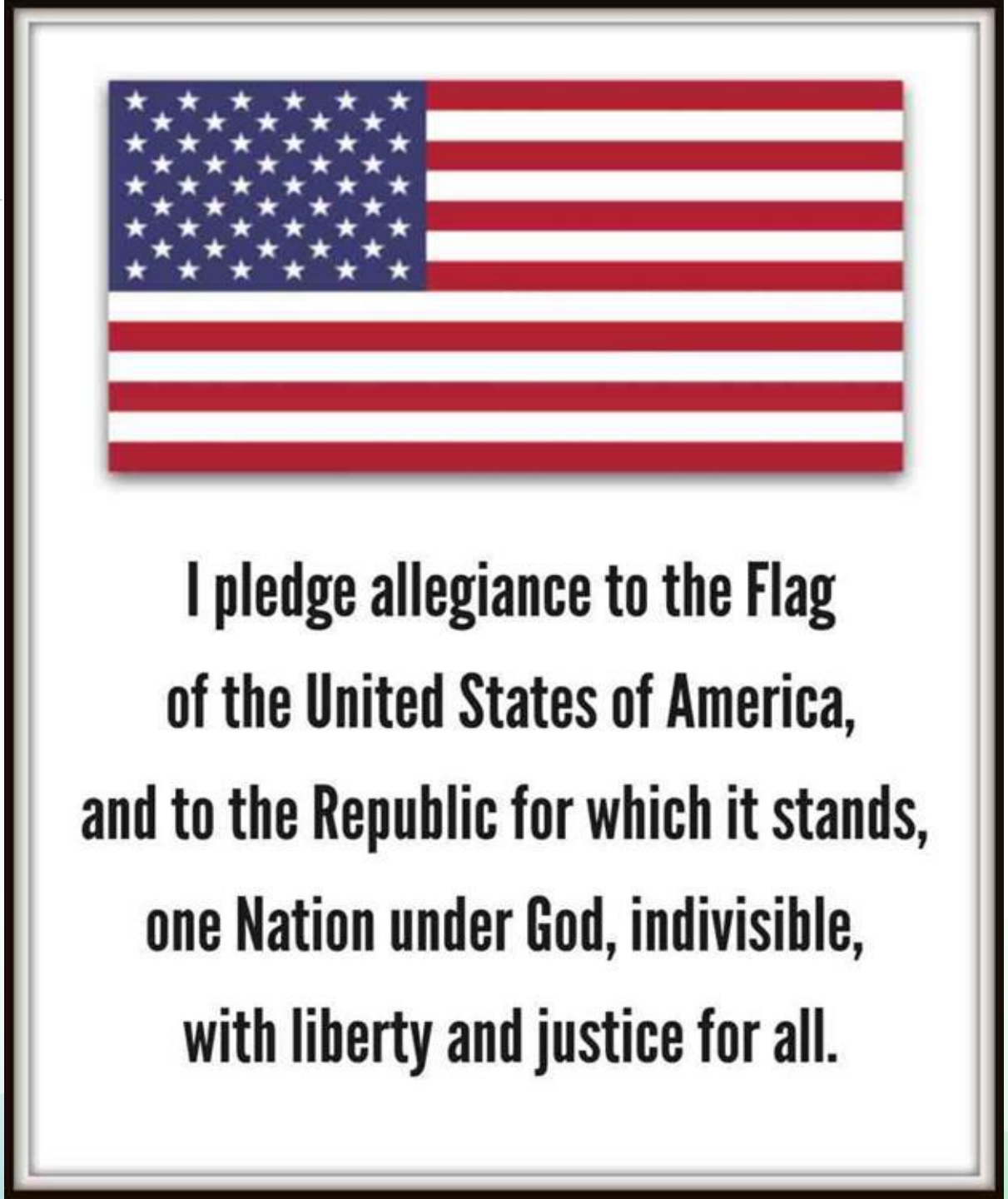
| DOCKETED | |
|---|---|
| **Docket Number:** | 22-BUSMTG-01 |
| **Project Title:** | Business Meeting Agendas, Transcripts, Minutes, and Public Comments |
| **TN #:** | 242802 |
| **Document Title:** | Presentation - April 26, 2022 Business Meeting |
| **Description:** | N/A |
| **Filer:** | Ngoc Tran |
| **Organization:** | California Energy Commission |
| **Submitter Role:** | Public Advisor |
| **Submission Date:** | 4/26/2022 8:18:54 AM |
| **Docketed Date:** | 4/26/2022 |

# California Energy Commission
# Business Meeting
# April 26, 2022
# 10:00 a.m.

# Pledge of Allegiance



# Consent Calendar: a. – c.

a. Order Instituting Rulemaking Proceeding (Docket Number 22-AAER-02). Contact: Carlos Baez
b. School of Arts and Enterprise. Contact: Sean Lockwood
c. Proposed Order Delegating Approval of Certain Agreements and Amendments Under Health and Safety Code Section 44272. Contact: Allan Ward

# Item 2: Order Instituting Informational Proceeding

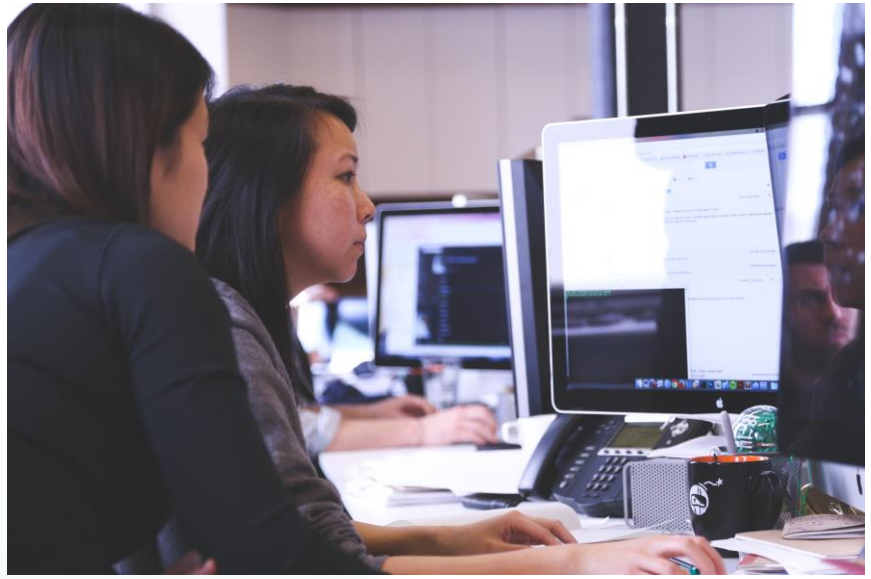
April 26, 2022 Business Meeting

Heather Raitt, Assistant Executive Director, Policy Development

# Benefits to Californians

- Authority to collect information needed for the 2022 IEPR Update
  - Hearings and workshops
  - Data requests

- Information is foundational to good policy development



# 2022 IEPR Update Scope

Tracks in 2022 IEPR Update:

1. Equity and Environmental Justice
2. California Planning Library
3. Emerging Topics

# Parallel Proceedings

Parallel to 2022 IEPR Update, two additional order instituting informational proceedings:

1. Decarbonizing the gas system
2. Distributed energy resources

Allows deep analysis beyond IEPR timeline

# Staff Recommendations

- Approve request for Order Instituting Informational Proceeding for the 2022 IEPR Update

# Item 3: Russell City Energy Center May 2021 Incident: Gap Analysis Report

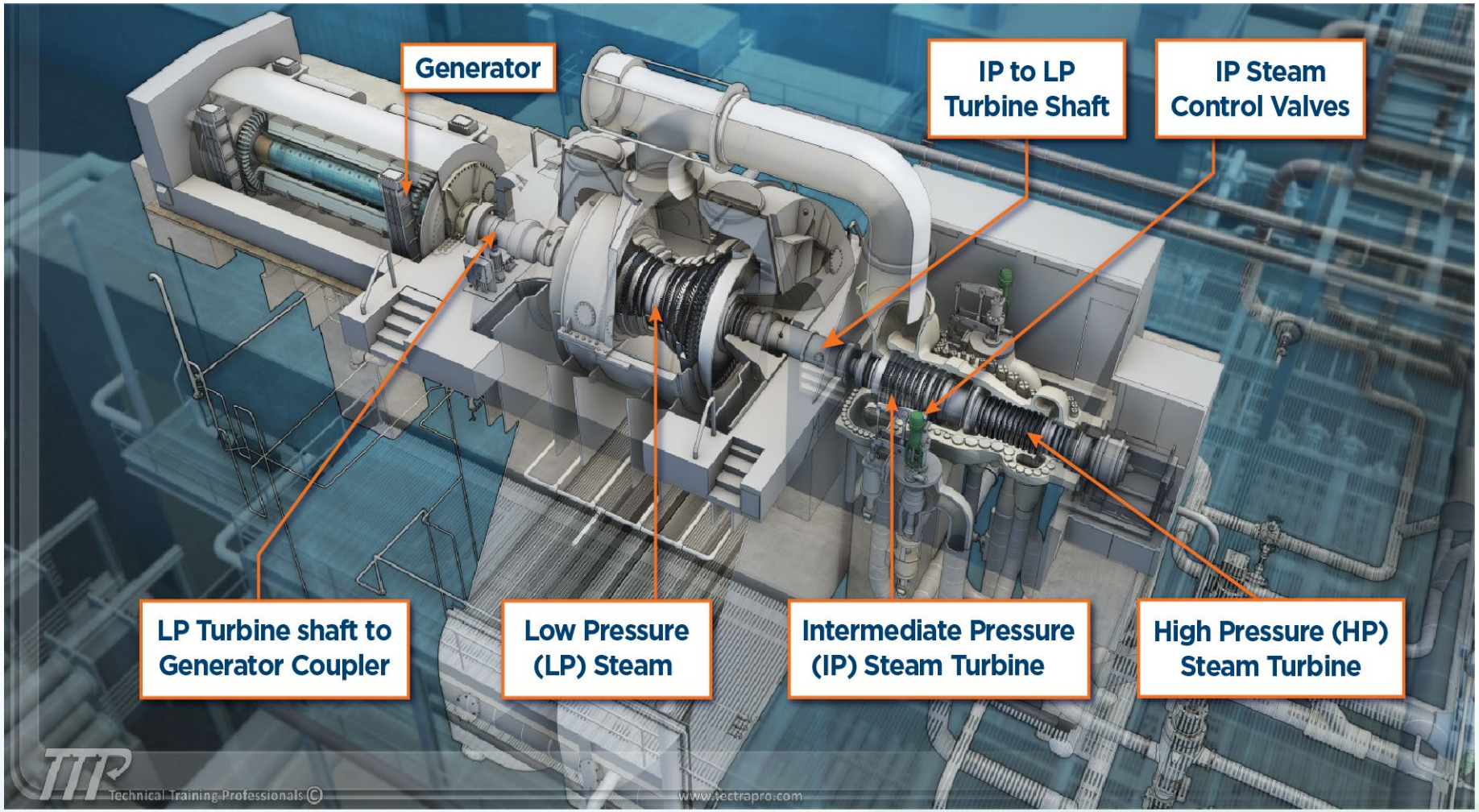
April 26, 2022

Presenting: Elizabeth Huber, Manager, Safety and Reliability Office and Geoff Lesh, Manager, Engineering Office
Siting, Transmission and Environmental Protection Division
Dian Vorters, Lead Counsel

# Restarting Russell City Energy Center

# Russell City Energy Center Investigation

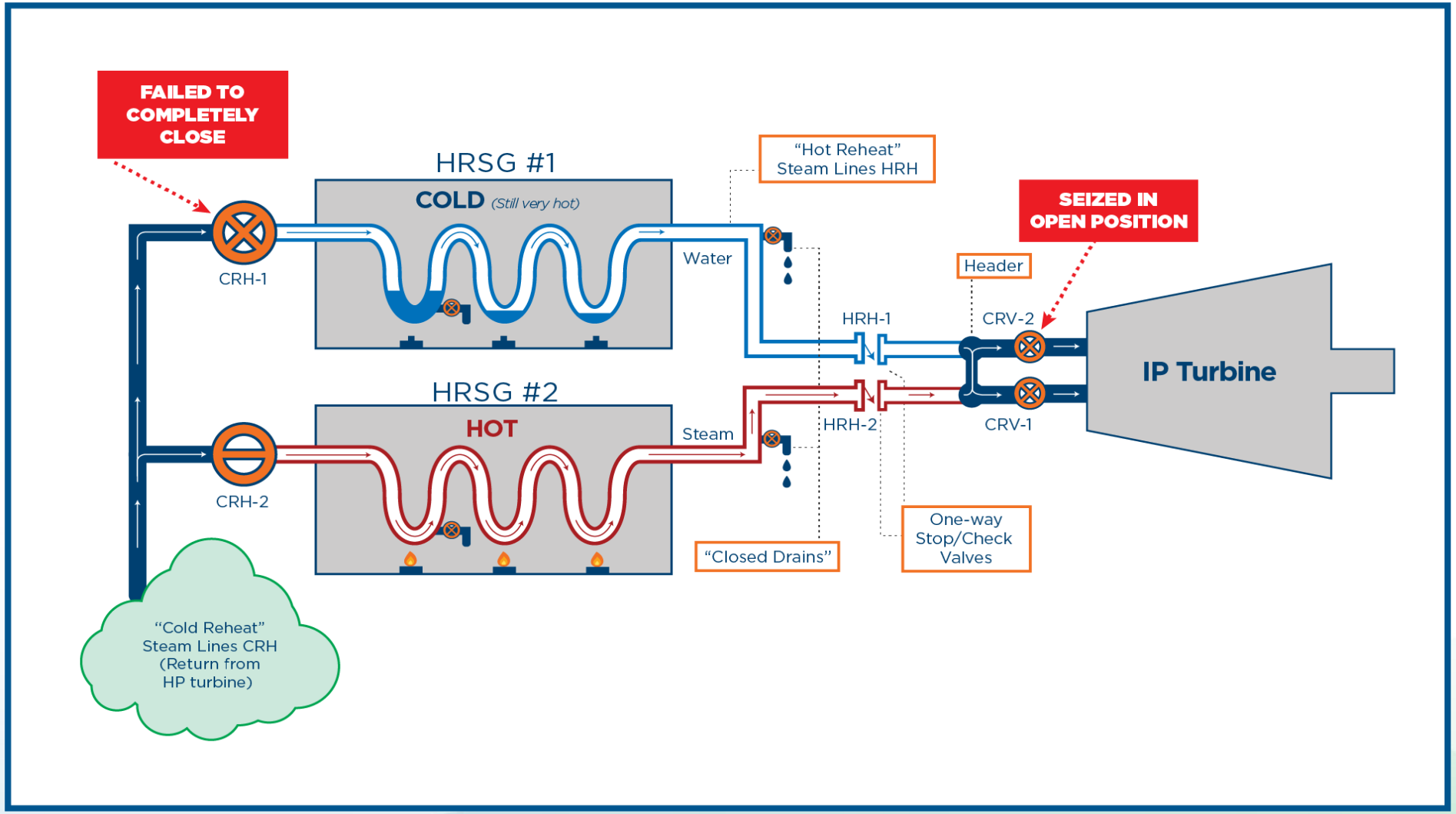
# Steam Turbine Generator



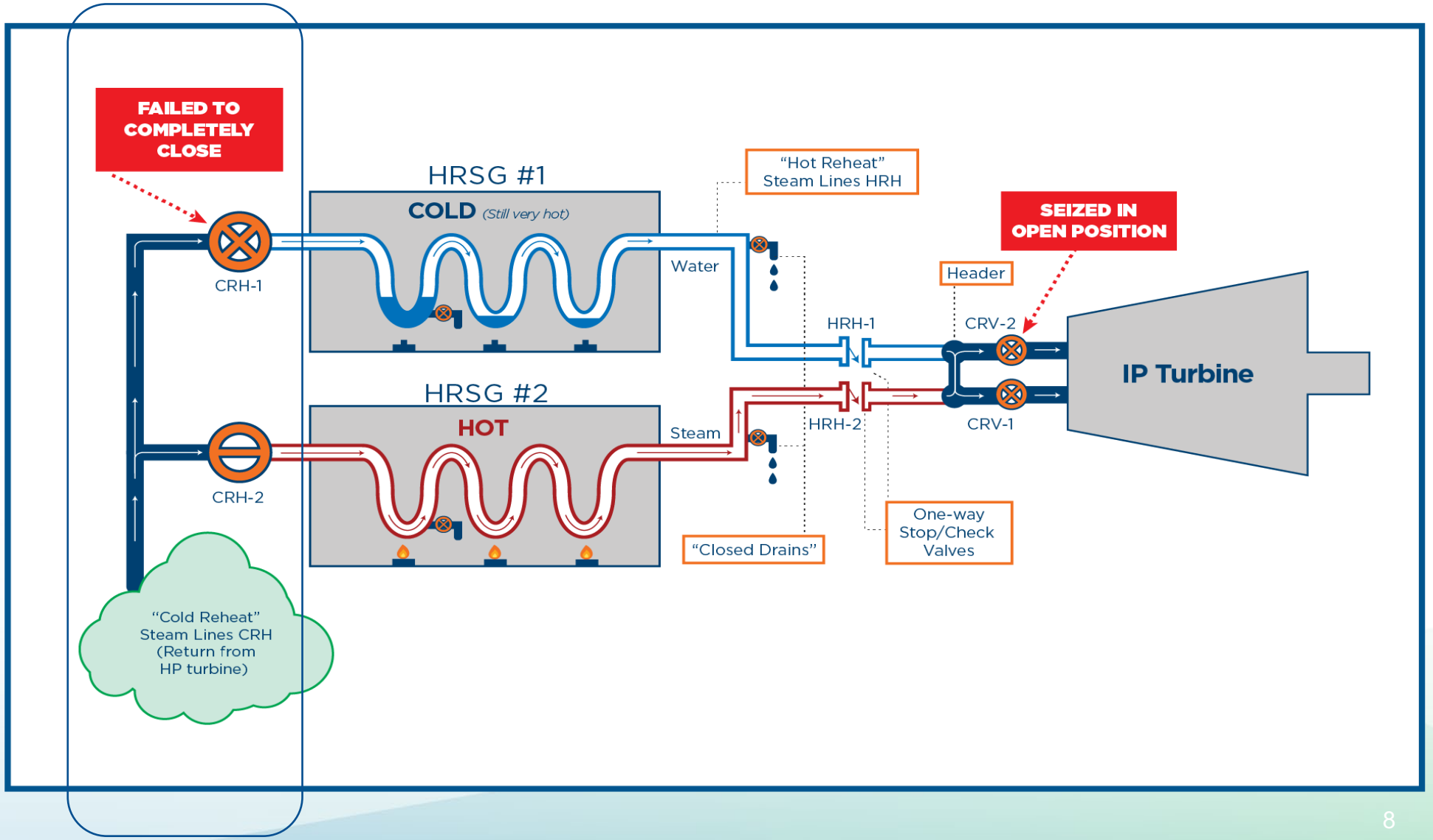
# Steam Turbine Debris Field

# Heat Recovery Steam Generator

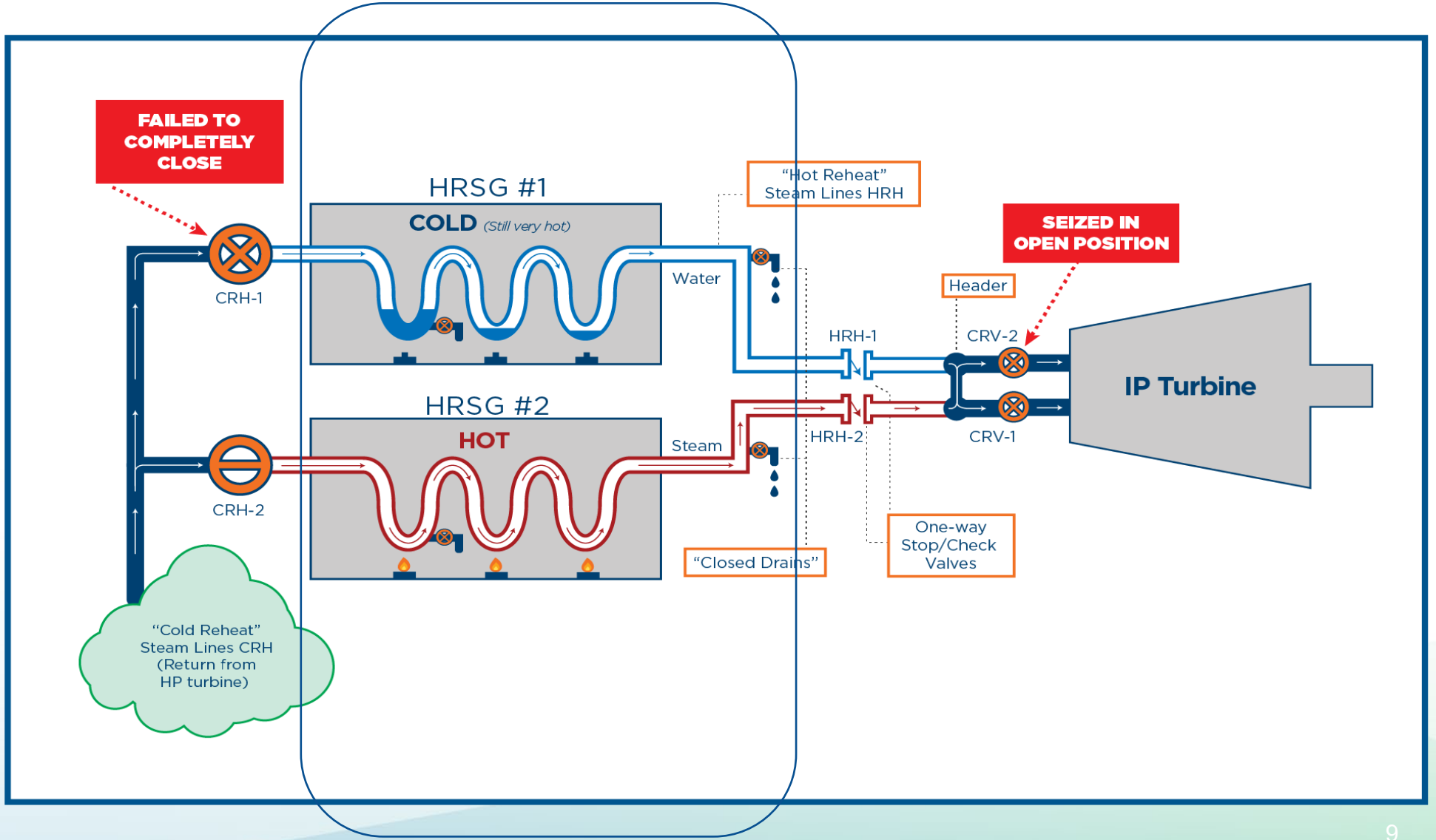
# Russell City Energy Center's HRSG Reheater Schematic



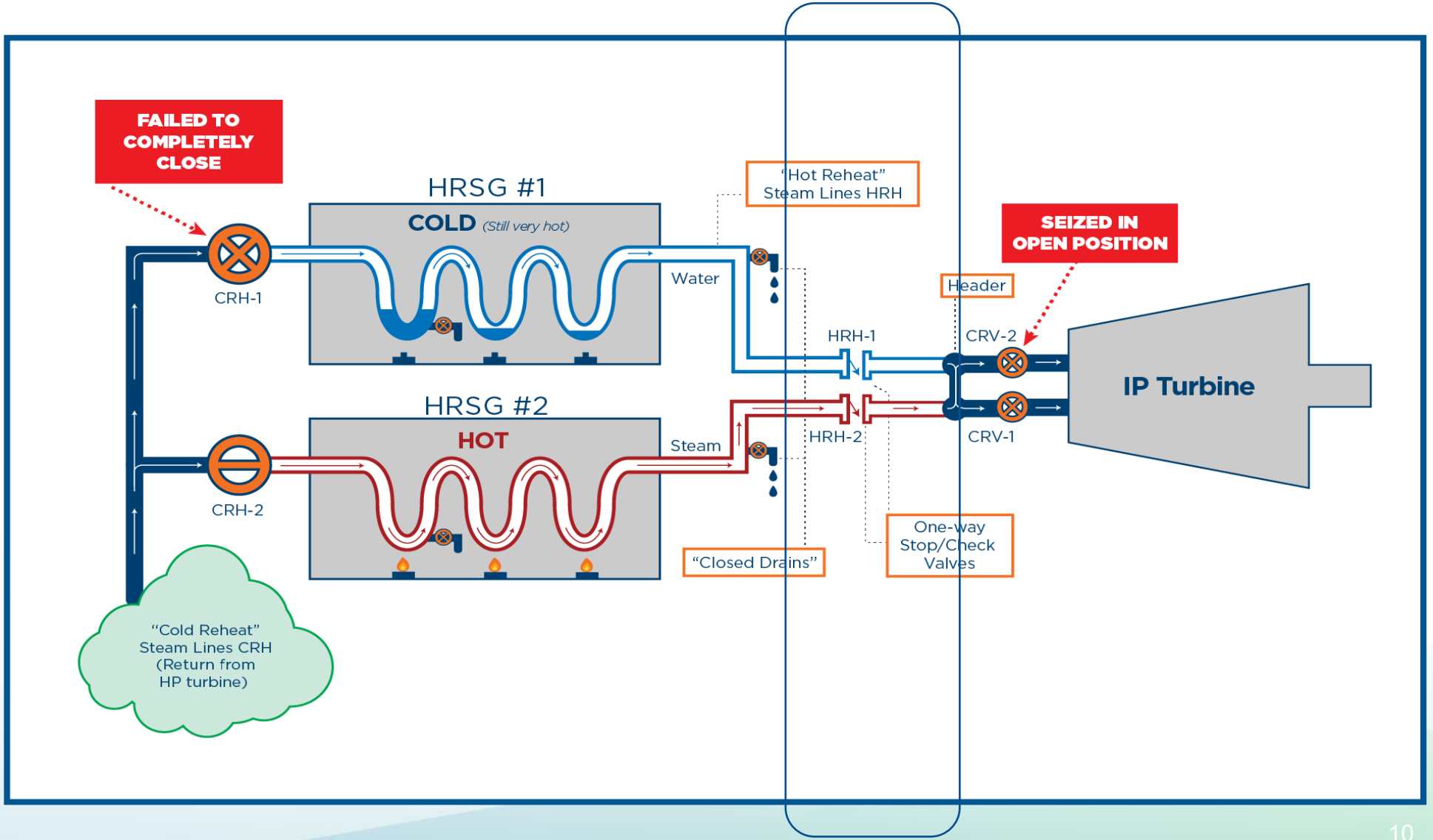
# Causal Factor 1 – Equipment Maintenance and Monitoring



# Causal Factor 2 – Deficiencies in Operator Interface and Training



# Causal Factor 3 – Inadequate Water Induction Protection



# JAIT Corrective Actions

- Modify preventative maintenance and monitoring programs
- Re-configure the CRH stop valve to close based on actuator torque value
- Implement an annual preventative maintenance program for the steam attemperators and mixers for review and approval.
- Synchronize control system clocks
- Consolidate the alarms generated by the control systems
- Implement control logic to alleviate pressure within offline HRSG
- Implement control logic to discharge water from offline HRSG
- Provide an ASME TDP-1-2013 conformance analysis
- Convert the HRH stop/check valve from manual to electrical actuation
- Revise operations procedures
- Reduce the occurrence of nuisance/false alarms

# City of Hayward

- City staff have been participating on Joint Agency Working Group with CEC and CPUC staff
- Consistent with the CEC Order to allow Calpine to restart operations at RCEC, City staff and Calpine staff have meeting “to discuss any needed modifications of [RCEC’s] standard operating procedures for first responders to implement when responding to incidents on site, including establishing a process for reimbursement of reasonable expenses.”
- Finalizing joint City/Calpine hazardous materials resiliency and action plan – this includes partial funding for a hazardous materials response vehicle
- Insurance claims for Homeless Navigation Center being processed
- Conversations with Russell City descendants/community action group underway – additional monetary contribution from Calpine proposed

# Hayward First Responder Training Plan Enhancements

- Notified City of Hayward of plant management changes on March 10.
- Schedule Annual HFD/City Manager/RCEC Meeting -TBD
- Knox Box Updated 12/14/2021
  - Updated MSDS's
  - Updated plot plan with location of oil filled equipment and hazardous materials
- Met with Hayward Fire Department Training Battalion Chief on March 14, 2022
- Hazmat Tabletop Drill – TBD
- Schedule plant tour for new fire company officers – TBD
  - Identifying hazardous material locations
  - Review Emergency Action Plan
  - Identify possible fire/explosive areas
  - Identify areas of static electricity potential for aerial ladder trucks
  - Identify water supply locations and access points
- Rope Rescue Scenario Drill (incapacitated victim on platform or scaffolding) – TBD

# Joint Agency Investigation Team

**California Energy Commission**

- Geoff Lesh
- Brett Fooks
- Tim Smith
- Shahab Khoshmashrab
- Elizabeth Huber
- John Heiser
- Paul Trygstad
- Ivan Clark
- Shawn Pittard

**California Public Utilities Commission**

- Jim Cheng
- Chris Lee
- Stephen Lee
- Nika Kjensli
- Lee Palmer

# Staff Recommendation

- Adopt corrective actions
- Delegate to the Executive Director the verification of the corrective actions

# Item 5: Overview of 2021 EPIC Annual Report

April 26, 2022 Business Meeting

Molly O'Hagan
Energy Deployment and Market Facilitation Office
Energy Research and Development Division

# EPIC by the Numbers

**>$1B**

EPIC FUNDS INVESTED

**437**

PROJECTS FUNDED

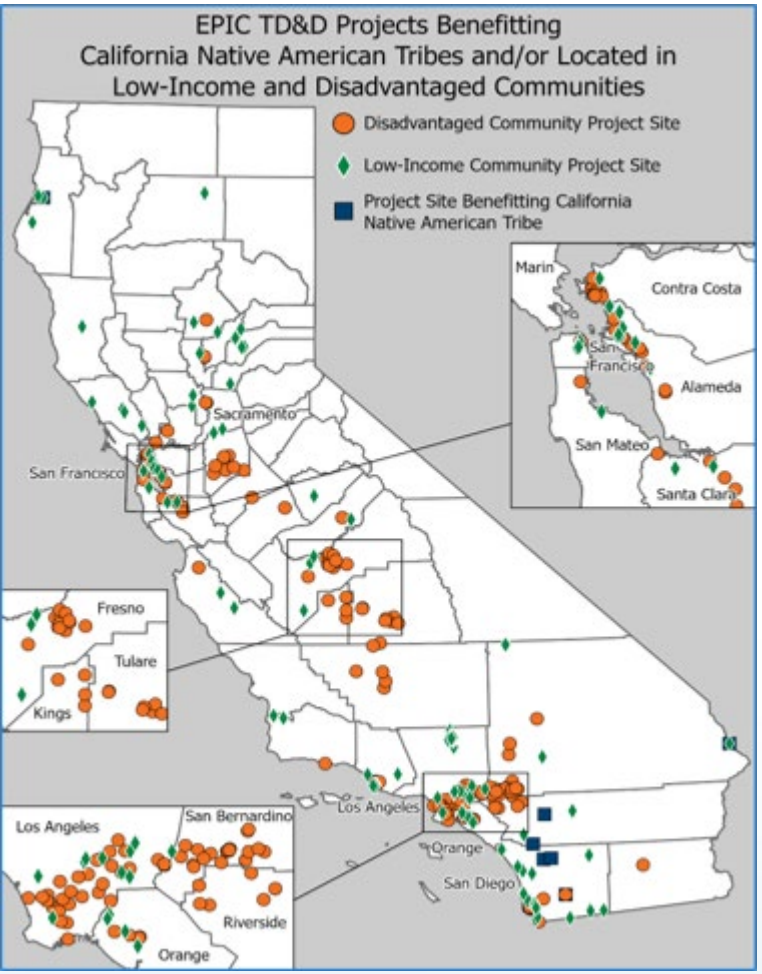
**$7.8B**

PRIVATE INVESTMENT AFTER RECEIVING EPIC SUPPORT

**55%**

INCREASE IN SUCCESSFUL EXITS BY START-UP COMPANIES

# EPIC Demonstration Projects in Underresourced Communities




EPIC TD&D HAS INVESTED:

- **$172,500,000+** in Disadvantaged Communities
- **$117,500,000+** in Low-Income Communities

**67%**
TD&D FUNDS

Source: California Energy Commission

# EPIC Investment Areas

| Entrepreneurial Ecosystem | Resiliency & Safety | Building Decarbonization | Grid Decarbonization & Decentralization | Industrial & Agricultural Innovation | Transportation Electrification |
|---|---|---|---|---|---|
|  |  |  |  |  |   |
| $210M | $182M | $232M | $219M | $133M | $68M |

# Entrepreneurial Ecosystem: Ubiquitous Energy

- **26B:** Approximate square feet of coated architectural glass produced and installed annually
- **60 GW:** Additional solar generation capacity possible from that glass if treated with the UE Power™ coating
- **10%:** The amount of California's annual electricity consumption that can be offset by full market penetration of UE Power™
- **1 x 1 inch:** The size of Ubiquitous Energy's solar window prototype when they first received EPIC funding in 2019
- **14 x 20 inch:** The size of solar windows to be produced from the first California production line that Ubiquitous Energy is developing under their current EPIC award
- **2000:** The number of 14x20-inch solar windows Ubiquitous Energy seeks to produce per year by the end of their current CEC project in 2024

Ubiquitous Energy's transparent PV window coating installed on a commercial building

Source: Ubiquitous Energy

# Resiliency & Safety: Humboldt State University

Coast Guard search and rescue in action.

Source: Shutterstock

- **7x:** The amount of time Humboldt County customers experienced sustained outages in 2020 as compared to other California customers
- **50,000:** Flights per year served by Humboldt County's airport, including commercial, private, and emergency medical flights, that could be significantly impacted by outages
- **20:** The number of customer meters in Humboldt County, including the airport and Coast Guard Air Station, served by this first-ever community-driven, front-of-the-meter microgrid
- **0:** The number of times polluting diesel generators are expected to be needed for outages once the microgrid is fully operational

# Building Decarbonization: SkyCool Systems

- **42,500:** Approximate number of supermarkets and cold storage facilities in the United States
- **60%:** Average amount of electricity used for refrigeration in supermarkets and cold storage facilities
- **10-40%:** Efficiency improvement from integrating SkyCool Panels with a refrigeration system
- **$3,000:** The monthly electricity bill savings one grocery store achieved with SkyCool Panels
- **0:** Refrigerants with global warming potential used in Skycool Panels

SkyCool Panels mount with conventional solar panel racking.

Source: SkyCool Systems, Inc.

# Grid Decarbonization & Decentralization: RCAM Technologies


UC Irvine Team with the 3DCP Tower Assembly.
Source: UC Irvine AM3 Lab

- **80 meters:** The approximate height of conventional wind turbine towers in the United States due to logistical constraints
- **140 meters:** The potential height of a 3DCP wind turbine printed onsite using RCAM's technology
- **>20%:** Increase in turbine energy captured from 140-meter towers compared to conventional 80-meter towers
- **11%:** The levelized cost of energy reduction for 3DCP towers compared to conventional towers
- **<1 day:** The amount of time RCAM is targeting for on-site fabrication of a new tower

# Industrial & Agricultural Innovation: AgMonitor

- **9 million:** Acres of irrigated farmland that contribute to California's $21.7 billion5 in agricultural exports
- **10,000 acres:** Current scale of AgMonitor's demonstration for its new, programmable irrigation load shifting software, helping California farmers improve energy efficiency, save water, and cut costs
- **$200 per acre:** Increase in profits from electricity and water savings for farms that implemented AgMonitor's PumpMonitor and CropMonitor solutions
- **3 MW:** Permanent load shift as of August 2021 provided by California agricultural irrigation pumps intelligently controlled with AgMonitor, supporting grid reliability

An example of the AgMonitor Platform display.

Source: AgMonitor

# Transportation Electrification: Cuberg

A battery R&D scientist preparing to work with testing Cuberg lithium-metal cells.

Source: Cuberg

- **250 miles:** Median range of electric vehicles offered for sale in the United States
- **70%:** Increase in range enabled by Cuberg's lithium-metal battery technology
- **3000**: Number of battery cells Cuberg can produce per month as a result of their CEC EPIC award
- **3x:** Increase in California jobs at Cuberg since 2021

# EPIC Opportunities in 2022

| |
|---|
| Advanced Prefabricated Zero-Carbon Homes |
| Energy Efficiency and Demand Response in Industrial and Commercial Cold Storage |
| Energy Efficiency and Load Shifting in Indoor Farms |
| Optimizing Long-Duration Energy Storage to Improve Grid Resiliency and Reliability in Under-resourced Communities |
| The Role of Green Hydrogen in a Decarbonized California—A Roadmap and Strategic Plan |
| Valuation of Investments in Electricity Sector Resilience |
| Vehicle-to-Building for Resilient Back-up Power |
| Offshore Wind Energy Technologies |
| Realizing Accelerated Manufacturing and Production for Clean Energy Technologies (RAMP) 2022 |

# Staff Recommendation

- Approve *2021 EPIC Annual Report*

# Item 5: The Next EPIC Challenge: Reimagining Affordable Mixed-Use Development in a Carbon-Constrained Future

April 26, 2022 Business Meeting

Anthony Ng, Molly Mahoney, Rachel Salazar, and Molly O'Hagan
Energy Deployment and Market Facilitation Office
Energy Research and Development Division

# Benefits to Californians

- Replicable designs and plans for affordable zero-emission mixed-use developments
  - Improve grid reliability
  - Increase the value proposition of grid interactive technologies
  - Provide an economical pathway to develop decarbonized high-density mixed-use developments

# The Next EPIC Challenge

- Design-build competition for a mixed-use development incorporating:
  - Cutting-edge clean energy technologies
  - Innovative tools for planning, design, and construction practices
  - Affordability and equity
  - Resistance to climate change impacts and extreme weather

# Minimum Site Requirements

1. Must be mixed-use.
2. 20%+ must be affordable housing units.
3. 10%+ dedicated to lower income units.
4. Minimum of 50 housing units.
5. Minimum density of 30 residential units per acre.

# Minimum Design Requirements

1. All electric building end-uses
2. Building must be able to island from the main grid
3. Building's residential load during peak demand, must be met through a combination of onsite generation, storage, and load management.
4. DER assets must be interoperable with aggregation platforms such as Virtual Power Plants.
5. 20% of all parking spaces must have EV-charging stations that can respond to grid- and building-signals. Rest to be EV ready.

# Two Phase Approach

| Project Group | Number of Awards - Design Phase | Number of Awards - Build Phase |
|---|---|---|
| **Group 1: Bay Area Region** | 3 | 1 |
| **Group 2: Central Valley/Northern California** | 3 | 1 |
| **Group 3: Los Angeles Region** | 3 | 1 |
| **Group 4: Imperial Valley, Inland Empire, and San Diego County** | 3 | 1 |
| **Total Number of Awards** | 12 | 4 |
| **Total Amount of Funding** | $12 million | $36 million |

# The Berkeley Efficient & Resilient Mixed-Use Showcase


**Berkeley, CA**

## The Northern California Land Trust, Inc.

- 50-unit permanently-affordable housing development for low-income renters.
- Pathways to community ownership.
- Office spaces for community organizations, including the Homeless Action Center.
- 20 Vehicle-to-Grid (V2G) charging stations with demand response services

# Net Positive Resilient All-Electric Affordable Housing at Pacific Station North Transit Center

Santa Cruz, CA

## Electric Power Research Institute (EPRI)

- 94 apartment units, with mixed office and retail spaces, public space, and new METRO transit hub.
- Culmination of 7+years of community input.
- First of its kind multifamily housing project in the Central Coast to use mass timber construction methods.
- 14 electric bus capacity

# Reimagining Affordable Mixed-Use Development in a Carbon-Constrained Future


**Woodland, CA**

- 100-unit affordable housing development for low- and very low-income renters.
- Vehicle-to-Grid (V2G) charging stations with demand response services for 20% of the parking spaces.
- Plug-in battery storage for each residential unit.
- Potential workforce development opportunities provided by the local colleges and project team.

# Fairview Terrace


**Stockton, CA**

- 59-unit permanently affordable housing, in-fill development for senior citizens.
- Property will be owned and managed by a local community organization (STAND) and Mutual Housing.
- Adjacent to health clinic and public transit.
- Using a third-party certified Social, Economic, and Environmental Design (SEED) approach to meaningful community engagement.

# Innovative Housing Opportunities, Inc.

## Santa Ana Environmental Justice Innovation Zone


**Santa Ana, CA**

- 160 affordable units for low-income affordability levels and will include office space and light retail.
- Virtual power plant with a user interactive application designed by Community Electricity utilizing NREL's ForeSee™ software.
- Advanced framing systems that will save floor and wall material costs by 30%.

# Paseo Adelanto: City Hall & Zero-Emission Affordable Housing Design

San Juan Capistrano, CA

- New city hall in partnership with the City of San Juan Capistrano.
- 50 affordable units for low-income individuals at risk for homelessness, including military veterans.
- Engage and educate residents through direct outreach and the formation of a new Resident Council.
- Islandable microgrid and smart system control.

# Zero Emission Affordable Housing Design: Palm City Village

San Diego, CA

## National Community Renaissance of CA

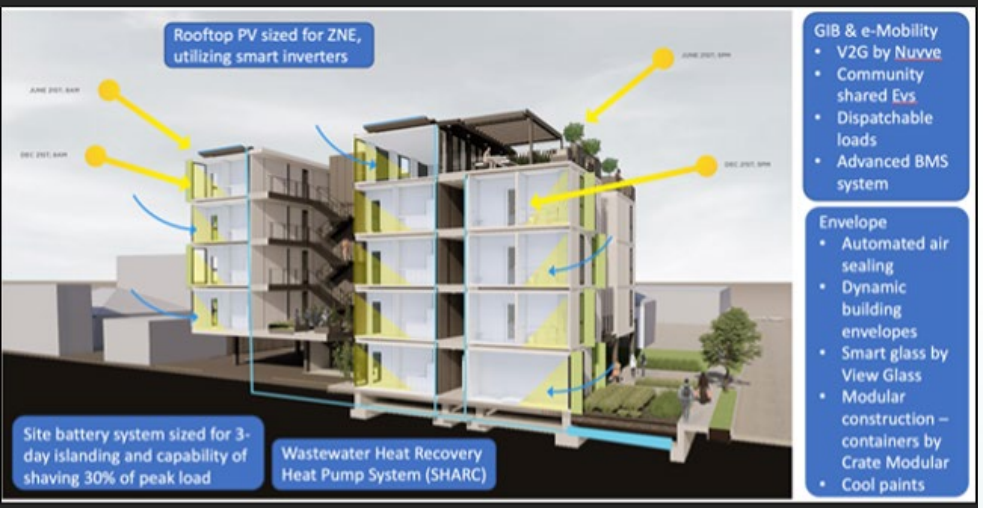
- Transit Oriented Development infill project including 288 apartment homes, community center/resiliency hub, childcare facility and retail area.
- Transactive platform to inform and engage occupants of energy use, DR, car-sharing and other transactive benefits.
- Panelized bamboo cavity walls for thermal performance, reduced embodied energy and construction times.

# The Zero Energy Live/Learn Residential EcoVillage


San Diego, CA

- 120 units, community kitchen, pocket park and public workforce training center located in Transit Oriented Development zone.
- Design based on a prefabricated "kit of parts" to reduce time and cost of construction.
- BIPV replacing tiled roof, combines glazing and weatherproof curtain wall systems.

# The Newton Avenue Project




**San Diego, CA**

## Family Health Centers of San Diego, Inc.

- 80 units, entirely low-income plus ground floor office space
- Use of single use shipping container units, offsite prefabrication to streamline construction
- Grid responsiveness helps save capacity for Port of SD cruise ship shore power and industrial electrification projects

# Staff Recommendation

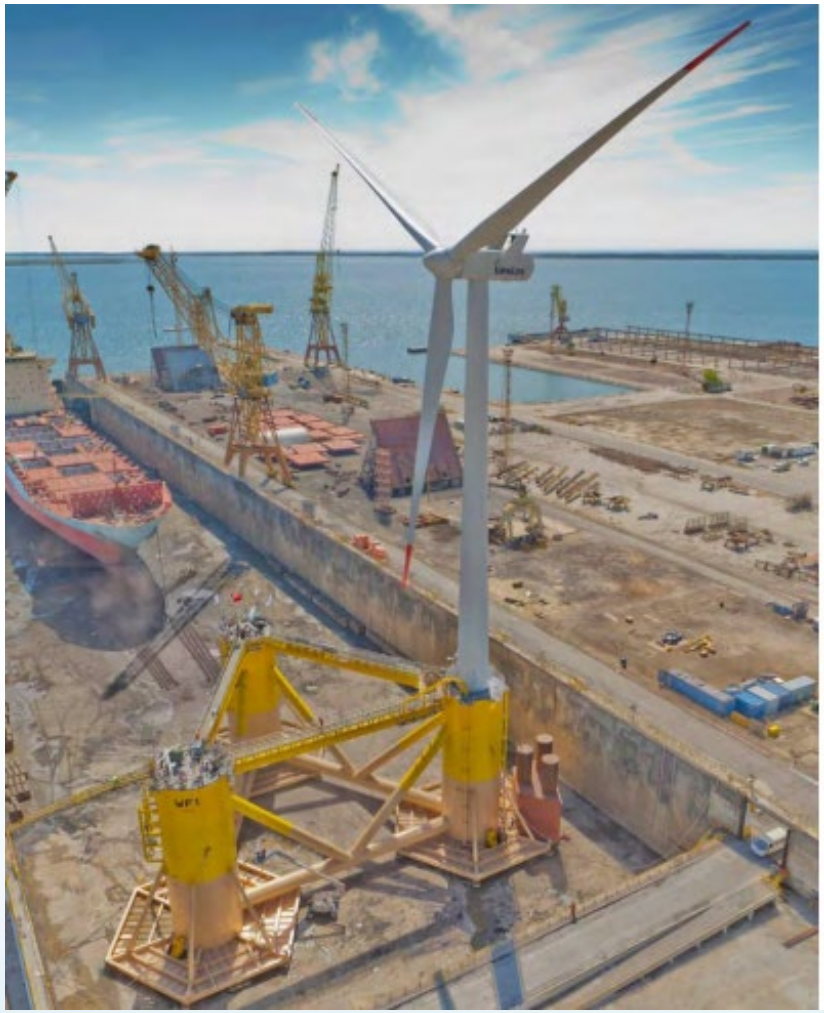
- Approve and adopt staff's findings that these projects are exempt from CEQA.

# Item 6: California State Lands Commission Interagency Agreement

April 26, 2022

Rhetta deMesa, Electric  Generation System Program Specialist
Siting, Transmission, and Environmental Protection Division,
Energy Resource and Land Use Planning Office

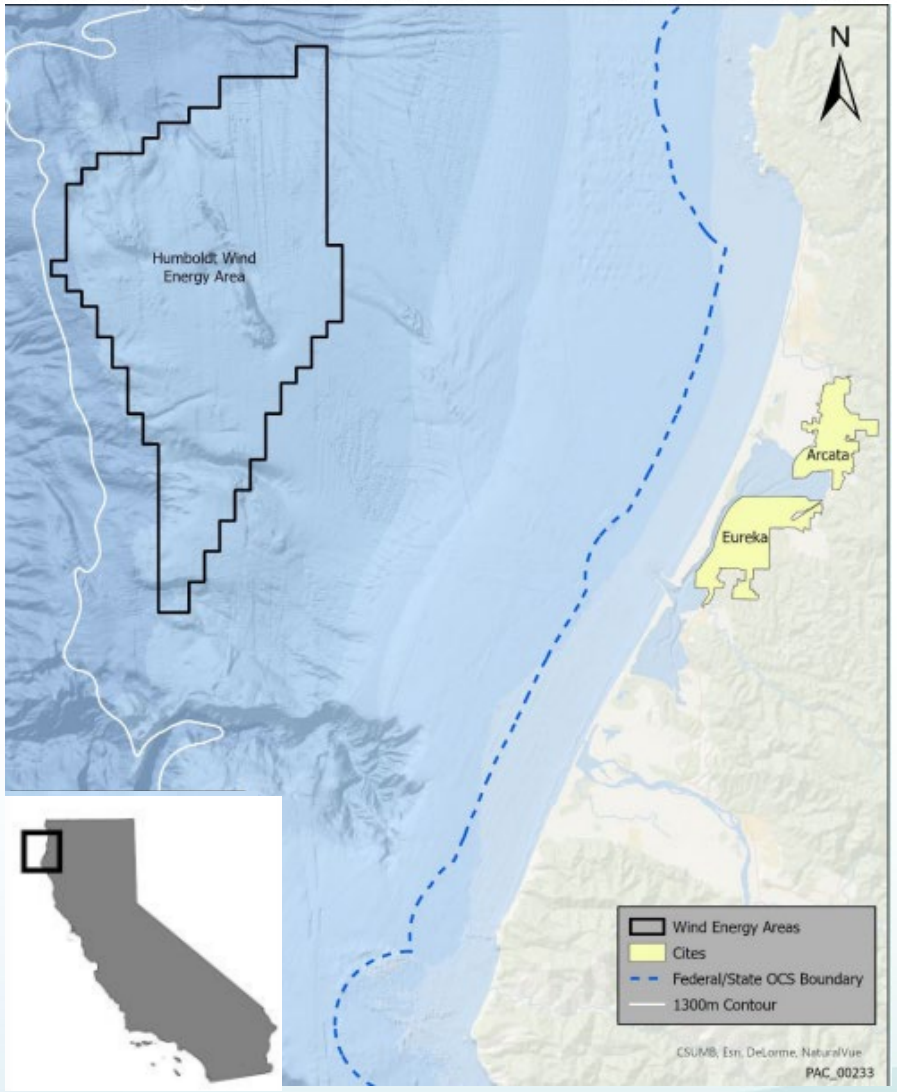
# Background and Purpose



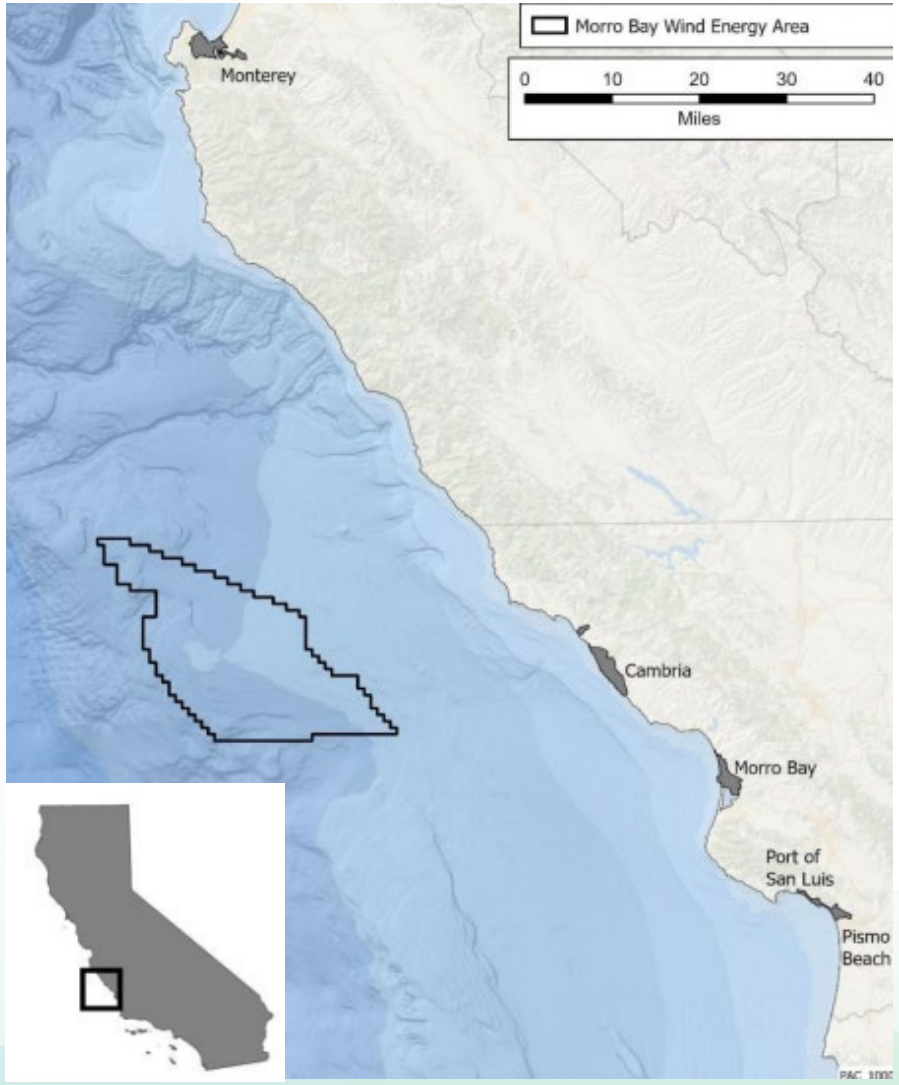
Source: OCS Study, BOEM, 2016

- Improves understanding of where new port infrastructure may be able to support offshore wind
- Complements ongoing port inventory work
- Informs offshore wind planning considerations and follow-on studies

# The Humboldt and Morro Bay Wind Energy Areas




Humboldt Wind Energy Area




Morro Bay Wind Energy Area

# Agreement Overview

- **Identify** potential new port locations and their characteristics
- **Assess** the feasibility of the new locations to support offshore wind activities
- **Inform** the development of an offshore wind strategic plan ( required by AB 525)

# Staff Recommendation

- Approve interagency agreement
- Adopt CEQA exemption determination

# Item 7: Zero Emission Transit Fleet Infrastructure Deployment GFO-20-602

April 26, 2022, Business Meeting

Esther Odufuwa, Energy Commission Specialist I
Fuels and Transportation Division
Medium and Heavy Duty Zero Emission Technologies Office, Freight & Transit Unit

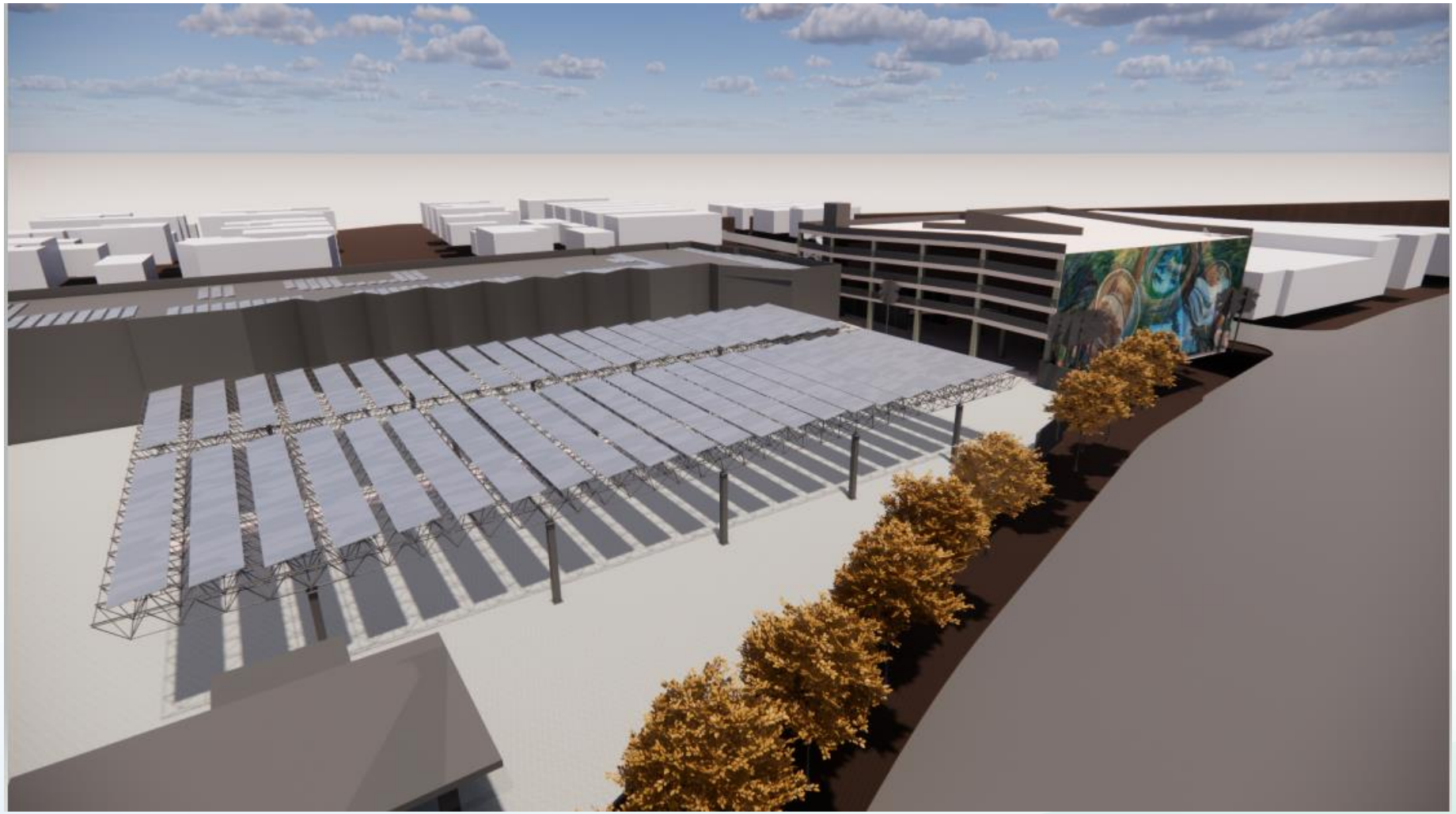
# Benefits to California

- Replicable solutions
- Reduced emissions
- Increased resilience
- Creates Jobs


Source: City of Culver City


Source: AC Transit

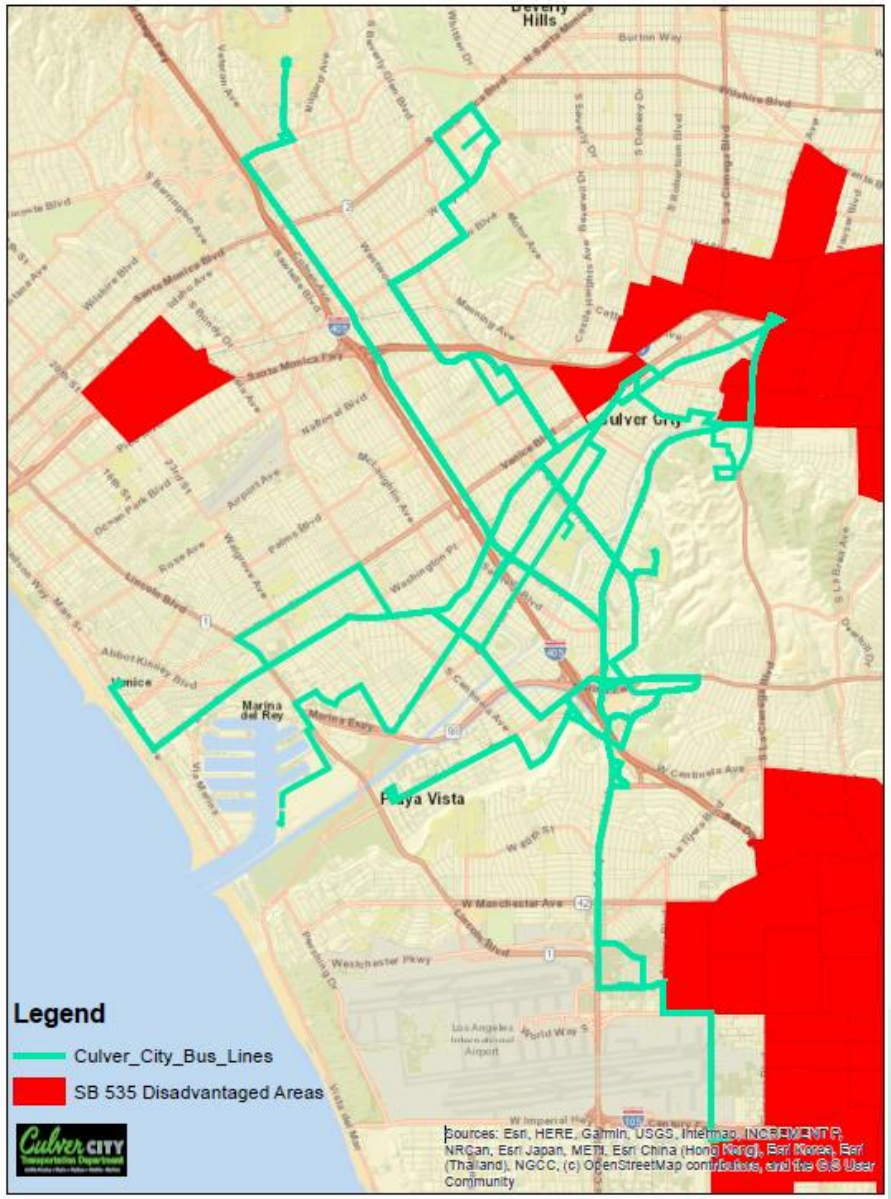
# 7a: City of Culver City Project Overview



Rendering of bus yard for overhead charging
Source: City of Culver City

Culver City Battery Electric Bus Transportation Facility Electrification

# City of Culver City Route Services



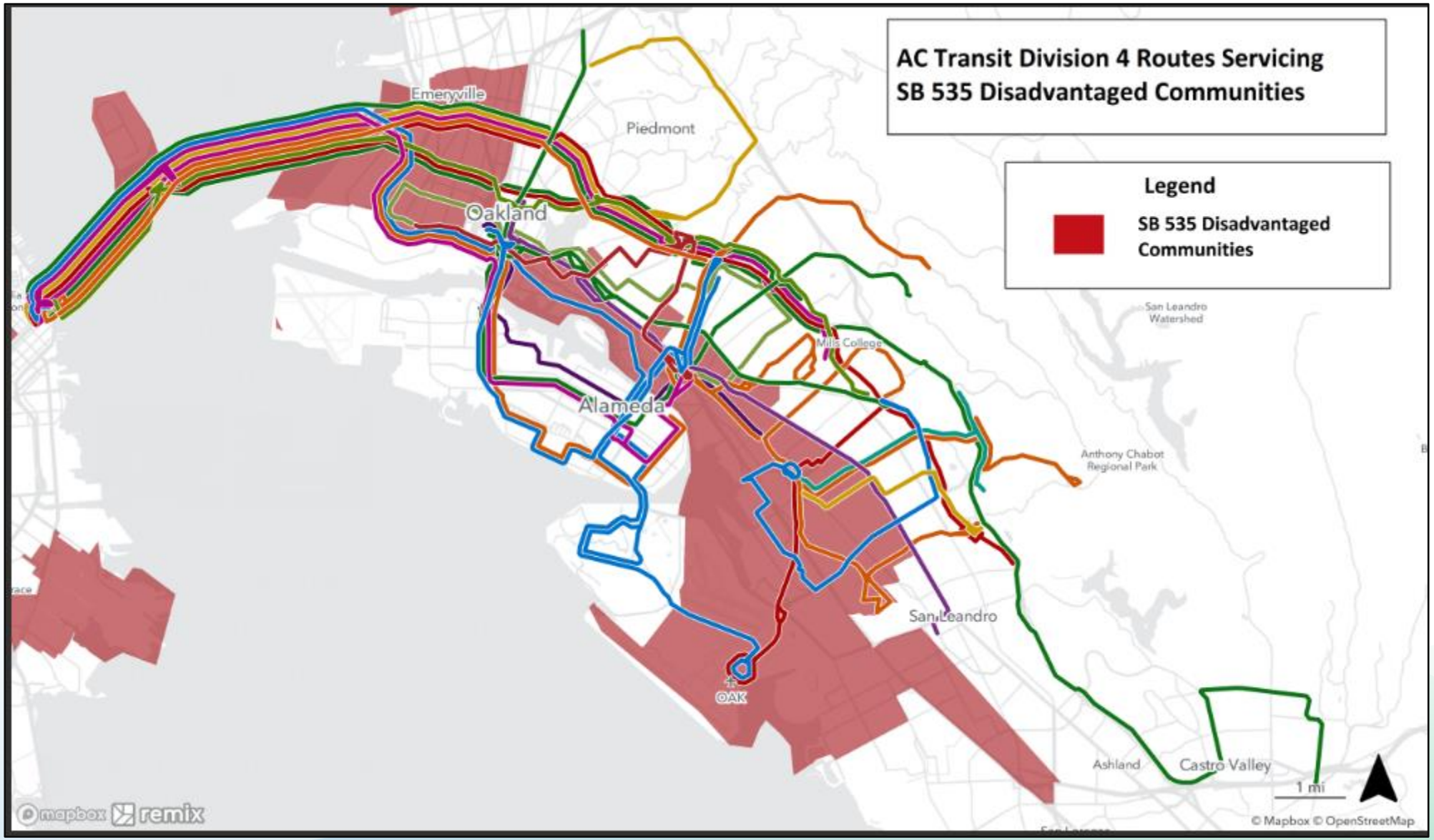

Culver City Bus Service and SB 535 DAC
Source: City of Culver City

# 7b: Alameda-Contra Costa Transit District Project Overview


Division 4 Hydrogen Refueling Infrastructure Upgrade

Aerial View of AC Transit's D4 Station and site for Hydrogen Infrastructure
Source: AC Transit

# AC Transit Route Services




Source: AC Transit

# California Market Potential


**≈ 11,500**
transit buses in California

**≈ 76**
fuel cell buses in CA as of 4/1/2022

**≈ 58**
hydrogen refueling stations in CA

Source: AC Transit

# Staff Recommendation

APPROVE

- City of Culver City agreement
- Alameda-Contra Costa Transit District

ADOPT

- Staff's determination that action is exempt from CEQA

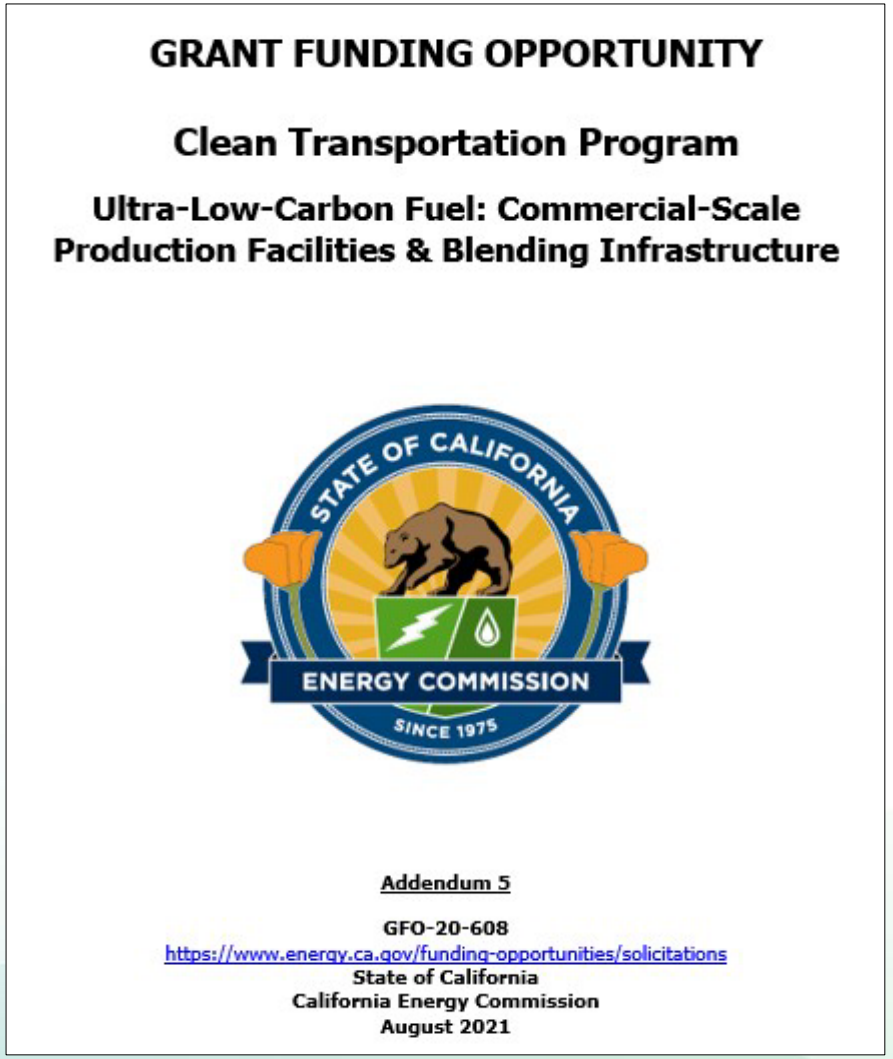
# Item 8: GFO-20-608: Ultra-Low-Carbon Fuel: Commercial-Scale Production Facilities & Blending Infrastructure

April 26, 2022 Business Meeting

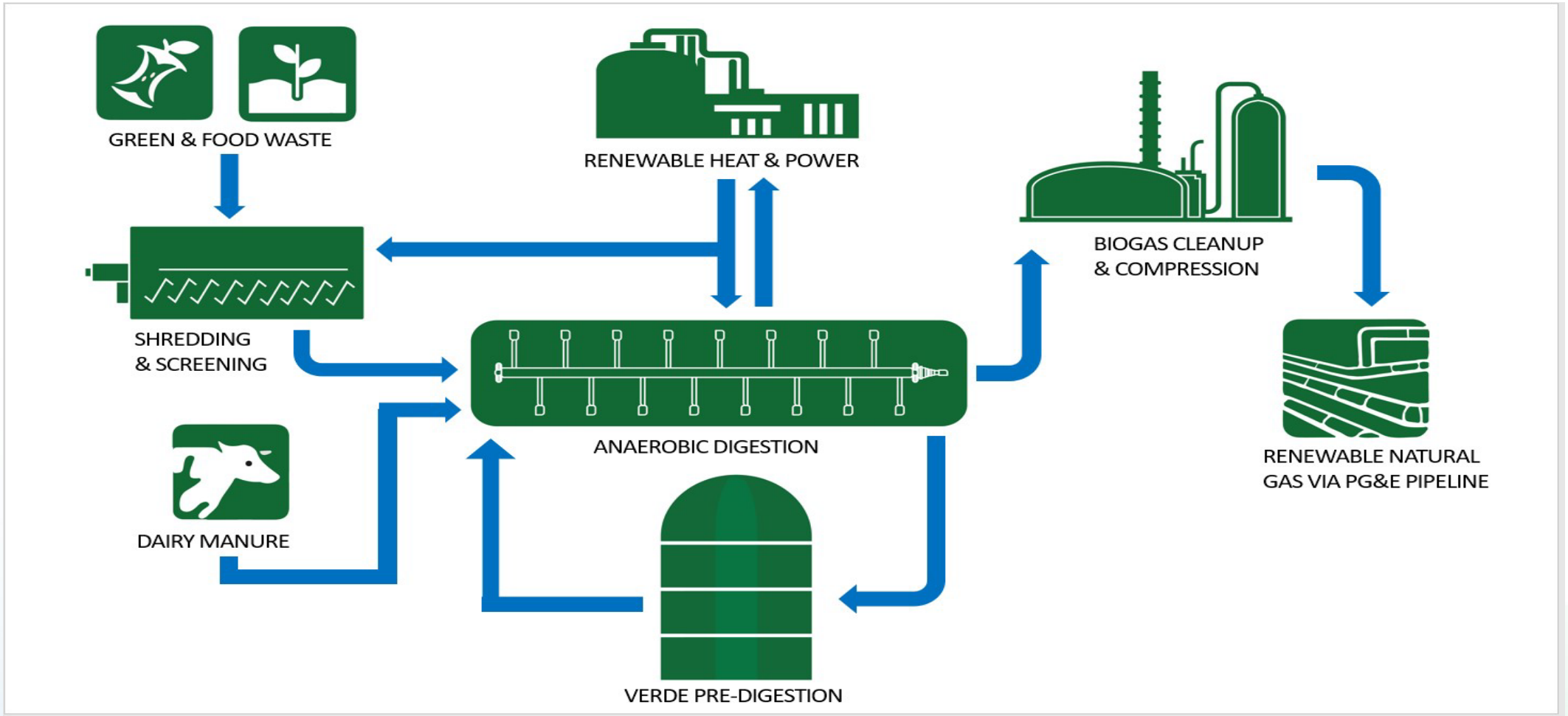
Hieu Nguyen, Energy Commission Specialist
Fuels and Transportation Division
Transportation Integration and Production Office,
Manufacturing and Production Unit

# Solicitation Overview

- Commercial-Scale Facilities
  - Fuel Production
  - Fuel Blending
- ≥1 million diesel gallon equivalents per year
- New or Existing Facilities
  - New: $3 million max
  - Existing: $1.5 million max
- Ultra-Low-Carbon Fuel: ≤30 gCO2e/MJ



# Project Overview of California Grinding

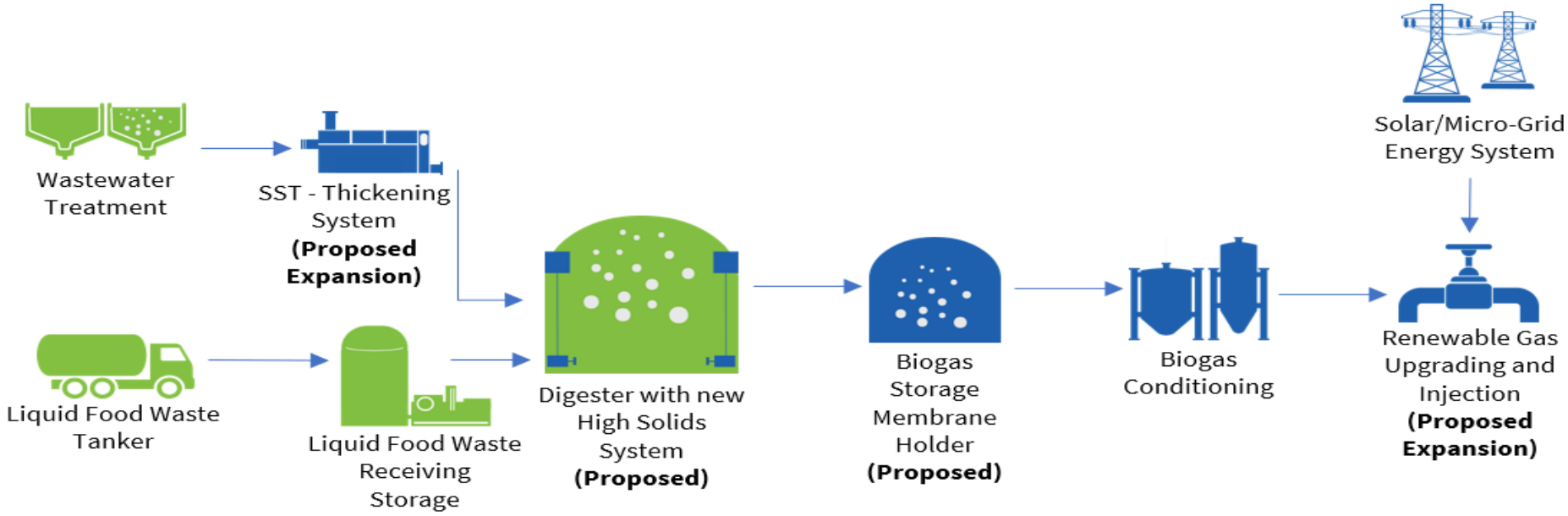



Source: California Grinding, Inc.

# Benefits of California Grinding

- Provides 29 new jobs.
- Diversion of waste from landfills.
- Offset ~55,022 MT CO2e per year.
- Eliminate 6,000 refuse truck trips.

# Project Overview of SoCal Biomethane




Source: SoCal Biomethane, LLC

- Produce 1.6 million diesel gallon equivalents of low-carbon RNG.
- Displace 18,256 MT CO2e per year.

# Benefits of SoCal Biomethane

- Provides 10 new jobs.
- Stop flaring at Victor Valley Wastewater Reclamation Authority facility.
- Offset up to 365,110 MT CO2e over 20-years.

# Project Overview of AltAir Paramount


Source: AltAir Paramount, LLC

# Benefits of AltAir Paramount

- Provides 100+ short term jobs.
- 4,500 fewer fuel tanker truck trips per year.
- Annual displacement of 1.58 million MT $CO_2e$.

# Staff Recommendation

- California Grinding, Inc.
  - Approve grant agreement for $3,000,000.
  - Adopt Staff CEQA findings.

- SoCal Biomethane, LLC
  - Approve grant agreement for $1,500,000.
  - Adopt Staff finding that project is CEQA Exempt.

- AltAir Paramount, LLC
  - Approve grant agreement for $2,000,000.
  - Adopt Staff CEQA findings.

# Item 9: IDEAL ZEV Workforce Pilot (GFO-21-602)

April 26, 2022 Business Meeting

Larry Rillera, Air Pollution Specialist
Fuels and Transportation Division, Transportation Integration and Production Office

# Benefits to Californians

- **Develop** ZEV and infrastructure career pathways
- **Create** jobs
- **Advocacy** for the ZEV industry
- **Support** priority communities and skills development

Source: California Community Colleges

Source: Green Energy Consumers Alliance

# Item 9. a. Community Resource Project, Inc.

- Proposed agreement with the Community Resource Project, Inc.
- Priority communities, workforce engagement, and training solutions
- Training for ZEV manufacturing, EV charging installation, operation, and service
- Facilitate creation of 75 jobs

COMMUNITY RESOURCE PROJECT Inc.
A NON-PROFIT ORGANIZATION
*We build strong communities through collaborative partnerships!*

CMC
CALIFORNIA MOBILITY CENTER

# Item 9. b. Kern Community College District

- Proposed agreement with the Kern Community College District
- Develop EV charging curricula and training
- Prepare electricians for Electric Vehicle Infrastructure Training Program (EVITP) Certification
- Address skills gap in EV charging installation, service, and replacement
- ~300 trainees are estimated for training
- Facilitate job placement

# Staff Recommendation

- Approve Community Resource Project, Inc. agreement
- Adopt staff's determination that action is exempt from CEQA

- Approve Kern Community College District agreement
- Adopt staff's determination that action is exempt from CEQA