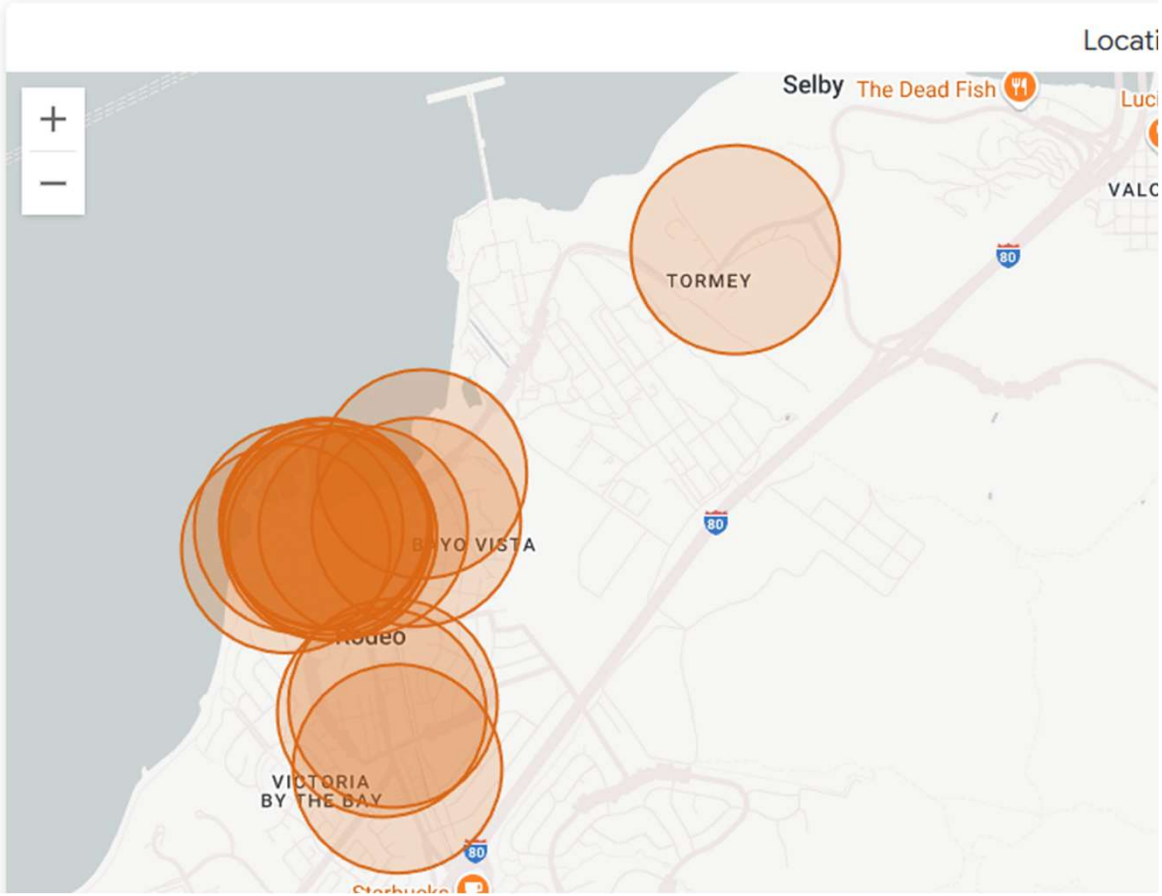
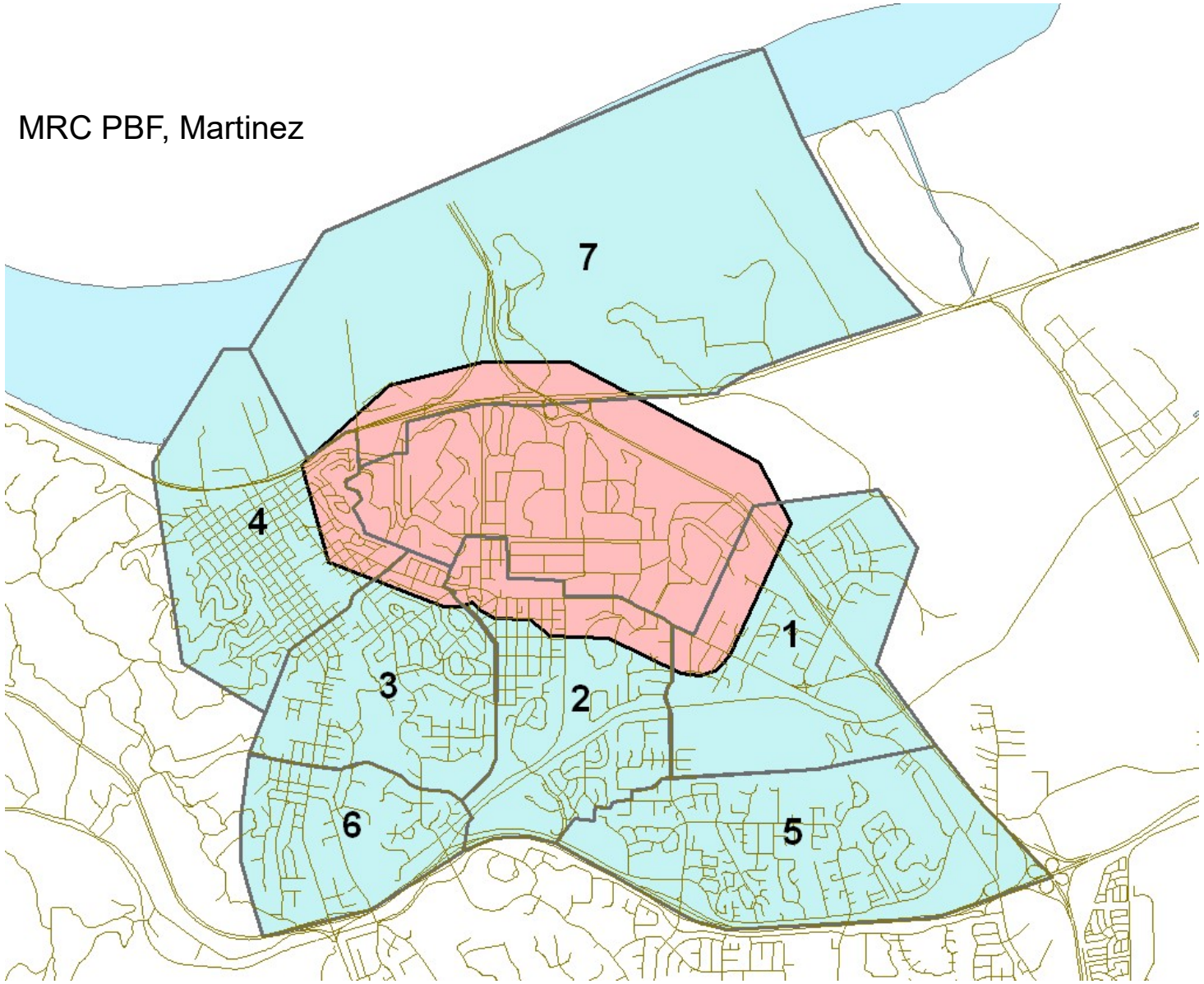
Conoco Refinery, Rodeo

Contact Date	CORE Team	Contact City
is from 2025/01/01 until 2025/04/22	is any value	is Rodeo

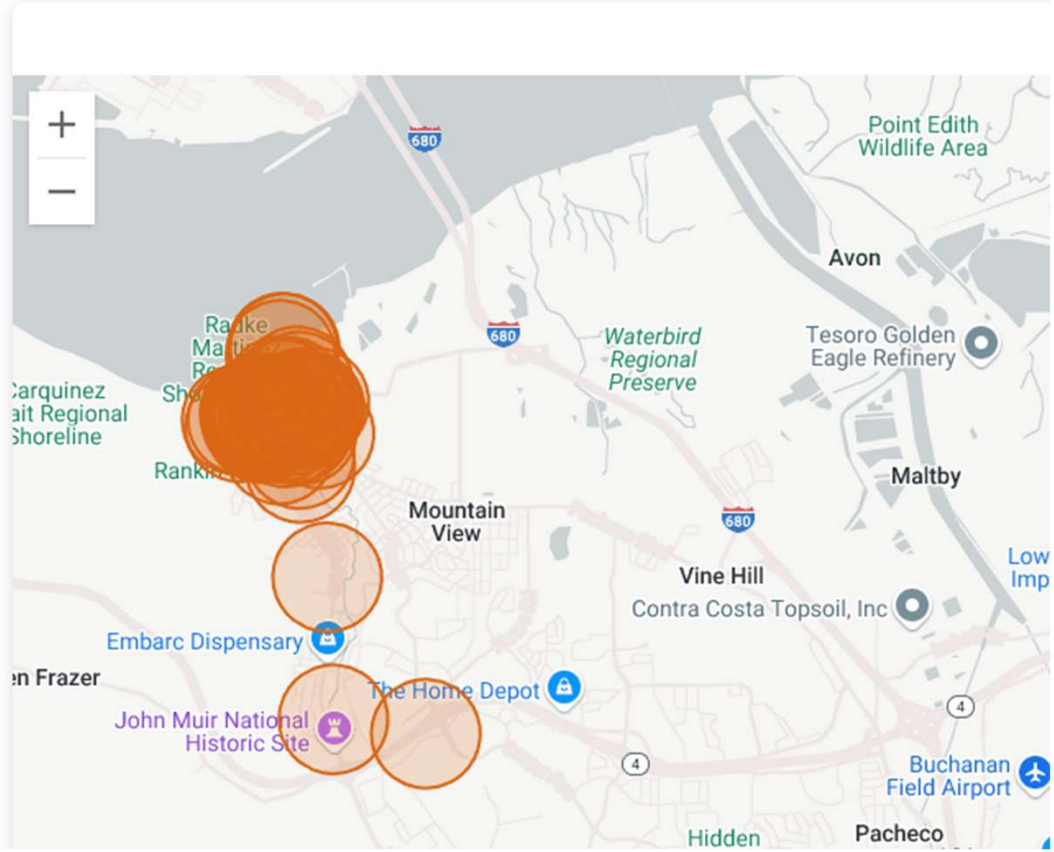


MRC PBF, Martinez

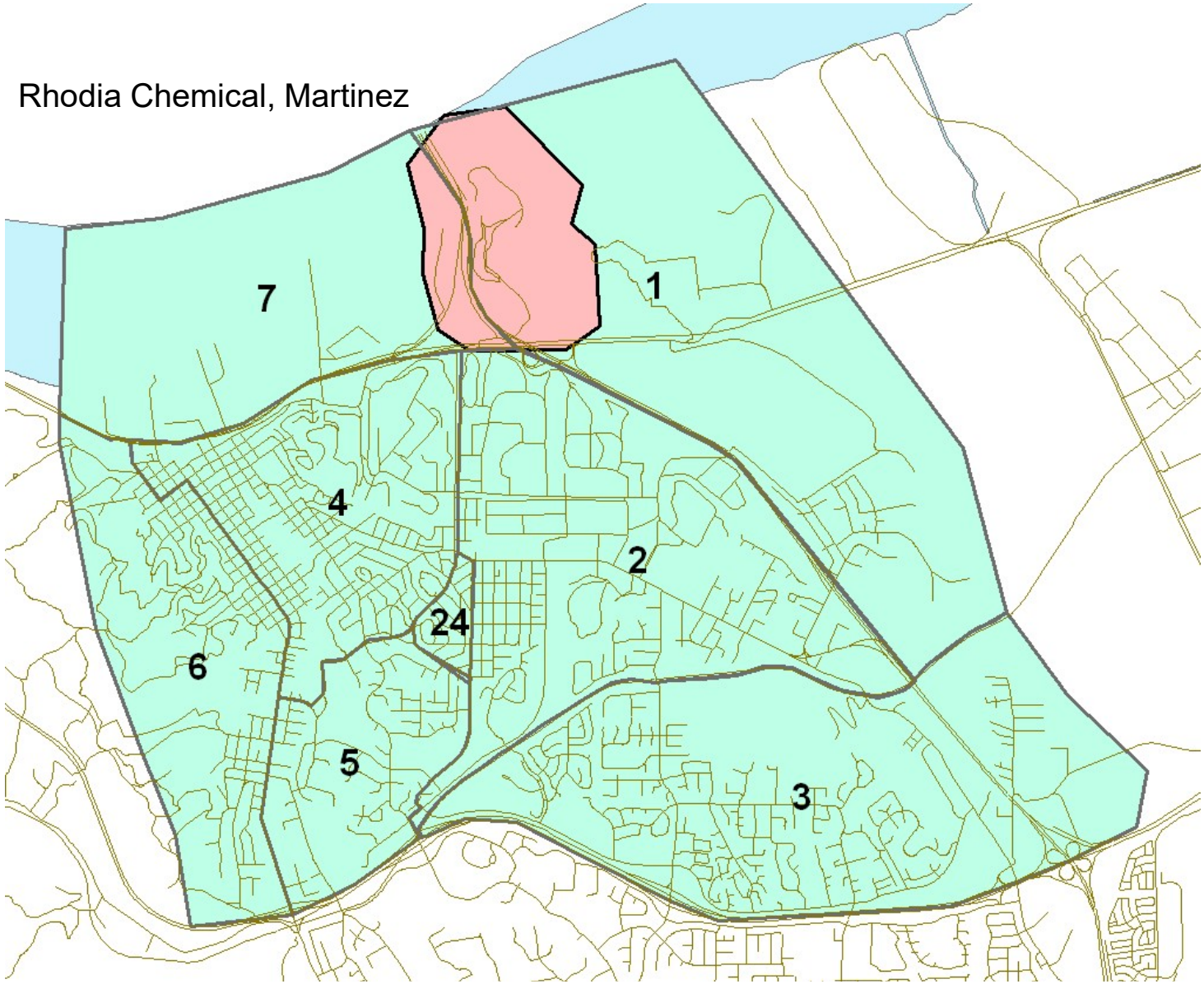


MRC, Martinez

Contact Date	CORE Team	Contact City
is from 2025/01/01 until 2025/04/22	is any value	is Martinez

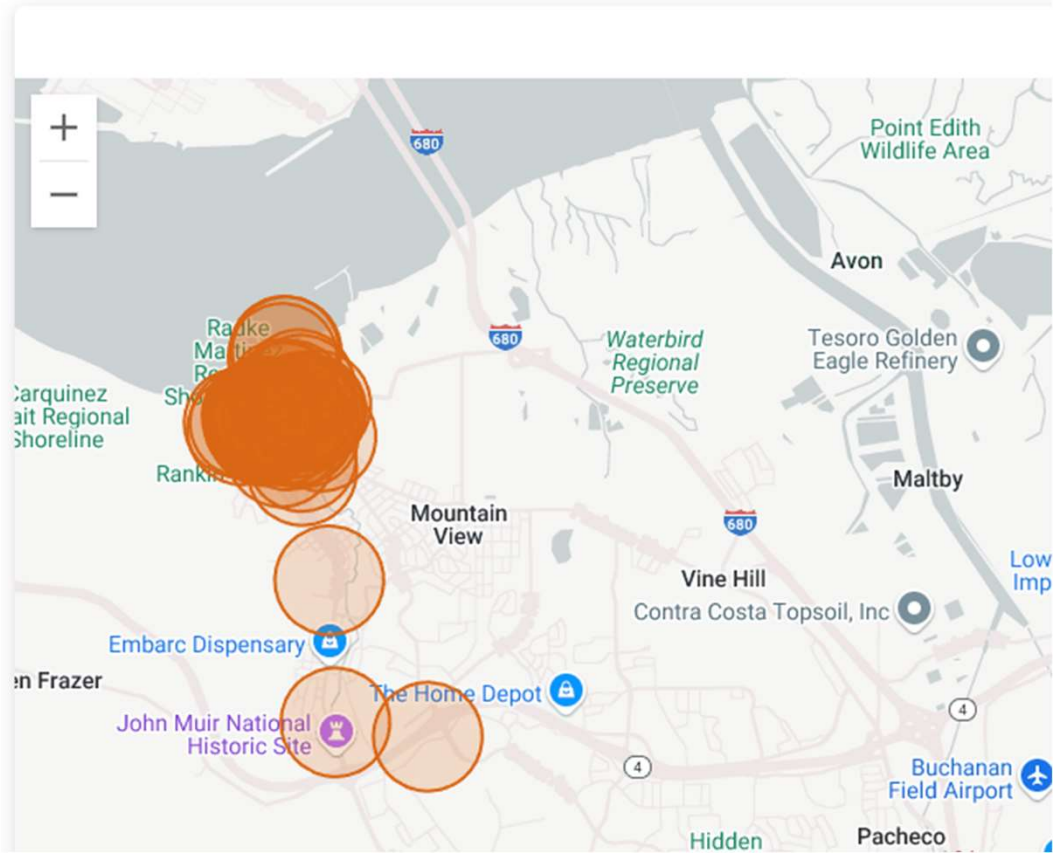


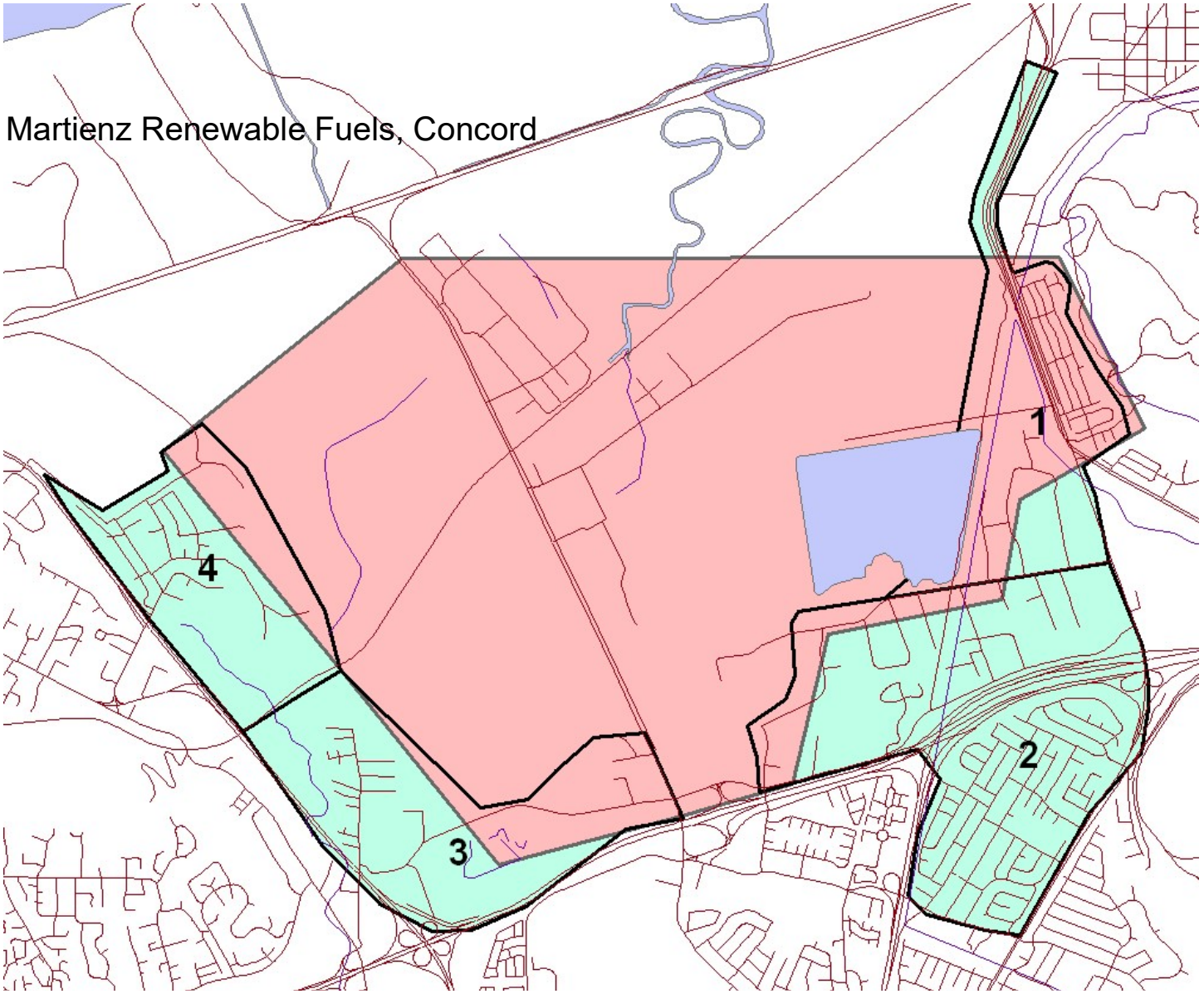
Rhodia Chemical, Martinez



Rodia Chemical, Martinez

Contact Date	CORE Team	Contact City
is from 2025/01/01 until 2025/04/22	is any value	is Martinez




Martienz Renewable Fuels, Concord
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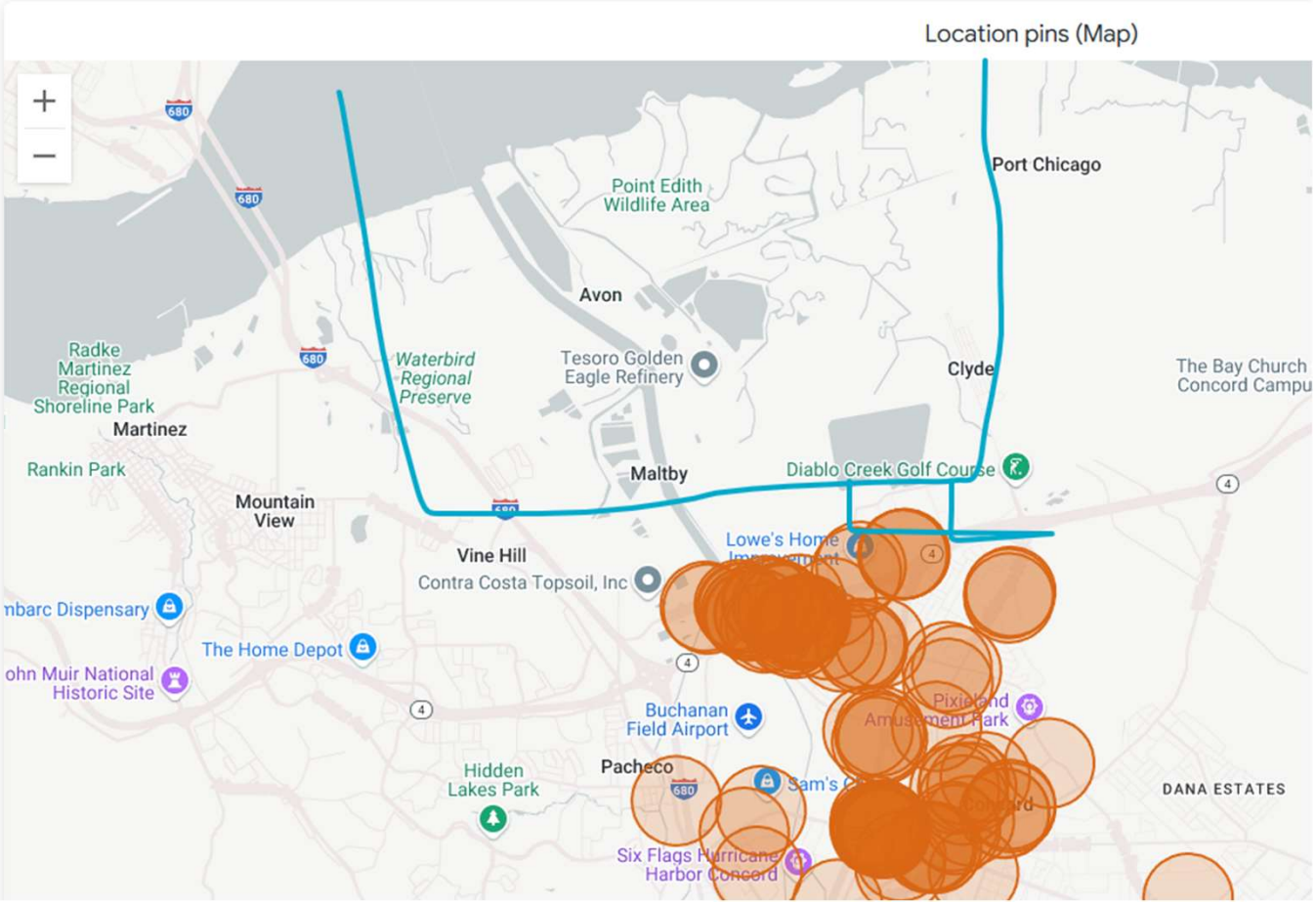
Martienz Renewable Fuels, Concord

Contact Date: is from 2025/01/01 until 2025/04/22

CORE Team: is any value

Contact City: is Concord



Homeless populations should sign up for the Community Warning System messages.

- It is important to inform the homeless in these areas about the Community Warning System and encourage them to sign up for emergency messages. Understanding an emergency alert signal at the last minute can be a challenging and stressful experience; it is better to know the system and recommendations in advance.