



County of San Diego

# Update on the Integrated Regional Decarbonization Framework



Board of Supervisors

March 16, 2022

Item # 5

# Integrated Regional Decarbonization Framework



Technical Report  
led by UC San  
Diego and USD



Workforce  
Development Study  
by Inclusive  
Economics



Implementation  
Pathways Report

The components of the Integrated Regional Decarbonization Framework



# Public Outreach Plan

## Regional Community Gatherings

5 Total: March 24, April 19, May 17, June 28, July 26

## Public Workshops

5 total: weekly April-May

## Speaker Series

4 depending on availability of guest speakers: June 2, June 16, July 7, July 21

## Direct Engagement Meetings & Presentations

One-on-one meetings/presentations

## Pop-Up Community Events

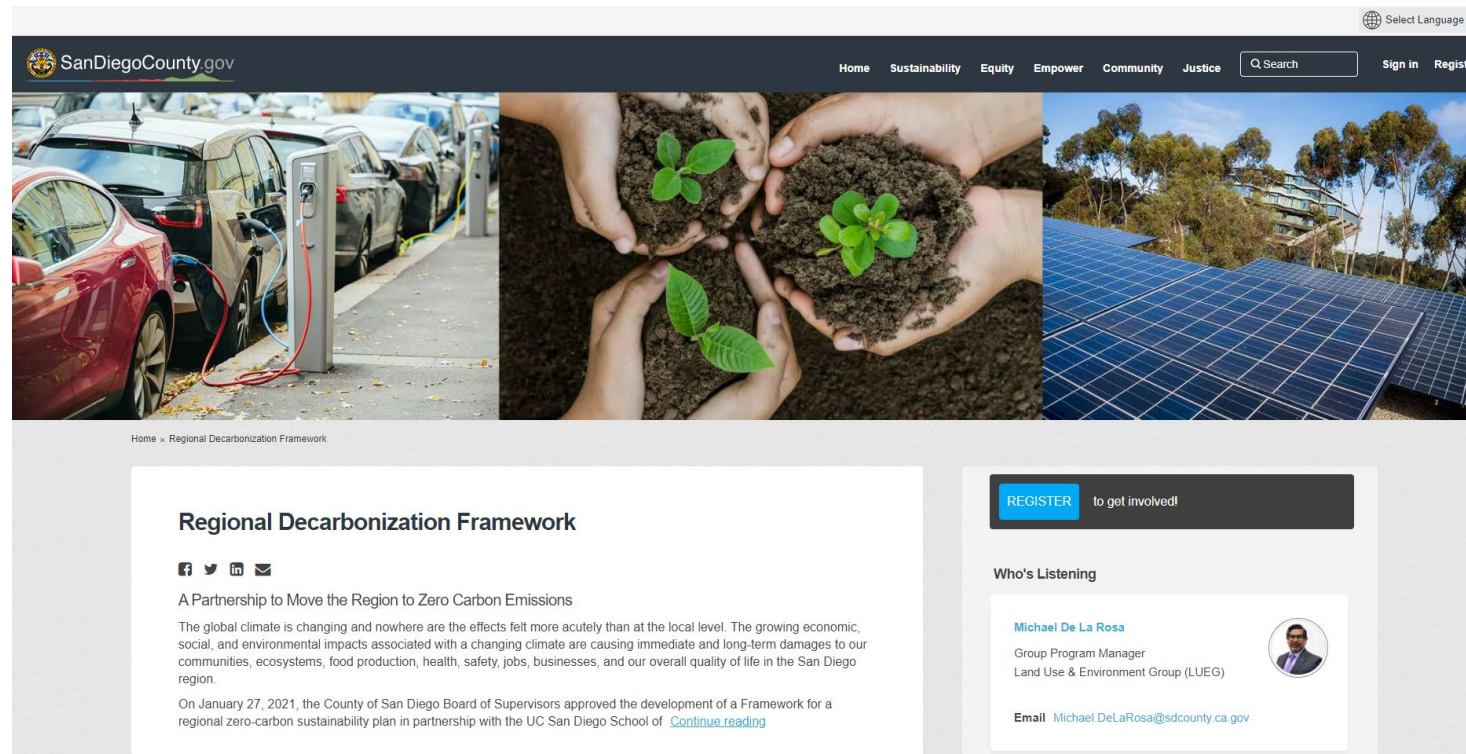
Various opportunities to educate a general audience

## Regional Convenings for Implementation

Events with public officials and stakeholders on implementation pathways

# New Engagement Tool

- Learn about the project, ask questions, comment directly on draft documents, and connect with the project team
- Documents available for comment through May 31, 2022





# Decarbonization Pathways in Four Sectors



# San Diego Regional Decarbonization Framework

**SDG  
POLICY  
INITIATIVE**

Gordon C. McCord  
School of Global Policy and Strategy  
UC San Diego

DRAFT San Diego Regional Decarbonization Framework – March 16, 2022

# Modeling Approach – Energy System

- Pathways analysis of sectors in the regional energy system to reduce emissions to net zero by 2045
  - “Energy system” is the total production and consumption of energy, including electricity and fossil fuels
  - Energy sectors: electricity generation, on-road transportation, and buildings
- “Net zero” here means that anthropogenic (human-caused) carbon emissions equal anthropogenic carbon sequestration, leading to no net carbon entering the atmosphere from the energy system
  - The goal of “net zero” here is that the San Diego region fits within the State and national net zero pathways – not that this region achieves net zero in isolation
- Also analyzed:
  - Land use considerations for the energy system pathways
  - Natural climate solutions that could increase annual sequestration
  - Quantitative jobs analysis for net zero pathways

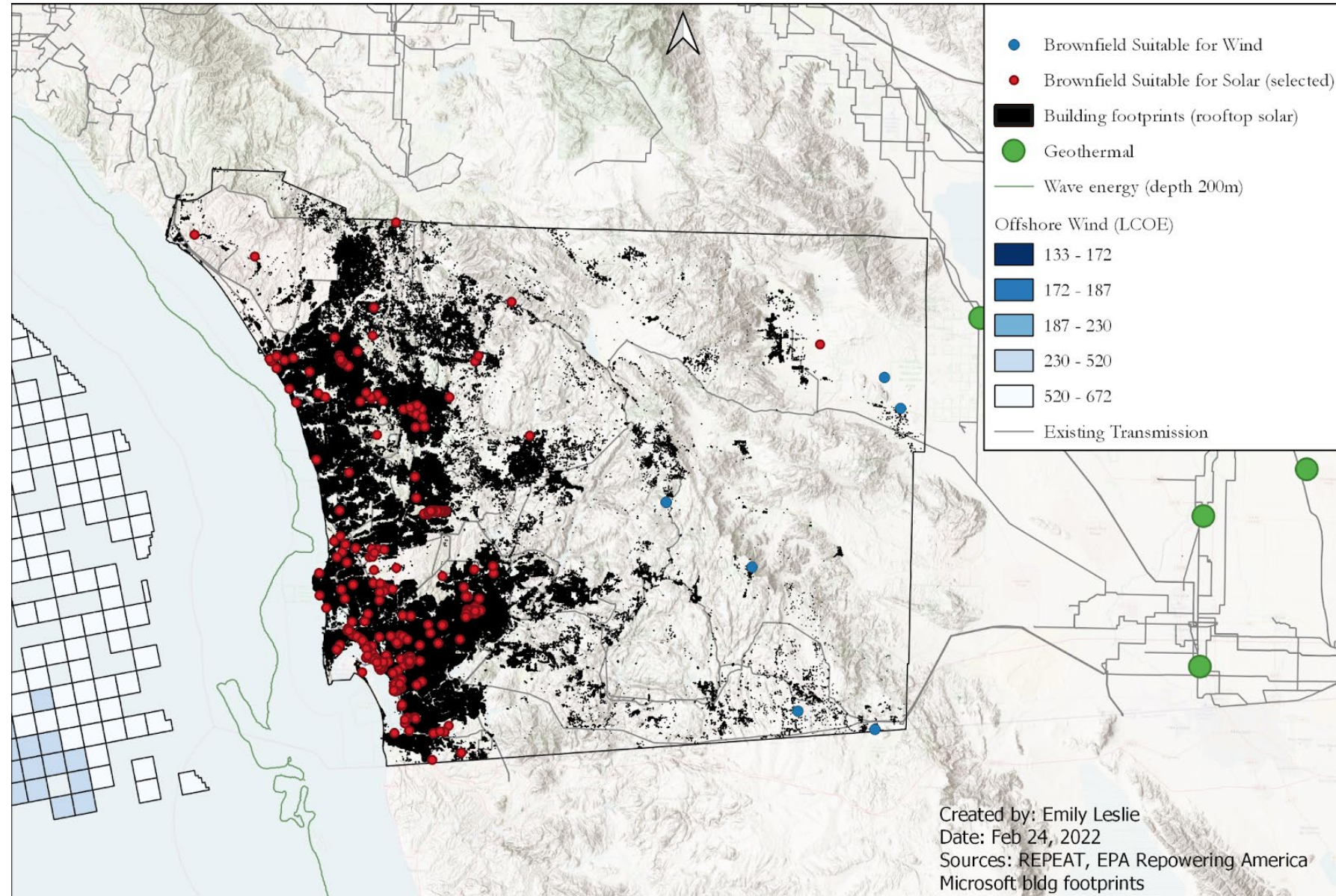


# Comment Period and Process

- Comment period was originally open through December 3<sup>rd</sup>, 2021
  - New comment period through May 31<sup>st</sup>, 2022
- The Technical Working Group, stakeholders, members of the public sent in letters and emails with comments
- UC San Diego team pulled comments from letters and organized them by chapter in an excel sheet that was shared with authors. All letters were also shared with authors
  - Authors were asked to address comments as feasible through additional analyses and maps, explanations of assumptions and/or data, more/better explanation of context, etc.

# Geospatial New Findings and Additional Analyses

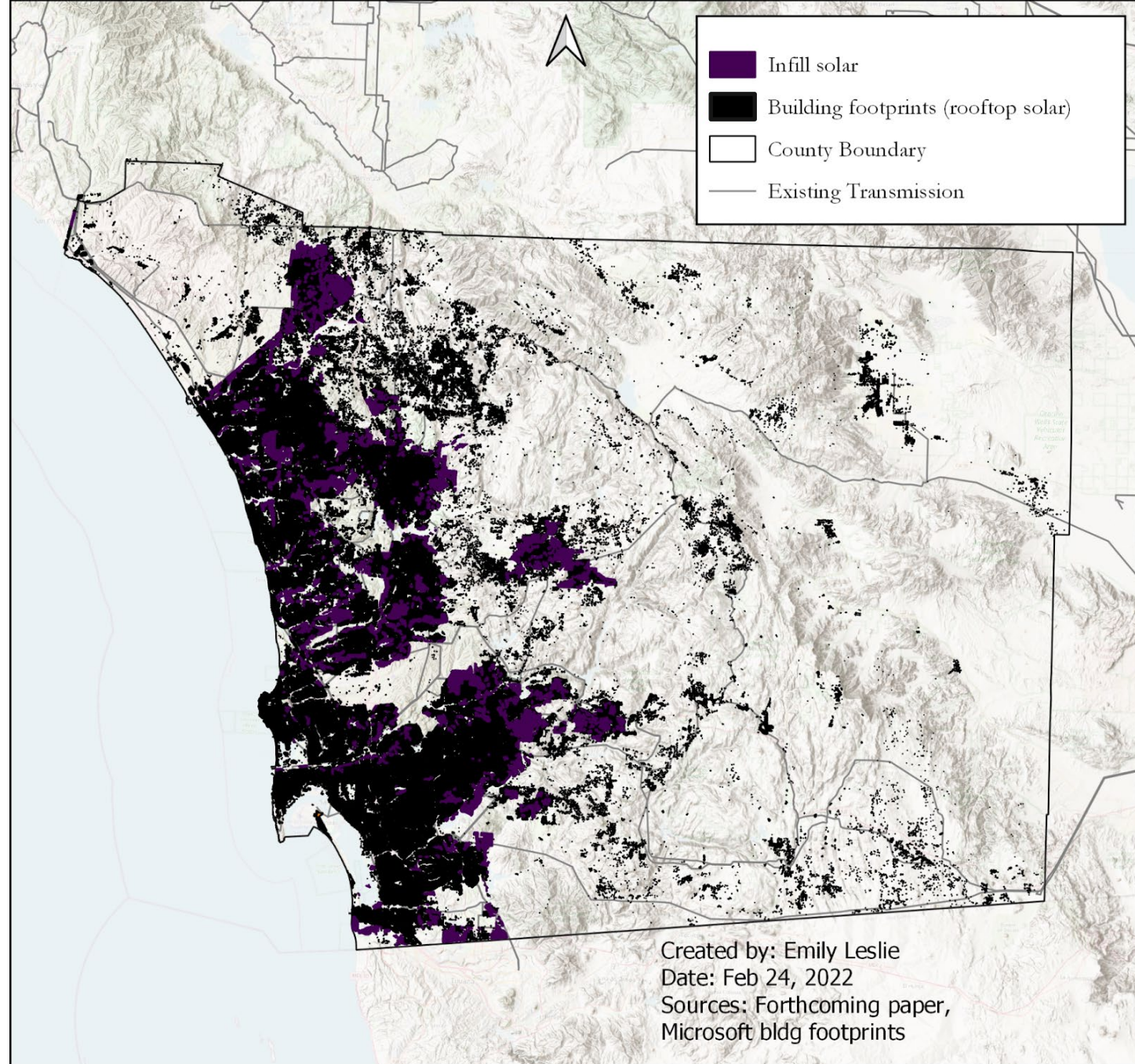
- Wave energy
- Offshore wind
- Rooftop solar
- Potential brownfields for solar and wind
- Geothermal sites





# Geospatial New Findings and Additional Analyses

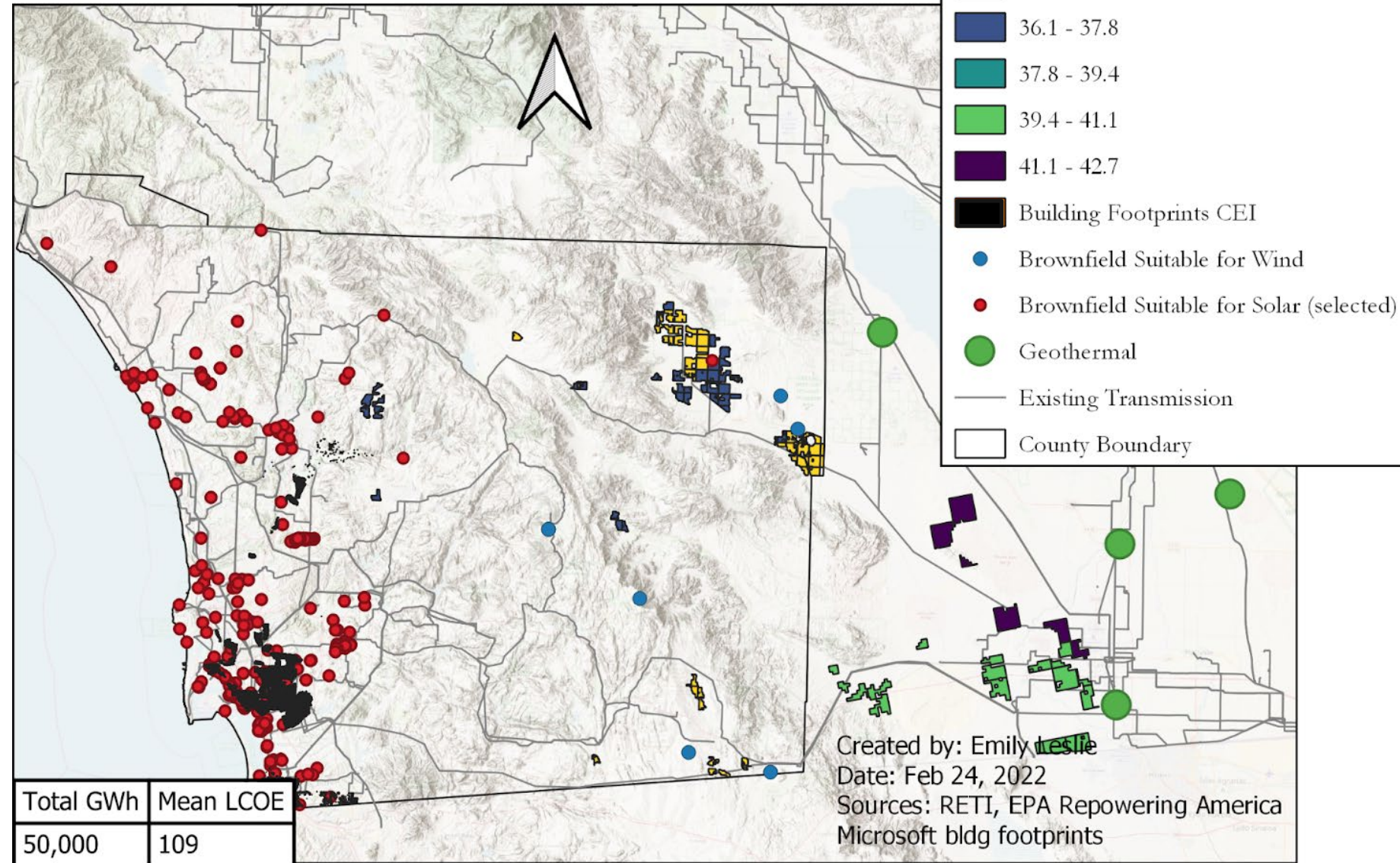
- New scenarios:
  - Rooftop solar and infill solar only
    - This scenario meets 35% of 2050 regional energy demand
    - Average levelized cost of energy (LCOE): \$70.04/MWh
- Regional utility-scale solar and wind:
  - Meets 100% of demand
  - Average LCOE: \$40.65/MWh





# Geospatial New Findings and Additional Analyses

- New Scenarios
  - “Mid-range scenario” for 2050 – balances competing priorities,
  - Meets 100% of 2050 energy demand
  - Average LCOE: \$109/MWh





# Co-Benefits New Findings and Additional Analyses

- Geospatial analysis of energy
  - Environmental benefits from different scenarios. Example: New rooftop and infill solar only scenario results in no land use change – minimizing impacts to natural and working lands
- Transportation
  - Health benefits from both vehicle electrification and VMT reduction strategies
- Buildings
  - Health benefits from building electrification due to burning fewer fossil fuels indoors

# Technical Report Summary

- The RDF provides quantitative, technical pathways to decarbonization to inform policy-making, highlight trade-offs, uncertainties, decision points, and key takeaways and investments
  - Key takeaways are near-term actions common across pathways, worthwhile regardless of how longer-term uncertainties resolve themselves
  - Examples:
    - Building low-cost renewable energy sites
    - Electrifying transport
    - Reducing VMT
    - Replacing end-of-life water and space heaters with electric alternatives
    - Protecting natural and working lands to maintain natural sequestration
- This report models the entire region as a system to inform an institutional arrangement that promotes coordination and learning across jurisdictions while updating these science-based pathways as technology and costs change over time

# Thank you

**Gordon McCord**

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**SDG POLICY INITIATIVE**

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# Employment Impacts from Climate Investments in the San Diego Region

Investment Area	Representative Occupations	Annual Expenditure (in millions)	Direct Jobs	Total Jobs	Average Annual Compensation
<b>ENERGY DEMAND</b>					
Vehicles	Freight movers, bus drivers	\$ 7,700	3,428	6,362	\$ 62,000
HVAC	Mechanical trades	\$ 897	1,345	2,808	\$ 72,000
Refrigeration	Machinists, laborers, heavy vehicle technicians	\$ 762	1,315	2,517	\$ 77,000
<b>ENERGY SUPPLY</b>					
Fossil fuels	Welders, operators, electricians, pipelayers	\$ 4,400	2,538	10,120	\$ 181,000
Clean Renewables	Misc. trades	\$ 630	1,488	2,937	\$ 97,600
<b>OVERALL WORKFORCE</b>					
Full-time year-round					\$ 80,900



# Employment Impacts from Climate Investments in the San Diego Region

Investment Area	Representative Occupations	Healthcare Coverage	Union Membership	Education: High School or Less	People of Color	Female
<b>ENERGY DEMAND</b>						
Vehicles	Freight movers, bus drivers	58.1%	14.9%	45.0%	70.0%	20.8%
HVAC	Mechanical trades	53.8%	12.9%	58.8%	70.0%	12.2%
Refrigeration	Machinists, laborers, heavy vehicle technicians	55.2%	14.7%	60.5%	70.4%	10.7%
<b>ENERGY SUPPLY</b>						
Fossil fuels	Welders, operators, electricians, pipelayers	82.9%	18.0%	31.1%	62.7%	23.0%
Clean Renewables	Misc. trades	59.5%	11.5%	46.5%	64.8%	19.0%
<b>OVERALL WORKFORCE</b>						
Full-time year-round		62.2%	13.3%	33.7%	61.4%	45.8%

# Putting San Diego County on the High Road

- Board directed a comprehensive green jobs plan
- Preliminary report presented today
- Modelled after the State of California's Jobs and Climate Action plan



## Purpose of Presentation

What can we do to make sure that the jobs created by decarbonization are good jobs and there are pathways into them?

What can we do to support workers who may lose their jobs?

### **Conclusion:**

With intentional policies and strategic capital investments, climate action can protect and increase high-quality jobs and access to them.

# What do we mean by “high-road jobs”?

## **Job quality:**

- Family-supporting wages and benefits
- High standards for health and safety
- Long-term career pathways
- Worker protections including the right to organize

## **Job access:**

- Access and entry-points to good jobs for local workers
- Training to support advancement

***A win-win approach for employers and community: employers gain access to skilled and committed workers, and community members gain access to good careers.***



# How to ensure good outcomes for workers:

## **Strategies to support job quality and job access for workers in the growing sectors:**

- Ensure that jobs that are created or expanded are family-supporting
- All demographic groups have access to special training and preparation

## **Strategies to support transition for workers in declining sectors:**

- Place workers in jobs with comparable pay, benefits, and working conditions
- Take advantage of new funding for industrial strategies to reduce GHG emissions
- Robust training investments for workers who want to change careers
- Safety nets for remaining workers

# The growth side: why do we need to worry about job quality and job access?

Without incorporating workforce goals into climate policy, the transition to a carbon-neutral economy may simply replicate—or even exacerbate—deep-seated trends of wage inequality and ***disparities by race and gender***.

- Workers in “green jobs” are really in greening occupations.
- Most jobs that contribute to reductions in GHG emissions are blue collar, and many are construction jobs.
- Green jobs are not necessarily good jobs, as they follow the same trends as other jobs of the same occupation and industry.
- Blue collar occupations can be low wage, particularly if they are not public sector or unionized.

# Low wage trouble spots where policy can improve job quality

- Distributed generation, rooftop solar
- Energy efficiency
- Trucking
- Ride-sourcing/Transportation Network Companies
- Waste management
- Lands conservation and restoration
- Agriculture
- Manufacturing



# RDF implementation can incorporate social policies: job quality standards and job access agreements

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## Construction:

- Project Labor Agreements with Targeted Hire (CWAs)
- Skilled and Trained Workforce
- Prevailing Wage
- Responsible Contractor Requirements

## Non-Construction:

- Inclusive Procurement Requirements
- Wage and Benefit Standards
- Skill Standards
- Community Benefit Agreements



# San Diego region can implement best practice training strategies



# Job Policies for Buildings

## Non-Residential Building Decarbonization

- Require “skilled and trained” workers are involved in large-scale commercial building decarbonization projects.
- Invest in decarbonizing and upgrading the region’s public buildings under a Community Workforce Agreement, to ensure middle class wage and benefit standards and expand hiring of workers from disadvantaged communities.

## Small Commercial and Residential Building Decarbonization

- Support electric-ready buildings by aggregating neighborhoods for electric service upgrades, performed by pre-qualified contractors.
- Develop a fund for deep decarbonization of the region’s affordable housing, to support high-road jobs in this sector while reducing energy burdens for low-income renters.
- Pre-qualify Responsible Contractors seeking incentives for electrification.

# Job Policies for Energy

Utility-Scale Solar, Wind, Battery Storage, Geothermal, etc.	<ul style="list-style-type: none"><li>• Require CWAs on the construction of renewable energy projects.</li><li>• Support job quality on the operations and maintenance of local renewable energy projects.</li></ul>
Distributed Solar and Storage	<ul style="list-style-type: none"><li>• Support models of distributed solar that are community scale rather than on individual homeowners' roofs, to both lower costs per MW and to facilitate contracting models that support high road jobs.</li><li>• Ensure licensing and electrical certification requirements reflect the hazards and risks associated with battery energy storage systems.</li></ul>
All Energy Subsectors	<ul style="list-style-type: none"><li>• Incorporate responsible employer prerequisites in incentive programs that require compliance with all applicable labor and employment laws and set family-sustaining wage and benefit standards.</li></ul>

# Job Policies for Transportation Electrification

Electric Vehicle Charging Infrastructure	<ul style="list-style-type: none"><li>• Adopt the requirement that electric vehicle charging stations be installed by EVITP-certified electricians.</li></ul>
Transit and Fleet Purchases of Electric Vehicles	<ul style="list-style-type: none"><li>• Use inclusive procurement policies, such as the U.S. Employment Plan, for purchase of zero emissions buses and other fleet vehicles by public agencies.</li></ul>
Electrified freight and efficient distribution	<ul style="list-style-type: none"><li>• Support EV charging for freight at distribution centers and give preference to firms that utilize employees rather than independent contractor drivers.</li></ul>
Electric Vehicle TNC subsidies	<ul style="list-style-type: none"><li>• Incentivize cleaner vehicles for TNCs, attaching responsible employer policies to subsidies.</li></ul>

# Job Policies for Transportation: Lowering Vehicle Miles Traveled

Expand transit services	<ul style="list-style-type: none"><li>• Require community workforce agreements on transit infrastructure expansion.</li><li>• Expand funding for public transit operations, maintaining current high road jobs.</li><li>• Support innovative programs that incorporate micro-transit services for first- and last-mile mobility as part of public transit systems.</li><li>• Incorporate worker protections and labor standards in comprehensive regulations of TNCs that also address congestion and vehicle miles traveled (VMTs), e.g., through licensing or rules and fees on access to curb space and public streets.</li><li>• Invest in TNC partnerships in rural and non-infill areas, prioritizing zero emissions vehicles, while piloting public rideshare using transit worker union drivers.</li></ul>
Infill and Transit Oriented Development	<ul style="list-style-type: none"><li>• Encourage development to zoning capacity limitations and 4+ story buildings, requiring skilled and trained craft laborers. On competitive grants for infill projects, include scoring criteria that factor in job quality and job access.</li></ul>
Accelerate SD Regional Bicycle Plan and develop pedestrian safety plan	<ul style="list-style-type: none"><li>• Implement a community workforce agreement for all active transportation infrastructure in the region.</li></ul>



# Job Policies for Lands

Restoration, reforestation, and urban greening	<ul style="list-style-type: none"><li>• Expand public sector employment for these activities or incorporate job quality standards and job access agreements into contract requirements for this work.</li></ul>
Carbon farming in agriculture	<ul style="list-style-type: none"><li>• Condition financial support on sites that have health and safety plans that account for the hazards of climate change on workers' well-being.</li></ul>
Protect and restore wetlands	<ul style="list-style-type: none"><li>• Expand public sector employment for these activities or incorporate job quality standards and job access agreements into contract requirements for this work.</li></ul>

# The Declining Side: Strategies to support workers at Risk of Job Loss

The goal of a truly just transition is to minimize or eliminate the need for worker transition assistance.

This goal can be accomplished by aligning capital investments with projects that utilize the same occupations as an industry in decline, and engaging in long-term planning that phases in a contracting workforce with worker retirements.

**We think this can be accomplished in the San Diego region!**

*Because:*

- Relative minor dependence of jobs on fossil fuels
- Alignment of vision and pro-active approach by economic development leaders
- Unique moment of federal investment in emerging climate technologies

RDF implementation can include specific investments that contribute to climate mitigation and redeploy fossil fuel workers

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Waste to Energy

District Thermal Energy

Lithium Valley

Onsite Water Reuse

**This takes planning and stakeholder engagement!**

# Examples of Planning Ahead for Alternative Climate Infrastructure Investments

- Pilot projects to strategically decommission gas distribution systems in neighborhoods to convert to carbon-free district energy, installed by gas infrastructure workers. The U.S. Department of Energy suggested district energy systems could expand from 17 today to 17,000 in 2050. The San Diego region should explore these solutions early, in order to scale them appropriately.
- Pilot waste-to-energy biomethane projects or green hydrogen demonstrations. These can also employ gas infrastructure workers. These will be important technologies for hard-to-electrify end uses, such as industrial process heat. Gaining experience with these technologies, and exploring the job impacts early is worthwhile.

# Transition and safety net programs for displaced workers

Preparation is needed in case redeployment is incomplete.

1. Bridges to retirement and pension guarantees for all workers in fossil fuel-based industries.
2. Wage insurance for all displaced workers who get placed in lower wage jobs.
3. Retraining support that includes career counseling, stipends during training, and job placement.



# Next Steps for Green Jobs Transition

Develop a technical assistance team to help local agencies identify and incorporate labor standards recommended in this report.

Assess need to shore up pre-apprenticeship via HRCC funding, and develop industry training partnerships, via H RTP funding.

Convene a just transition task force that includes affected stakeholders

- Research on specific situation and needs of workers facing job loss
- Identification of climate and public investments that could redeploy workers
- Development of partnerships for federal and state funding opportunities
- Negotiated package for safety net, including bridges to retirement and wage insurance
- Comprehensive approach to retraining support for workers who will change careers



## Next Steps for the RDF

# Other Considerations & Board Direction



Social Equity



Alternative  
Renewable Energy  
Sources



Regional  
Collaboration



Local,  
Sustainable  
Agriculture &  
Food System

# Implementation Pathways Design and Development

## Phase 1: Short and Mid-Term Implementation

- Set the path for action
- Develop a set of options for short, mid, and long-term actions
- Program design
- Evaluate feasibility of mid-term actions

## Phase 2: Long Term Implementation

- Regional convenings
- Bring together stakeholders
- Gather feedback to refine implementation pathways



# The Team: Contracts



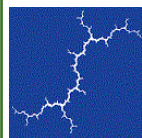
## Technical Report



SUSTAINABLE DEVELOPMENT  
SOLUTIONS NETWORK  
A GLOBAL INITIATIVE FOR THE UNITED NATIONS



POLITICAL ECONOMY  
RESEARCH INSTITUTE



Synapse  
Energy Economics, Inc.

FEHR & PEERS



Montara  
Mountain  
Energy



EVOLVED  
ENERGY  
RESEARCH

## Workforce Development Study



## Implementation Pathways

UC San Diego



# August Board Update



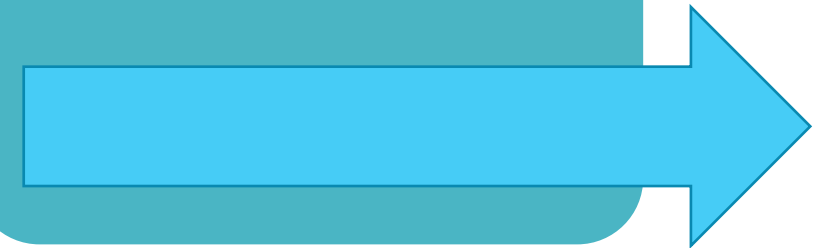
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# Today's Board Action

## Receive the Report

- Revised technical report and draft workforce development study

## Approve Contract with USD EPIC

- Consulting services for implementation support



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