Redwood Coast Energy Authority

633 3rd Street, Eureka, CA 95501
Phone: (707) 269-1700 Toll-Free (800) 931-RCEA Fax: (707) 269-1777
E-mail: info@redwoodenergy.org Web: www.redwoodenergy.org

REVISED NOTICE AND CALL OF A SPECIAL MEETING
OF THE COMMUNITY ADVISORY COMMITTEE
OF THE REDWOOD COAST ENERGY AUTHORITY

TO THE COMMUNITY ADVISORY COMMITTEE OF THE REDWOOD COAST ENERGY AUTHORITY AND TO THE CLERK OF THE BOARD:

NOTICE IS HEREBY GIVEN that a special meeting of the **Community Advisory Committee** of the Redwood Coast Energy Authority is hereby called to be held on **Tuesday, November 12, 2019, at the Humboldt Bay Municipal Water District Office, 828 7th Street, Eureka,** at **6:00 p.m.** The purpose is to discuss business items that were scheduled for the Tuesday, October 29, 2019, special meeting, which was cancelled due to a public safety power shutoff.

Please note the location for this meeting has been changed.

Dated: November 8, 2019

Matty Tittman, RCEA CAC Chair

Agenda Item	What / Action	When
1. Open	Roll Call: Norman Bell Jerome Carman Colin Fiske Larry Goldberg Pam Halstead Tom Hofweber Robin Smith, Board liaison Richard Johnson Luna Latimer Dennis Leonardi Kit Mann Craig Mitchell Kathy Srabian Matty Tittman **Review meeting agenda and goals**	6 - 6:05 (5 min.)
2. Approval of Minutes	**Action: Approve minutes of July 9, 2019 regular meeting**	6:05 - 6:10 (5 min.)
3. Member Reports	This time is provided for Committee members to share information on topics not on the agenda. At the end of member reports, the Executive Director will set requests requiring action to a future agenda or refer requests to staff or the Board.	6:10 - 6:25 (15 min.)
4. Oral Communications	This item is provided for the public to address the Committee on matters not on the agenda. At the end of oral communications, the Committee will respond to statements, set requests requiring action to a future agenda, or refer requests to staff.	
5. Public Safety Power Shutoff	Receive update from staff on RCEA activities to minimize impacts of future public safety power shutoffs.	6:25 - 6:30 (5 min.)

6. RePower Humboldt / Comprehensive Action Plan for Energy (CAPE) 2019 Update	**Receive report on the current draft of the 2019 CAPE update and public input received to date; provide input and guidance to staff on incorporating public input and finalizing the draft.**	6:30 – 7:25 (55 min.)
7. Close & Adjourn	Summarize actions, outcomes, Board communication items, next steps	7:25 - 7:30 (5 min.)

Redwood Coast Energy Authority

633 3rd Street, Eureka, CA 95501
Phone: (707) 269-1700 Toll-Free (800) 931-7323 Fax: (707) 269-1777
E-mail: info@redwoodenergy.org Web: www.redwoodenergy.org

Redwood Coast Energy Authority Office
633 3rd St., Eureka, CA 95501

July 9, 2019
Tuesday, 6 - 7:30 p.m.

COMMUNITY ADVISORY COMMITTEE MEETING

DRAFT MINUTES

The agenda for this meeting was posted on July 5, 2019. Community Advisory Committee Vice Chair Larry Goldberg called the meeting to order at 6 p.m.

Members present:	Norman Bell	Richard Johnson
	Jerome Carman	Dennis Leonardi
	Colin Fiske	Kathy Srabian
	Vice Chair Larry Goldberg	Board Liaison Robin Smith
	Pam Halstead	
Members absent:	Tom Hofweber	Craig Mitchell
	Luna Latimer	Chair Matty Tittman
	Kit Mann	

Staff present: Richard Engel, Director of Power Resources
Lou Jacobson, Director of Demand-Side Management
Matthew Marshall, Executive Director
Nancy Stephenson, Community Strategies Manager
Lori Taketa, Clerk of the Board

Minutes Approval

Vice Chair Goldberg invited public comment on the April 9 meeting minutes.

Dr. Norman Bell stated that the community needs to know the volume of carbon that local biomass electricity production will emit in the next five years, and that the Comprehensive Action Plan for Energy (CAPE) needs to address the carbon emissions of the Community Choice Energy (CCE) program's electric power procurement.

Upon inquiry by member of the public Jesse Noell whether property value losses to neighbors had been considered when evaluating renewable energy sources, Executive Director Marshall responded that the request for proposal evaluation process included other non-quantitative measures such as environmental impacts and job creation but attempting to quantify and evaluate impacts to property values was not included.

It was clarified that the Board of Directors adopted the target of a 100% clean and renewable electricity mix by 2025 in March, approved gathering community input on how to implement

the goal and how to define "clean," and that the goal of today's discussion was to discuss the public input process.

Vice Chair Goldberg closed public comment.

Motion Leonardi, Second Halstead. By consensus, the Committee voted to approve the minutes of April 9, 2019 Regular Meeting.

Oral Communications

Vice Chair Goldberg invited public comment.

Member of the public Dr. Ken Miller expressed concern about the Terra Gen wind project's construction, transmission line, CO_2 emission, and potential fire impacts on the biodiversity of ridges which are also considered to be sacred. Dr. Miller requested investment in clean power such as offshore wind and old wind energy sites that have been repowered with fewer, modern wind turbines.

Member of the public Jesse Noell stated his opposition to the Humboldt Wind Project's footprint size, fog disruption, near-turbine temperature rise and the loss of carbon sequestering forest acreage. Mr. Noell disapproved of externalizing project costs onto the public.

Executive Director Marshall clarified that the County approves or denies the Humboldt Wind Project permit; RCEA's Board approved negotiating a power purchase agreement (PPA) with Terra Gen; energy developers need PPAs to secure financing; RCEA will receive damage payments if the wind project permit is denied; the renewable energy request for proposals (RFP) solicited wind, solar and small hydropower projects, favoring local projects due to transmission line constraints and RCEA planning document direction to pursue energy security; and that the RCEA Board does consider public comment from many sources.

Vice Chair Goldberg closed public comment.

CAPE and Countywide Climate Action Plan Updates

Review and provide input on draft Comprehensive Action Plan for Energy (CAPE) document.

Review and provide input on public engagement plan for the CAPE update process.

Executive Director Matthew Marshall described the documents guiding RCEA's work and the resources and community involvement in creating them:

- the 2012 Comprehensive Action Plan for Energy (CAPE),
- the 2013 RePower Humboldt strategic plan,
- the 2016 Community Choice Energy Program Launch Period Strategy and Targets,
- the 100% Clean and Renewable Electricity Mix by 2025 Board resolution
- and other local and regional planning documents.

Executive Director Marshall described the County's current countywide climate action planning efforts and RCEA's goal to update the CAPE, RCEA's main work blueprint, by incorporating the agency's preceding guiding documents and aligning it with the County's currently forming climate action plan. The updated CAPE will capture the community's qualitative goals and high-level quantitative goals and timeline targets, and shape the Community Choice Energy program's Integrated Resource Plan outlining the power purchases needed to meet electricity load needs, community goals and state mandates for the next 20 years.

The energy action plan's four strategy categories were described: 1) Regional Energy Planning and Coordination (including energy-related economic development and emergency response planning), 2) Integrated Demand Side Management (customer energy efficiency and conservation, distributed generation, and demand response), 3) Energy Generation and Utility Services (buying power, microgrids), and 4) Low-Carbon Transportation. It was explained that transportation accounts for more than half of Humboldt County's greenhouse gas emissions and RCEA focuses on transportation energy use (alternative fuels vehicles and associated fueling infrastructure) while relying on Humboldt Transit Authority, Humboldt County Association of Governments and other local government entities to lead other transportation-related greenhouse gas reduction and planning efforts.

Mr. Marshall described the needed next steps: refining the energy action plan's qualitative goals and high-level strategies, developing quantitative targets and milestones, particularly power portfolio targets leading toward 100% clean and renewable electricity by 2025, and translating those electricity mix targets into an integrated resource plan.

Discussion covered how offshore wind will most likely be significantly more expensive than onshore wind initially; how energy source availability at different times of day needs to be considered; how the renewables RFP looked at projects' demand curve fit, rate impacts, and the impact of long-term commitments on procuring other energy.

Power Resources Director Richard Engel presented proposals for community engagement and a possible timeline.

The members expressed wanting a written public comment period; wanting the process of determining targets to be transparent; asking the public where the community's electricity should come from rather than for definitions of "clean" or "renewable"; wanting to know the carbon emissions of different energy sources so the community can decide on the power portfolio make-up; the need to clearly ask the public for help in setting goals and how to meet them; the need to keep public information on what RCEA is doing crisp and clear; how engaging stakeholder focus groups for input may be more productive than general public forums; the need to avoid redoing costly technical analysis; wanting to begin a Climate Action Plan discussion on forest management for carbon sequestration, forestry's economic impacts and biomass energy's role; the possibility of using a North Coast Journal insert to help gather public input; the need for information on energy source feasibility, impacts, and costs; and that this is the opportunity for the public to determine what power sources should be included in the CCE power mix.

Concerns were raised about the timeframe to engage the public for input; the public unfamiliarity with RCEA's mission and previous efforts to engage the public in the agency's planning process; the possibility of public meetings increasing divisiveness; and the difficulty of quickly reaching a decision on biomass energy from forest management discussions.

Executive Director Marshall summarized the Committee's discussion as follows: The Committee requests a period for the general public to submit written comments on the Comprehensive Action Plan for Energy strategies and guidelines. The group would like to solicit input from targeted stakeholder groups, avoiding overwhelming technical detail. Staff will use gathered input to refine the CAPE. The Committee would like a second opportunity for written public comment on the revised, high-level quantitative goals. The Integrated Resource Plan will be

revised based on the public input. Finally, the group would like an education campaign on what RCEA is doing.

Vice Chair Goldberg invited public comment. No one came forward to speak. Vice Chair Goldberg closed public comment.

October Meeting Schedule

In light of upcoming CAPE update public engagement work and the Yom Kippur holiday, Executive Director Marshall recommended moving the next CAC meeting to October 29 and working with the CAC Chair to schedule public engagement special meetings on August 26 and October 14.

Vice Chair Goldberg invited public comment. No one came forward to speak. Vice Chair Goldberg closed public comment.

> **Motion Johnson, Second Leonardi. By consensus, the Committee unanimously voted to cancel the October 8 regular Community Advisory Committee meeting and schedule a special meeting on Tuesday, October 29 from 6 to 7:30 p.m. at the RCEA office.**

Customer Programs Subcommittee

Demand-Side Management Director Lou Jacobson requested volunteers to give input to staff on the future of state and local customer programs, existing program life spans, working toward program administrator status and other ways of bridging state to local programs. Vice Chair Larry Goldberg and members Jerome Carman and Richard Johnson volunteered to serve on the ad hoc FY 2019-2020 Customer Programs Subcommittee which will sunset in March.

Vice Chair Goldberg adjourned the meeting at 7:54 p.m.

Respectfully submitted,

Lori Taketa
Clerk of the Board

NEXT MEETING

The Tuesday, October 8, 2019, regular Community Advisory Committee meeting has been canceled.

A special meeting has been scheduled for Tuesday, October 29 from 6-7:30 p.m. at the RCEA office, 633 Third Street, Eureka, CA.

REDWOOD COAST Energy Authority

NOTE: THIS STAFF REPORT MAY BE UPDATED WITH MORE CURRENT INFORMATION PRIOR TO NOV. 11, 2019.

COMMUNITY ADVISORY COMMITTEE
STAFF REPORT
Agenda Item # 5

AGENDA DATE:	October 29, 2019
TO:	RCEA Community Advisory Committee
PREPARED BY:	Matthew Marshall, Executive Director
SUBJECT:	Comprehensive Action Plan for Energy Update

BACKGROUND

In April 2019 RCEA initiated the process of updating its Comprehensive Action Plan for Energy (CAPE). The CAPE is RCEA's primary strategic planning document and identifies implementation measures specific to fulfilling RCEA's mission, as well as to fulfilling RCEA's role as the regional energy authority. Following the Community Advisory Committee's July 2019 direction, staff have engaged in community and stakeholder outreach to update the 2012 CAPE.

The initial step in the CAPE update consisted of a strategic plan audit. Goals and objectives from RCEA's various strategic planning documents were reviewed to determine applicability and inclusion in the new CAPE. In chronological order, these documents include:

- Comprehensive Action Plan for Energy (2012)
- RePower Humboldt: A Strategic Plan for Renewable Energy Security and Prosperity (2013)
- North Coast Plug-in Electric Vehicle Readiness Plan (2014)
- Northwest California Alternative Fuels Readiness Plan (2016)
- RCEA Board-Adopted Community Choice Energy Program Guidelines (2016)
- North Coast Resource Partnership Resilience and Energy Assessment for Key Assets in Humboldt County (2017)
- North Coast Resource Partnership Climate Mitigation Report for the North Coast Region of California (2018)
- North Coast and Upstate Fuel Cell Vehicle Readiness Project (2019).

CURRENT DRAFT

The draft CAPE update incorporates and integrates strategies from the above planning documents. The strategies have been reorganized into the following focus areas that align with RCEA's current program implementation framework:

1. **Regional Energy Planning & Coordination,** including energy-related economic development, funding, planning, and education.

2. **Integrated Demand-Side Management**, covering efforts focused on energy efficiency and conservation, demand response, and distributed generation and storage.
3. **Low-Carbon Transportation**, supporting efforts to reduce vehicle miles traveled, increase advanced fuel vehicle adoption and fuel efficiency, and expand fueling infrastructure.
4. **Energy Generation & Utility Services**, including strategies addressing utility and energy service, rates and tariffs, transmission and distribution infrastructure, and Community Choice Energy program power resources.

Staff incorporated public input received into a second draft that is attached with edits shown and also as a "clean" version with edits incorporated. The updated draft includes the addition of proposed goals and targets as well as revisions to the draft qualitative strategies. Also, this draft has been updated to use RePower Humboldt as the title of the document based on 1) suggestions that "RePower Humboldt" is a more effective and memorable title than "Comprehensive Action Plan for Energy (CAPE)," and 2) the current draft document has as many or more elements from the original RePower Humboldt plans as it does from the 2012 CAPE.

PUBLIC INPUT

The comment period for this draft has been extended through November 10, and then a final draft with be presented to the RCEA Board for initial review at the November 21 Board meeting and then again for final adoption at the December 19 Board meeting.

The remaining two public workshops were completed the week of October 14. There were 45 participants at the October 17 "CAPE draft 2" meeting and 74 participants at the "Forests, Energy, and Environment" workshop on October 18. RCEA hired professional videographers to capture the October 18 panel discussion and public comments, which are available on RCEA's website at https://redwoodenergy.org/services/planning/ and will also be aired on Access Humboldt.

In total there were 221 participants at the 6 workshops held in August, September, and October (that total double counts any individuals who attended more than one workshop). RCEA had as of October 18 also received a total of 380 written comments. All comments are available on RCEA's website, and below is staff's high-level categorization of comments received. Note that some comments addressed multiple topics so the categorizations total to more than 380. Also note that many individuals that attended workshops also submitted written comments.

Overall summary of comments received as of October 18

Topic Commented On	Number of Comments
Energy efficiency	3
General	6
Electricity Generation	390
Planning	5
Process	7
Transportation	5

Breakdown of 390 written comments on electricity generation

Generation category	Total	Support	Against	Mixed
Biomass	**349**	320	22	7
Onshore wind	**14**	4	8	2
Offshore wind	**1**	1	0	0
Solar	**12**	12	0	0
General power resources	**8**			
Distributed generation	**2**			
Rates and tariffs	**3**			
Infrastructure	**1**			

At the meeting staff will provide updates made in the second draft of the document and provide additional information on public input, including additional comments received at the October 24 RCEA Board meeting.

ACTION

Provide input and guidance to staff on incorporating public input and finalizing the draft.

ATTACHMENTS:

1. Draft 2 of the Comprehensive Action Plan for Energy 2019 update – clean version
2. Draft 2 of the Comprehensive Action Plan for Energy 2019 update – redlined version
3. Presentation slides that will be presented at the meeting

This page intentionally left blank.

RePower Humboldt

The Redwood Coast Energy Authority's Comprehensive Action Plan for Energy

2019 UPDATE – DRAFT 2.0a

10-21-19

REDWOOD COAST EnergyAuthority

Redwood Coast Energy Authority
633 3rd Street
Eureka, CA 95501

Telephone:
707-269-1700

Fax:
707-269-1777

Email:
info@redwoodenergy.org

Website:
www.RedwoodEnergy.org

TABLE OF CONTENTS

Executive Summary

Consistent with Humboldt County's General Plan, the County of Humboldt recognizes the Redwood Coast Energy Authority (RCEA) as the regional energy authority to foster, coordinate, and facilitate countywide strategic energy planning, implementation, and education through RePower Humboldt, RCEA's comprehensive cction plan for energy. This action plan consists of implementation measures specific to the functions of RCEA as the regional energy authority for Humboldt County and in alignment with the mission and purpose stated in RCEA's Joint Powers Agreement, which is to:

> Develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region.

The strategies within this 2019 update of the RePower Humboldt strategic plan will be implemented between 2020-2030 to achieve the following goals:

REGIONAL PLANNING AND COORDINATION

RCEA will take a leadership role to develop and advance strategic regional energy goals through economic development, funding, planning efforts, and education. This work will be done in coordination with RCEA's member governments, other local public agencies, local tribes, and other public and private stakeholders.

Goals: Achieve net-zero greenhouse gas emissions county-wide by 2030.

By 2030 fully establish Humboldt County as a renewable energy secure community that can affordably and reliably meet its local energy needs with local renewable resources and has the robust local capabilities and infrastructure necessary to effectively respond to energy emergencies or disruptions in energy supply**.**

Build the clean energy sector into a cornerstone of the local economy through a breadth of strategies that include innovation, research and development, local energy-related business development, and establishing Humboldt Bay as the primary west coast hub for the offshore wind energy industry.

INTEGRATED DEMAND SIDE MANAGEMENT

RCEA will use an Integrated Demand Side Management approach to develop distributed energy resources and reduce energy consumption in the residential, commercial, industrial, agricultural, and government sectors and to align customer energy use with variable clean and renewable energy supplies. RCEA will prioritize efforts that enhance local energy resiliency and independence.

Goals: Support the wide-spread installation of customer solar photovoltaic energy systems, with a target to increase installation to a rate of one system every day for the next decade and reach 30MW of customer solar installed by 2025 and 50MW installed by 2030.

Make energy efficiency and conservation services available to every household and business in the county by 2030.

Develop and begin implementation of expanded energy efficiency, conservation and electrification programs to reduce greenhouse gas emissions from buidings using fossil fuels by 20% from 2018 levels by 2030 and establish and maintain a trajectory to reduce emission from natural gas by 90% by 2050.

Deploy a network of community microgrids and renewable energy back-up power systems for homes and businesses across the county to reduce greenhouse gas emissions and to provide energy resiliency and long-duration emergency energy supply at all critical facilities by 2030.

LOW-CARBON TRANSPORTATION

RCEA will decarbonize regional transportation through efforts to reduce vehicle miles travelled, increase advanced fuel vehicles adoption and fuel efficiency, and expand advanced fuel infrastructure.

Goals: Accelerate the adoption of electric vehicles, with a target of over 6,000 electric vehicles on the road in Humboldt County by 2025 and 22,000 vehicles by 2030. Develop public, workplace, and residential electric vehicle charging infrastructure necessary to support the county electric vehicle targets.

Work with other local public entities to reduce vehicle miles traveled in Humboldt County by at least 25% by 2030.

By 2030 reduce greenhouse gas emissions from transportation by over 65% through reductions in vehicle miles traveled, improved vehicle efficiency, the adoption of electric vehicles, and, where determined to be an effective emissions-reduction strategy, the use of biofuels as a bridge to a full transition to zero-emissions vehicles. Establish and maintain a trajectory of emissions reduction to eliminate the use of fossil fuels by 2050.

ENERGY GENERATION AND UTILITY SERVICES

RCEA will address Humboldt County's supply-side energy needs through its existing Community Choice Aggregation (CCA) program and development of new programs and initiatives.

Goals: By 2025 100% of RCEA's power mix will be from a combination of state-designated renewable energy sources—solar, wind, biomass, small hydroelectric, and geothermal—and state-designated net zero carbon emission existing large hydroelectric facilities.

By 2030 Humboldt County will be a net exporter of renewable electricity and RCEA's power mix will consist of 100% local, net-zero-carbon-emission renewable sources.

Humboldt County can effectively respond to regional and local disruptions to energy supply and distribution systems through modernization of the local electric grid, the deployment of local distributed energy resources, and the development of community microgrids.

ENERGY FUELS OUR EVERYDAY LIVES

SECTION TO BE UPDATED

In Humboldt County, as in all parts of the United States, we depend on energy 24 hours a day, and we continuously benefit from direct and indirect use of energy resources. Energy is so pervasive in our daily lives that it can sometimes be taken for granted. From the sun we draw heat, light, and solar power; we depend on it to grow our food, forests, flowers, etc. We depend on fossil fuels to get us to work, school, local shops, and the hospital; to transport our food, commodities, mail, and even garbage; we depend on it to visit exotic places by plane (and to get to the airport), or to visit a friend by car. Electricity enables us to work after the sun goes down; we depend on it to light our offices, classrooms, and streets; to keep our food cold and our ice cream frozen; to pump water through pipes; and to transmit information in this electronic age. Energy in a diversity of forms fuels our industries and business ventures: from powering lumber mills to dairy farms; from firing ceramics to pizzas, and from brewing beer to baking bread. Energy generation and transmission is also an industry in and of itself. Clearly, reliance on energy resources characterizes a large part of our everyday lives.

The production and consumption of energy also affects our daily lives in more indirect ways, particularly with regard to the environment. The burning of fossil fuels has led to damaging environmental effects such as acid rain, smog, water pollution, and global warming. Exploratory drilling and extraction of non-renewable energy sources (such as coal, petroleum, and natural gas), and their attendant infrastructure, has resulted in the degradation of other natural resources, for example forests, coastal communities, and rainforests. Although these areas may be far away, the environmental impacts can reach Humboldt County.

In Humboldt County, energy is used as a transportation fuel and as electrical and heat energy in homes, businesses, industries, and agriculture. In 2010 it is estimated that Humboldt County spent $460 million to meet local energy demands, the majority of which left the county. Approximately half of the energy was used as a transportation fuel (gasoline and diesel), with large amounts also used to meet end use electrical demands and end-use natural gas heating demands. Primary energy sources were comprised mainly of natural gas, gasoline, diesel, and biomass (wood waste and firewood).

REDWOOD COAST ENERGY AUTHORITY MISSION AND PURPOSE

The purpose of the Redwood Coast Energy Authority is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region for the benefit of the Member agencies and their constituents. To further that purpose, the Redwood Coast Energy Authority will work toward the following goals:

A. To lead, coordinate and integrate regional efforts that advance secure, sustainable, clean and affordable energy resources.

B. To develop a long-term sustainable energy strategy and implementation plan.

C. To increase awareness of, and enhance access to, energy conservation, energy efficiency, and renewable energy opportunities available to the region.

D. To add value to, but not duplicate, energy services offered by utilities and others serving the region in a manner that does not conflict with acting as a community choice aggregator.

E. To keep key decision makers and stakeholders informed of policy, regulatory, and market changes that are likely to impact the region.

F. To support research, development, demonstration, innovation, and commercialization of sustainable energy technologies by public and private entities operating in Humboldt County.

G. To develop regional capabilities to respond to energy emergencies and short-term disruptions in energy supply, infrastructure, or markets that could adversely affect Humboldt residents and businesses.

The RePower Humboldt plan is intended to support achieving these goals through strategies that specifically address: Regional Energy Planning & Coordination, Integrated Demand Side Management, Low-Carbon Transportation, and Energy Generation & Utility Services.

VISION STATEMENT

The below vision statement was developed in 2012 through the public comment process for the original draft of the Humboldt County General Plan Energy Element prepared by RCEA. It expresses the community qualities and characteristics that the RePower Humboldt plan aspires to achieve, expressed as how Humboldt County could be described in 2030. Minor modifications have been made to the original vision statement to reflect recent changes to the state and local energy economies, as well as community input gathered in developing this 2019 RePower Humboldt update.

In 2030…

Humboldt County has surpassed net-zero greenhouse gas emissions and is a net exporter of renewable energy. We achieve energy independence and self-sufficiency through high levels of energy conservation, efficiency, and electrification combined with locally-produced and -managed energy generation. Our energy comes from renewable sources. Money spent on energy stays in the county.

Individual communities have developed greater energy self-sufficiency and independence as has the county overall. Citizens have a diversity of choices for how to meet their energy needs. We have local control over energy prices. We readily adapt to any major external changes in energy supply or technology.

Our rate of energy consumption is level, due to increasing conservation and efficiency to offset increases in growth-related demand.

Our overall quality of life is better than it was in 2005. The population is healthier as a result of leading energy-conserving lifestyles. It is safe, pleasant, economically favorable, and typical to have a lifestyle that doesn't consume much energy.

Energy conservation education has reached, and continues to reach, effectively, everyone in the county.

Energy considerations and decisions are integrated with all other decision-making arenas.

The County is energy efficient through neighborhood design. Good community planning has reduced sprawl. There are fewer automobiles used for travel; people depend more on transit, bikes, scooters, walking, and shared-use automobiles than they depend on private automobiles. Public transportation is conveniently available and well utilized. There is much less consumption of energy from non-renewable sources for transportation.

All buildings are energy efficient. All new construction is all-electric and done in the most energy efficient manner, starting with building design. All existing buildings have been upgraded to be more efficient and many have converted their previous uses of natural gas and propane to electricity. Energy efficiency is integral to locally adopted building standards, which have flexibility and include meaningful incentives. Many homes and businesses produce more energy than they consume.

The County is a thriving research and development center and incubator for energy technology and related manufacturing, which is a stable source of local jobs.

Draft 2019
Strategies Update

Regional Energy Planning & Coordination

RCEA will take a leadership role to develop and advance strategic regional energy goals through economic development, funding, planning efforts, and education. This work will be done in coordination with RCEA's member governments, other local public agencies, local tribes, and other public and private stakeholders.

Goals: **Achieve net-zero greenhouse gas emissions county-wide by 2030.**

By 2030 fully establish Humboldt County as a renewable-energy secure community that can affordably and reliably meet its local energy needs with local resources and has the robust local capabilities and infrastructure necessary to effectively respond to any energy emergencies or disruptions in energy supply.

Build the clean energy sector into a cornerstone of the local economy through a breadth of strategies that include innovation, research and development, local energy-related business development, and Humboldt Bay as the primary west coast hub for the offshore wind energy industry.

ECONOMIC DEVELOPMENT

Attract Energy-related Business. Collaborate with local economic development entities to attract technology developers, manufacturers, and energy service providers to locate operations in the County when appropriate.

Support Proactive Energy-related Business Development. Collaborate with local jurisdictions to identify and pre-assess locations and facilities for energy-related business ventures.

Support Energy-sector Workforce Development. Work with other local entities to provide training and continuing education that develops and maintains a qualified local workforce available to implement energy efficiency upgrades, renewable energy projects, and advanced-vehicle technology deployment.

ENERGY-RELATED EMERGENCY RESPONSE

Develop Emergency Response Capabilities. Coordinate with other local entities to develop regional capabilities to respond to energy emergencies and disruptions in energy supply, infrastructure, or markets. Incorporate efforts to enhance emergency response capabilities across RCEA's demand-side, power resources, and transportation programs.

Assist with Energy Emergency Response Procedures. Assist the Humboldt County Office of Emergency Services in the preparation of energy response procedures for the Humboldt County Emergency Response Plan.

Support Climate Change Adaptation. Work with other local entities to conduct a climate change risk assessment and develop an adaptation plan consistent with the best-practices guidance provided by the California Natural Resources Agency and California Emergency Management Agency.

FUNDING

Develop Regional Energy Funding Mechanisms*.* Offer support and act as the fiscal agent and funding clearinghouse for countywide energy programs.

Pursue Cap and Trade Auction Proceeds*.* Work regionally to access Cap and Trade auction proceeds and other State funding mechanisms to ensure effective, efficient, coordinated, and equitable resource allocation in the North Coast Region.

Develop Job Development Incentives*.* Collaborate with local economic development entities to identify funding opportunities for developing jobs in the field of energy conservation, efficiency, and renewable sources.

Implement Energy Project Financing. Work with local economic development entities and/or financial institutions to develop and implement financing programs that enable residents and businesses to implement energy efficiency and renewable energy projects.

Facilitate Financing Mechanisms. Facilitate Property Assessed Clean Energy (PACE) and other financing programs that access the needed capital to deploy regional energy independence strategies.

Develop Local Energy Investment Programs. Work with local economic development entities and financial institutions to develop programs and resources that facilitate local community investment in and/or ownership of energy efficiency and renewable energy projects.

PLANNING

Support Carbon Sequestration. Support the development and deployment of mechanisms for retaining carbon in the region's abundant natural areas and working lands.

Assist with Climate Action Planning*.* Work with member jurisdictions to regularly complete greenhouse gas inventories, set greenhouse gas reduction targets, and develop climate action plans.

Support Countywide Strategic Energy Planning. Coordinate an effective energy strategy based on self-sufficiency, development of renewable energy resources, energy conservation, and

electrification that is actively implemented countywide through Climate Action Plans, General Plans and the Redwood Coast Energy Authority's RePower Humboldt plan.

Encourage Adoption of Energy Elements. Encourage and assist with the adoption of energy elements by member jurisdictions. Periodically review local energy elements and recommend updates, as necessary, to reflect changing technologies for the generation, transmission, and efficient use of energy.

Encourage Energy Policies and Plans. Encourage member jurisdictions and entities to adopt and implement sound energy plans and policies, to include energy elements and/or energy policies in their general plans and ordinances. Advocate and disseminate energy planning strategies, policies, and other information.

EDUCATION

Maintain an Energy Resource Center. Operate an energy resource center open to the public and provide information on energy conservation, energy planning, renewable energy, energy storage, low-carbon transportation, and energy-efficient and all-electric building design and retrofits.

Hold Regional Energy Forums. Serve as a forum for addressing countywide energy issues.

Develop Public Displays. Encourage and assist development of educational displays for exemplary renewable energy and distributed energy systems installed throughout Humboldt County. Displays should provide county residents and businesses with information on how the systems work and how well they perform and should inform county residents about the importance, benefits, and associated impacts of developing local energy resources.

Provide Energy Efficiency, Conservation and Electrification Education and Training. Provide community education, information, and resources on energy issues to support informed decision making related to customer energy use, including the benefits of reduced energy consumption, electrification and increased energy efficiency. Collaborate with schools and colleges for energy-related research, education, and conservation practices.

Integrated Demand Side Management

RCEA will use an Integrated Demand Side Management approach to develop distributed energy resources and reduce energy consumption in the residential, commercial, industrial, agricultural, and

government sectors and to align customer energy use with variable clean and renewable energy supplies. RCEA will prioritize efforts that enhance local energy resiliency and independence.

Goals: **Support the wide-spread installation of customer solar energy systems, with a target to increase installation to a rate of one system every day for the next decade to reach 30MW of customer solar installed by 2025 and 50MW installed by 2030.**

Provide energy efficiency and conservation services to every household and business in the county by 2030.

Develop and begin implementation of expanded efficiency and electrification programs to reduce greenhouse gas emission from natural gas use by 20% by [YEAR] and establish and maintain a trajectory to reduce emissions from natural gas by 90% by 2050.

Deploy a network of community microgrids and renewable energy back-up power systems across the county to reduce greenhouse gas emission and to provide energy resiliency and long-duration emergency energy supply at all critical facilities by 2030.

INTEGRATED DEMAND SIDE MANAGEMENT STRATEGIES

Support Member Agency and Local Government Energy Management. Support member agencies in managing their energy consumption. RCEA will support activities that reduce and balanceenergy use with available clean and renewable supplies to reduce costs while aligning to performance-based action plans and Greenhouse Gas Emission Reduction goals. Additional activities will be prioritized where they support energy resiliency and independence.

Support Implementation of Codes and Standards. Support the State's goals related to residential and commercial net-zero-energy and zero-net carbon standards along with other green building standards, including the local implementation of Title 24 building energy codes, Title 20 appliance efficiency standards and individual projects that strive to achieve energy efficiencies that exceed state or local requirements. Support implementation of above code energy ordinances.

Promote No Regrets Energy Efficiency, Renewable Energy, and Storage Permitting. Support local ordinances that streamline permitting processes for energy efficiency, renewable energy, and storage technologies.

Assist with Facility Benchmarking. Assist local governments and businesses with facility benchmarking to evaluate and track the energy performance of non-residential buildings.

Support Energy Assessments. Support and encourage full knowledge of the costs and benefits (including product stewardship) of energy efficiency, conservation, generation and storage activities through assessments.

Integrate Distributed Energy Resources. Develop and implement customer programs that support, promote and integrate distributed energy resources, including but not limited to distribution-

connected generation, energy storage, energy efficiency, electric vehicle and demand response technologies.

Integrate a Distributed Energy Resource Management System. Support the development and installation of systems needed for effective and responsive management of distributed energy resources. Evaluate the potential integration of distributed energy resources into a unified system that would allow RCEA to aggregate and automate demand response activities.

Support and Deploy Microgrids. Support and deploy energy microgrids, focusing on critical infrastructure and community facilities, that through onsite generation, energy storage, and advanced control systems provide energy resiliency and emergency-response capabilities as well as ongoing economic and environmental benefits.

Use Advanced Metering Infrastructure. Use advanced metering infrastructure to make informed, data driven program decisions and allow customers visibility into their energy usage for more ownership and control of their energy related behavior and decisions

ENERGY EFFICIENCY & CONSERVATION

Maximize the Efficiency of Buildings. Support energy efficiency and conservation as core strategies toward achieving environmental, economic, and community goals. Where feasible, energy efficiency technologies will be controllable and integrated as a distributed resource; any such efforts will be implemented with a commitment to respecting and protecting customers' rights to privacy.

Support Electrification. Prioritize the development and implementation of programs and services that promote the use of the most energy-efficiency electric equipment including: air-source heat pump hot water and space heaters, induction stoves, electric clothes dryers, and the electrification of commercial and industrial processes.

Encourage Energy-Efficient Equipment. Encourage the use of the most energy-efficient equipment for space and water heating, ventilation, lighting, refrigeration, and air conditioning in all buildings and developments, including residential, commercial and industrial facilities.

Promote Performance Contracting. Promote residential and commercial performance contracting that is consistent with current best practices for energy efficiency and environmentally sound construction techniques.

Develop and Support Behavioral, Commissioning and Operations Programs. Promote, develop, and implement programs that enable energy conservation and load-shifting through customer behavior changes, building system commissioning, and operational changes.

Replace Plug Loads. Replace existing plug load devices and install smart technologies that save energy and provide an integrated solution that aligns with demand response and storage measures. Examples include internet-of-things enabled lighting, water and space conditioning, dish and clothes washing, and refrigeration.

DEMAND RESPONSE

Implement Demand Response Programs. Support and prioritize demand response programs that offer ratepayers a role in balancing energy usage with renewable energy supply**.** Demand response programs and offerings will, where possible, integrate with distribution-connected efficiency systems and controls, renewable energy generation, and energy storage measures.

Support Time of Use. Notify, support, and enable action from customers who want to participate in load shifting or peak shaving to reduce energy usage during times of peak demand**.**

Provide and Support Peak Day Pricing. Provide notification and support for customer energy use changes during summer peak energy demand day events.

Enable Automated Demand Response. Install electrification, efficiency, and storage technologies that automatically reduce energy use during demand response events. Implement building demand response systems that allow for the curtailment of loads without major impacts to occupants and operations.

DISTRIBUTED GENERATION & STORAGE

Support Customer Installation of Distributed Generation. Support the deployment of distribution-level renewable energy and storage systems as core strategies toward achieving environmental, economic, and community stability/resilience goals.

Implement the Public Agency Solar Program. Continue to implement the solar and energy-storage technical assistance program for public agencies; integrate grid-connected resources, electrification and microgrids as feasible.

Implement a Community Solar and Storage Program. Evaluate, design and launch community solar and storage program services that support the increased adoption of grid-connected solar and storage technologies.

Integrate Vehicle to Grid Storage. Integrate vehicle to grid storage solutions with transportation and demand side management goals and objectives.

Low-carbon Transportation

RCEA will decarbonize regional transportation through efforts to reduce vehicle miles travelled, increase advanced fuel vehicles adoption and fuel efficiency, and expand advanced fuel infrastructure.

Goals: **Accelerate the adoption of electric vehicles, with a target of over 6,000 electric vehicles on the road in Humboldt County by 2025 and 22,000 vehicles by 2030. Develop public, workplace, and residential electric vehicle charging infrastructure necessary to support these county-wide electric vehicle targets.**

Work with other local public entities to reduce vehicle miles traveled in Humboldt County by at least 25% by 2030.

By 2030 reduce greenhouse gas emission from transportation by over 65% through reductions in vehicle miles traveled, improved vehicle efficiency, the adoption of electric vehicles, and, where determined to be an effective emissions-reduction strategy, the use of biofuels as a bridge to the full transition to zero-emissions vehicles. Establish and maintain a trajectory of emissions reduction to eliminate the use of fossil fuels by 2050.

REDUCE VEHICLE MILES TRAVELED

Strengthen Broadband Infrastructure. Support efforts to strengthen rural regional broadband infrastructure to facilitate remote access to educational and business opportunities, and deploy advanced, resilient grid management technology and integrated energy efficiency and demand response solutions.

Encourage Transportation-efficient Land Use Planning. Encourage infill, transit-oriented development, and walkable and bikeable communities through thoughtful zoning and land-use planning processes.

Facilitate Multi-modal Transportation Infrastructure. Support improving multi-modal transportation options through regional trail networks, transit infrastructure, and complete streets infrastructure strategies that support walking, biking, carsharing, ridesharing, and the use of public transportation.

INCREASE ADVANCED FUEL VEHICLE ADOPTION & FUEL EFFICIENCY

Support Local Vehicle Fleet Owners Leading by Example. Encourage local government and private fleets to maximize the use of low-carbon vehicles and support low-carbon transportation initiatives at other agencies..

Promote Advanced Fuels. Equitably promote, support and incentivize low carbon vehicle and fuel adoption by local governments, commercial fleets, and the public. Encourage the use of non-fossil sources of advanced fuels that reduce greenhouse gas emissions, which may include electricity, hydrogen, biodiesel, ethanol, and renewable diesel.

Support Electric Vehicle Adoption. Conduct public outreach campaigns to promote electric vehicles. Offer electric vehicle incentives and provide customers with web and in-person decision

support when considering the purchase of an electric vehicle. Conduct leadership by example among government agencies.

Promote Efficient Driving Practices. Promote the use of energy-efficient driving practices that improve fuel efficiency, such as moderate speed changes and legal speeds, anti-idling, and traffic-calming features.

Support Shipping Efficiency. Support the implementation of trucking efficiency technologies and best-practices, including idle-reduction technologies, aerodynamic retrofits, and low rolling resistance tires. Support the analysis of other potential transportation modes that could provide efficient shipping alternatives such as barge and rail.

EXPAND FUELING INFRASTRUCTURE

Develop Transportation Electrification Infrastructure. Develop and implement Electric Vehicle charging stations. Provide local incentives for electric vehicle charging infrastructure and prioritize technologies that align with integrated demand-side management goals.

Utilize Biofuels. Promote use of biofuels with low California Low Carbon Fuel Standard (LCFS) scores, particularly those produced with local waste feedstocks.

Streamline Permitting for Electric Vehicle Charging Infrastructure. Encourage local jurisdictions to list vehicle charging as a permitted use across a broad range of zoning classifications. If a zoning review is triggered, consider vehicle charging as an accessory use to another permitted use whenever possible. Develop a standard vehicle charging permitting process.

Promote Vehicle-to-Grid Connection. Promote integration of electric vehicles with the electric grid. Evaluate the development status of vehicle-to-grid interconnect standards and the use of grid-connected vehicles for short-term energy storage.

Energy Generation & Utility Services

RCEA will address Humboldt County's supply-side energy needs through its existing Community Choice Aggregation (CCA) program and development of new programs and initiatives.

Goals: **By 2025 100% of RCEA's power mix will be from a combination of state-designated renewable energy sources—solar, wind, biomass, small-hydroelectric, and**

geothermal—and state-designated net zero carbon emission existing large hydroelectric facilities.

By 2030 Humboldt County will be a net exporter of renewable electricity and RCEA's power mix will consist of 100% local, net-zero-carbon-emission renewable sources.

Humboldt County can effectively respond to regional and local disruptions to energy supply and distribution systems through modernization of the local electric grid, the deployment of local distributed energy resources, and the development of community microgrids.

POWER RESOURCES

Maximize the Use of Local Renewable Energy to the Extent Technically and Economically Feasible and Prudent. Use the CCA program with its renewable energy targets, and programs supporting distributed energy resources, to achieve this goal.

Minimize Greenhouse Gas Emissions Associated with RCEA's CCA Program. Procure a power mix that has, at least, a 5% lower greenhouse gas emission rate than PG&E mix. Assess, evaluate, and monitor the short-term and lifecycle emissions from all generation sources to ensure power resources align with RCEA's greenhouse gas emissions goals.

Reduce Regulatory Barriers. Support streamlining the renewable energy permitting process and reduce any excessive regulatory barriers to renewable energy and distributed generation projects. Using RCEA's position as a power offtaker,work with developers on proactive strategies to reduce and mitigate the environmental and community impacts of potential energy projects.

Maximize Renewable Energy Content of RCEA's CCA Program. Procure a power mix that reaches 100% clean and renewable content by 2025.

Ensure Diversity in Local Sources. Pursue development of a diverse, locally produced renewable energy supply that is price-competitive in the California power market and that can be generated in a way that minimizes adverse environmental and community impacts.

Promote Energy Feasibility Studies. Encourage and support feasibility studies of local wind, solar, hydro-power, and ocean energy resources. Make recommendations on preferred alternatives that are consistent with community goals for energy security and sustainability.

Power Resources: Distributed Generation

Designate "Renewable Energy Parks." Work with County and City planning departments to designate areas of the county preferred for renewable energy development.

Develop Distributed Generation. Encourage studies to identify key locations throughout the county that would benefit from distributed generation systems. Encourage development of responsive distributed generation demonstration sites.

Provide Feed-In-Tariff Power Procurement Program for Small Generators. Offer long-term contracts at a market-adjusting rate for Renewable Portfolio Standard eligible renewable energy generators of 1MW or smaller.

Power Resources: Solar

Support Solar Energy Development. Support local efforts to develop customer solar electric systems and solar hot water systems in the county. Support development of local training programs for solar contractors and installers. Educate the public about the benefits of solar energy systems. Develop programs that facilitate an increase in the number of solar energy systems in the county.

Procure Local Solar Energy. Contract for local onshore solar energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Offshore Wind

Develop Offshore Wind Energy. Work with public and private entities to develop offshore wind energy off of the north coast region's coastline, and support establishing Humboldt Bay as a west-coast hub for the offshore wind industry.

Procure Local Offshore Wind Energy. Contract for local offshore wind energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Onshore Wind

Promote Large-Scale Wind Energy. Provide information about the potential for cost-effective, commercial-scale wind farms in the county. Educate the public about the benefits and impacts of wind energy systems. Work with utilities, local government, and private companies to develop onshore wind energy projects.

Procure Local Onshore Wind Energy. Contract for local onshore wind energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Bioenergy

Support Biomass Fuels Reduction and Utilization. Develop strategies and technologies for improved biomass utilization in ways that effectively support restoration objectives and fire management priorities. Coordinate with local agencies, communities, and landowners to develop biomass energy plans that are consistent with sustainable forest management, hazardous fuels reduction, fire safety, and restoration needs.

Procure Local Biomass Energy. Contract with local biomass facilities at a scale matched to the local supply of wood waste from mills and, when feasible and appropriate, from forest management and restoration activities. Require and support a high standard of environmental compliance from RCEA's biomass suppliers through the deployment of the best-available emissions control technologies. Analyze and confirm on an ongoing basis that, within the context of local commercial forest land management practices and the forest-products sector, local biomass power generation sector has net-zero greenhouse gas emissions on both a short-term and long-term basis.

Promote Small-Scale Biomass Generation Sites. Monitor feasibility of smaller and/or mobile biomass electric generators fed with wood waste and very small diameter logs (e.g.,

from thinning for fire safety and timber harvest slash). If/when technology proves feasible and cost effective, promote its use in county areas where appropriate.

Pursue Biogas Development. Support HWMA and others with the development of organic waste digesters. Develop and publicize dairy biogas demonstration sites and work with local farm organizations to promote dairy biogas energy systems where appropriate. Publicize the use of biogas at existing local wastewater treatment facilities and encourage its use at additional facilities where appropriate. Encourage biogas use to produce electricity onsite rather than pipeline injection to avoid the potential greenhouse gas emission impacts of pipeline leaks.

Power Resources: Wave and Tidal

Pursue Wave and Tidal Energy Development. Build on the previous WaveConnect and CalWave projects to explore and evaluate opportunities for local wave and tidal energy research, development, and pilot deployment.

Power Resources: Hydro

Support Existing and New Local Small-scale Hydroelectric Power. Evaluate options for contracting with existing small hydroelectric projects as well as the development of new run-of-river hydroelectric projects that would be eligible for Renewable Portfolio Standard designation and compatible with environmental and cultural priorities. Update the Oscar Larson and Associates' 1982 assessment of small hydroelectric resource potential in the county.

UTILITY ENERGY SERVICE

Minimize Energy Interruptions. Work with local utility providers to minimize the impact of power outages and improve the reliability and resiliency of the local electricity delivery service.

Provide Energy via Direct Access. Explore the feasibility of RCEA acting as an electricity provider through direct access.

Review Utility Options. Review the effectiveness of the incumbent utility in meeting Humboldt County's long-term energy needs and evaluate the feasibility of establishing a local municipal electric utility.

Provide Outstanding Customer Service to RCEA Ratepayers. Ensure that participants in RCEA's community choice energy program receive high-quality customer service related to enrollment, rates, billing, and customer programs supported by CCE program ratepayer funds.

RATES & TARIFFS

Provide Community Choice Aggregation Program Customer Rate Savings. Provide customer savings relative to corresponding PG&E generation rates and departing load charges averaging at least $2 million per year.

Provide Electricity Buyback from Self Generators. Provide a net energy metering program that encourages more distributed local generation and more equitably compensates such generation.

Retain and/or Redirect Rate-Payer Dollars Back into Humboldt County. Work to maximize the amount of ratepayer dollars retained in Humboldt County when taking into consideration local power procurement, electricity rates, local program spending, and allocations toward building the reserve fund for RCEA's Community Choice Aggregation program.

Provide Match Funding for State, Federal, and Foundation Energy Grants. Support bringing resources into Humboldt County to pursue CCA community energy goals.

Support Transition to Time of Use Rates. Support customer adoption and transition to time of use electricity rates.

TRANSMISSION & DISTRIBUTION INFRASTRUCTURE

Perform Transmission Assessments and Monitoring. Encourage development of long-term transmission assessments and, if necessary, electrical transmission grid upgrade and/or expansion plans. Monitor local electricity transmission system planning to ensure that projected growth areas are adequately served and to support the development of local renewable energy projects.

Support Upgrade of the Electricity Transmission and Distribution System. Collaborate with PG&E, the California Independent System Operator, and renewable energy developers to upgrade the regional transmission and distribution electrical grid to enable increased development of both utility-scale renewable energy projects and community-scale distributed generation systems, including capability to export surplus renewable electricity from Humboldt County to other areas of the state.

RePower Humboldt

The Redwood Coast Energy Authority's Comprehensive Action Plan for Energy

2019 UPDATE – DRAFT 2.0a

10-21-19

REDWOOD COAST EnergyAuthority

Redwood Coast Energy Authority
633 3rd Street
Eureka, CA 95501

Telephone:
707-269-1700

Fax:
707-269-1777

Email:
info@redwoodenergy.org

Website:
www.RedwoodEnergy.org

TABLE OF CONTENTS

Executive Summary

Consistent with Humboldt County's General Plan, the County of Humboldt recognizes the Redwood Coast Energy Authority (RCEA) as the regional energy authority to foster, coordinate, and facilitate countywide strategic energy planning, implementation, and education through RePower Humboldt, RCEA's ~~a~~ ~~C~~comprehensive ~~A~~action ~~P~~plan for ~~E~~energy ~~(CAPE)~~. This action plan consists of implementation measures specific to the functions of RCEA as the regional energy authority for Humboldt County and in alignment with the mission and purpose stated in RCEA's Joint Powers Agreement, which is to:

> Develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region.

The strategies within this 2019 update of the RePower Humboldt strategic plan will be implemented between 2020-2030 to achieve the following goals:

REGIONAL PLANNING AND COORDINATION

RCEA will take a leadership role to develop and advance strategic regional energy goals through economic development, funding, planning efforts, and education. This work will be done in coordination with RCEA's member governments, other local public agencies, local tribes, and other public and private stakeholders.

Goals: Achieve net-zero greenhouse gas emissions county-wide by 2030.

By 2030 fully establish Humboldt County as a renewable~~-~~ energy secure community that can affordably and reliably meet its local energy needs with local renewable resources and has the robust local capabilities and infrastructure necessary to effectively respond to ~~any~~ energy emergencies or disruptions in energy supply**.**

Build the clean energy sector into a cornerstone of the local economy through a breadth of strategies that include innovation, research and development, local energy-related business development, and establishing Humboldt Bay as the primary west coast hub for the offshore wind energy industry.

INTEGRATED DEMAND SIDE MANAGEMENT

RCEA will use an Integrated Demand Side Management approach to develop distributed energy resources and reduce energy consumption in the residential, commercial, industrial, agricultural, and government sectors and to align customer energy use with variable clean and renewable energy supplies. RCEA will prioritize efforts that enhance local energy resiliency and independence.

Goals: Support the wide-spread installation of customer solar photovoltaic energy systems, with a target to increase installation to a rate of one system every day for the next decade and ~~to~~ reach 30MW of customer solar installed by 2025 and 50MW installed by 2030.

MakeProvide energy efficiency and conservation services available to every household and business in the county by 2030.

Develop and begin implementation of expanded energy efficiency, conservation and electrification programs to reduce greenhouse gas emissions from buidings using fossil fuels from natural gas use by 20% from 2018 levels by 2030 and establish and maintain a trajectory to reduce emission from natural gas by 90% by 2050.

Deploy a network of community microgrids and renewable- energy back-up power systems for homes and businesses across the county to reduce greenhouse gas emissions and to provide energy resiliency and long-duration emergency energy supply at all critical facilities by 2030.

LOW-CARBON TRANSPORTATION

RCEA will decarbonize regional transportation through efforts to reduce vehicle miles travelled, increase advanced fuel vehicles adoption and fuel efficiency, and expand advanced fuel infrastructure.

Goals: Accelerate the adoption of electric vehicles, with a target of over 6,000 electric vehicles on the road in Humboldt County by 2025 and 22,000 vehicles by 2030. Develop public, workplace, and residential electric vehicle charging infrastructure necessary to support the county electric vehicle targets.

Work with other local public entities to reduce vehicle miles traveled in Humboldt County by at least 25% by 2030.

By 2030 reduce greenhouse gas emissions from transportation by over 65% through reductions in vehicle miles traveled, improved vehicle efficiency, the adoption of electric vehicles, and, where determined to be an effective emissions-reduction strategy, the use of the biofuels as a bridge to thea full transition to zero-emissions vehicles. Establish and maintain a trajectory of emissions reduction to eliminate the use of fossil fuels by 2050.

ENERGY GENERATION AND UTILITY SERVICES

RCEA will address Humboldt County's supply-side energy needs through its existing Community Choice Aggregation (CCA) program and development of new programs and initiatives.

Goals: By 2025 100% of RCEA's electricity power mix will be from net-zero-carbon-emission sources that are eithera combination of state-designated renewable energy sources—solar, wind, biomass, small -hydroelectric, and geothermal—andand state-designated net zero carbon emission existing large hydroelectric facilities.

By 2030 Humboldt County will be a net exporter of renewable electricityenergy and RCEA's power mix will consist of 100% local, net-zero-carbon-emission renewable sources.

Humboldt County can effectively respond to regional and local disruptions to energy supply and distribution systems through modernization of the local electric grid, the

deployment of local distributed energy resources, and the development of community microgrids.

~~The CAPE strategies target the following objectives:~~

~~**Regional Energy Planning & Coordination:** Facilitate coordinated strategic energy planning within Humboldt County, provide a forum for addressing countywide energy issues, and assist local jurisdictions with completing greenhouse gas inventories, climate action plans, and general plan energy elements.~~

~~**Energy Reliability & Security:** Coordinate with utility providers and other local governments on energy emergency planning and response, evaluate transmission and distribution systems, and conduct a climate change risk assessments and develop adaptation plans.~~

~~**Economic Development:** Support the development of emerging energy technologies, attract and support energy-sector businesses and ventures, and provide training and workforce development assistance for jobs in the energy field.~~

~~**Built Environment Efficiency:** Develop and implement programs which encourage energy efficiency and renewable energy retrofits in existing buildings, and support local implementation of state-wide energy efficiency standards and goals.~~

~~**Education:** Through a variety of channels, provide the community with comprehensive education and information on energy conservation, energy planning, renewable energy, and energy-efficiency.~~

~~**Water & Waste:** Support water and waste conservation initiatives that will result in reduce energy demand and or renewable energy generation.~~

~~**Transportation:** Encourage energy-efficient, health-promoting modes of travel such as walking, bicycling, and public transit, and support the adoption of alternative fuels.~~

~~**Energy Generation & Utility Services:** Promote policies which seek to meet local energy needs with a diversity of renewable energy resources, distributed generation, and cogeneration.~~

~~This action plan shall be periodically updated by the RCEA Board and presented to the Humboldt County Board of Supervisors for review.~~

Introduction

ENERGY FUELS OUR EVERYDAY LIVES

SECTION TO BE UPDATED

In Humboldt County, as in all parts of the United States, we depend on energy 24 hours a day, and we continuously benefit from direct and indirect use of energy resources. Energy is so pervasive in our daily lives that it can sometimes be taken for granted. From the sun we draw heat, light, and solar power; we depend on it to grow our food, forests, flowers, etc. We depend on fossil fuels to get us to work, school, local shops, and the hospital; to transport our food, commodities, mail, and even garbage; we depend on it to visit exotic places by plane (and to get to the airport), or to visit a friend by car. Electricity enables us to work after the sun goes down; we depend on it to light our offices, classrooms, and streets; to keep our food cold and our ice cream frozen; to pump water through pipes; and to transmit information ~~during~~ in this electronic age. Energy in a diversity of forms fuels our industries and business ventures: from powering lumber mills to dairy farms; from firing ceramics to pizzas, and from brewing beer to baking bread. Energy generation and transmission is also an industry in and of itself. Clearly, reliance on energy resources characterizes a large part of our everyday lives.

The production and consumption of energy also affects our daily lives in more indirect ways, particularly with regard to the environment. The burning of fossil fuels has led to damaging environmental effects such as acid rain, smog, water pollution, and global warming. Exploratory drilling and extraction of non-renewable energy sources (such as coal, petroleum, and natural gas), and their attendant infrastructure, has resulted in the degradation of other natural resources, for example forests, coastal communities, and rainforests. Although these areas may be far away, the environmental impacts can reach Humboldt County.

In Humboldt County, energy is used as a transportation fuel and as electrical and heat energy in homes, businesses, industries, and agriculture. In 2010 it is estimated that Humboldt County spent $460 million to meet local energy demands, the majority of which left the county. Approximately half of the energy was used as a transportation fuel (gasoline and diesel), with large amounts also used to meet end use electrical demands and ~~end use~~end-use natural gas heating demands. Primary energy sources were comprised mainly of natural gas, gasoline, diesel, and biomass (wood waste and firewood).

REDWOOD COAST ENERGY AUTHORITY MISSION AND PURPOSE

The purpose of the Redwood Coast Energy Authority is to develop and implement sustainable energy initiatives that reduce energy demand, increase energy efficiency, and advance the use of clean, efficient and renewable resources available in the region for the benefit of the Member agencies and their constituents. To further that purpose, the Redwood Coast Energy Authority will work toward the following goals:

A. To lead, coordinate and integrate regional efforts that advance secure, sustainable, clean and affordable energy resources.

B. To develop a long-term sustainable energy strategy and implementation plan.

C. To increase awareness of, and enhance access to, energy conservation, energy efficiency, and renewable energy opportunities available to the region.

D. To add value to, but not duplicate, energy services offered by utilities and others serving the region in a manner that does not conflict with acting as a community choice aggregator.

E. To keep key decision makers and stakeholders informed of policy, regulatory, and market changes that are likely to impact the region.

F. To support research, development, demonstration, innovation, and commercialization of sustainable energy technologies by public and private entities operating in Humboldt County.

G. To develop regional capabilities to respond to energy emergencies and short-term disruptions in energy supply, infrastructure, or markets that could adversely affect Humboldt residents and businesses.

~~The CAPE~~The RePower Humboldt plan is intended to support achieving these goals through strategies that specifically address: Regional Energy Planning & Coordination, Integrated Demand Side Management, Low-Carbon Transportation, ~~Energy Reliability & Security, Economic Development, Built Environment Efficiency, Education, Water & Waste, Transportation,~~ and Energy Generation & Utility Services.

VISION STATEMENT

The below vision statement was developed in 2012 through the public comment process for the original draft of the Humboldt County General Plan Energy Element prepared by RCEA. It expresses the community qualities and characteristics that ~~the CAPE~~the RePower Humboldt plan aspires to achieve, expressed as how Humboldt County could be described in 2030. Minor modifications have been made to the original vision statement to reflect recent changes to the state and local energy economies, as well as community input gathered in developing this 2019 RePower Humboldt update.

In 2030…

Humboldt County has surpassed net-zero greenhouse gas emissions and is ~~no longer~~ a net exporter ~~importer~~ of renewable energy. We achieve ~~a high degree of~~ energy independence and self-sufficiency through high levels of energy conservation, ~~and~~ efficiency, and electrification combined with locally-produced and -managed energy generation. ~~Most of o~~Our energy comes from renewable sources. ~~Significantly less m~~Money spent on energy ~~leaves~~ stays in the county.

Individual communities have developed greater energy self-sufficiency and independence as has the county overall. Citizens have a diversity of choices for how to meet their energy needs. We have ~~much more~~ local control over energy prices. We ~~have been able to~~ readily adapt to any major external changes in energy supply or technology.

Our rate of energy consumption is level, due to increasing conservation and efficiency to offset increases in growth-related demand.

Our overall quality of life is ~~as good as or~~ better than it was in 2005. The population is healthier as a result of leading energy-conserving lifestyles. It is safe, pleasant, economically favorable, and typical to have a lifestyle that doesn't consume much energy.

Energy conservation education has reached, and continues to reach, effectively, everyone in the county.

Energy considerations and decisions are integrated with all other decision-making arenas.

The County is energy efficient through neighborhood design. Good community planning has reduced sprawl. There are fewer automobiles ~~a~~used for travel; ~~,~~ people depend more on transit, bikes, scooters, walking, and shared-use automobiles than they depend on private automobiles. ~~There are fewer automobiles and there is less automobile dependence.~~ Public transportation is conveniently available and well utilized~~, and walking, bicycling and other non-automobile forms of transportation are commonly used~~. There is much less consumption of energy from non-renewable sources for transportation.

All buildings are energy efficient. All new construction is all-electric and done in the most energy efficient manner, starting with building design. All existing buildings have been upgraded to be more efficient and many have converted their previous uses of natural gas and propane to electricity. Energy efficiency is integral to locally adopted building standards, which have flexibility and include meaningful incentives. Many homes and businesses produce more energy than they consume.

The County is a thriving research and development center and incubator for energy technology and related manufacturing, which is a stable source of local jobs.

Draft 2019
Strategies Update

Regional Energy Planning & Coordination

RCEA will take a leadership role to develop and advance strategic regional energy goals through economic development, funding, planning efforts, and education. This work will be done in coordination with RCEA's member governments, other local public agencies, local tribes, and other public and private stakeholders.

Goals: **Achieve net-zero greenhouse gas emissions county-wide by 2030.**

By 2030 fully establish Humboldt County as a renewable-energy secure community that can affordably and reliably meet its local energy needs with local resources and has the robust local capabilities and infrastructure necessary to effectively respond to any energy emergencies or disruptions in energy supply.

Build the clean energy sector into a cornerstone of the local economy through a breadth of strategies that include innovation, research and development, local energy-related business development, and Humboldt Bay as the primary west coast hub for the offshore wind energy industry.

ECONOMIC DEVELOPMENT

Attract Energy-related Business. Collaborate with local economic development entities to attract technology developers, manufacturers, and energy service providers to locate operations in the County when appropriate.

Support Proactive Energy-related Business Development. Collaborate with local jurisdictions to identify and pre-assess locations and facilities for energy-related business ventures.

Support Energy-sector Workforce Development. Work with other local entities to provide training and continuing education that develops and maintains a qualified local workforce available to implement energy efficiency upgrades, renewable energy projects, and advanced-vehicle technology deployment.

ENERGY-RELATED EMERGENCY RESPONSE

Develop Emergency Response Capabilities. Coordinate with other local entities to develop regional capabilities to respond to energy emergencies and disruptions in energy supply, infrastructure, or markets. Incorporate efforts to enhance emergency response capabilities across RCEA's demand-side, power resources, and transportation programs.

Assist with Energy Emergency Response Procedures. Assist the Humboldt County Office of Emergency Services in the preparation of energy ~~emergency~~ response procedures for the Humboldt County Emergency Response Plan.

Support Climate Change Adaptation. Work with other local entities to conduct a climate change risk assessment and develop an adaptation plan consistent with the best-practices guidance provided by the California Natural Resources Agency and California Emergency Management Agency.

FUNDING

Develop Regional Energy Funding Mechanisms. Offer support and act as the fiscal agent and funding clearinghouse for countywide energy programs.

Pursue Cap and Trade Auction Proceeds. Work regionally to access Cap and Trade auction proceeds and other State funding mechanisms to ensure effective, efficient, coordinated, and equitable resource allocation in the North Coast Region.

Develop Job Development Incentives. Collaborate with local economic development entities to identify funding opportunities for developing jobs in the field of energy conservation, efficiency, and renewable sources.

Implement Energy Project Financing. Work with local economic development entities and/or financial institutions to develop and implement financing programs that enable residents and businesses to implement energy efficiency and renewable energy projects.

Facilitate Financing Mechanisms. Facilitate Property Assessed Clean Energy (PACE) and other financing programs that access the needed capital to deploy regional energy independence strategies.

Develop Local Energy Investment Programs. Work with local economic development entities and financial institutions to develop programs and resources that facilitate local community investment in and/or ownership of energy efficiency and renewable energy projects.

PLANNING

Support Carbon Sequestration. Support the development and deployment of mechanisms for retaining carbon in the region's abundant natural areas and working lands.

Assist with Climate Action Planning. Work with member ~~local~~ jurisdictions to regularly complete greenhouse gas inventories, set greenhouse gas reduction targets, and develop climate action plans.

~~**Support Climate Change Adaptation.** Work with other local entities to conduct a climate change risk assessment and develop an adaptation plan consistent with the best-practices guidance~~

~~provided by the California Natural Resources Agency and California Emergency Management Agency.~~

Support Countywide Strategic Energy Planning. Coordinate an effective energy strategy based on self-sufficiency, development of renewable energy resources~~, and~~ energy conservation, and electrification that is actively implemented countywide through Climate Action Plans, General Plans and the Redwood Coast Energy Authority's RePower Humboldt plan~~Comprehensive Energy Action Plan~~.

Encourage Adoption of Energy Elements. Encourage and assist with the adoption of energy elements ~~in~~ by member ~~other local and regional~~ jurisdictions. Periodically review local energy elements and recommend updates, as necessary, to reflect changing technologies for the generation, transmission, and efficient use of energy.

~~**Assist with Energy Emergency Response Procedures.** Assist the Humboldt County Office of Emergency Services in the preparation of energy emergency response procedures for the Humboldt County Emergency Response Plan.~~

Encourage Energy Policies and Plans. Encourage ~~other~~ member jurisdictions and entities~~, including the cities in Humboldt County,~~ to adopt and implement sound energy plans and policies, to include energy elements and/or energy policies in their general plans and ordinances. Advocate and disseminate energy planning strategies, policies, and other information.

EDUCATION

Maintain an Energy Resource Center. Operate an energy resource center open to the public and provide information on energy conservation, energy planning, renewable energy, energy storage, low-carbon transportation, and energy-efficient and all-electric building design and retrofits ~~information~~.

Hold Regional Energy Forums. Serve as a forum for addressing countywide energy issues.

Develop Public Displays. Encourage and assist development of educational displays for exemplary renewable energy and distributed energy systems installed throughout Humboldt County. Displays should provide county residents and businesses with information on how the systems work and how well they perform and should inform county residents about the importance, benefits, and associated impacts of developing local energy resources.

Provide Energy Efficiency, Conservation and Electrification Education and Training. Provide community education, information, and resources on energy issues to support informed decision making related to customer energy use, including the benefits of reduced energy consumption, electrification and increased energy efficiency. Collaborate with schools and colleges for energy-related research, education, and conservation practices.

Integrated Demand Side Management

RCEA will use an Integrated Demand Side Management ~~(IDSM)~~ approach to develop distributed energy resources and reduce energy consumption in the residential, commercial, industrial, agricultural, and government sectors and to align ~~match and enhance~~ customer energy use with ~~intermittent~~ variable clean and renewable energy supplies. RCEA will prioritize efforts that enhance ~~An additional priority will be placed on~~ local energy resiliency and independence.

Goals:

- **Support the wide-spread installation of customer solar energy systems, with a target to increase installation to a rate of one system every day for the next decade to reach 30MW of customer solar installed by 2025 and 50MW installed by 2030.**
- **Provide energy efficiency and conservation services to every household and business in the county by 2030.**
- **Develop and begin implementation of expanded efficiency and electrification programs to reduce greenhouse gas emission from natural gas use by 20% by [YEAR] and establish and maintain a trajectory to reduce emissions from natural gas by 90% by 2050.**
- **Deploy a network of community microgrids and renewable- energy back-up power systems across the county to reduce greenhouse gas emission and to provide energy resiliency and long-duration emergency energy supply at all critical facilities by 2030.**

INTEGRATED DEMAND SIDE MANAGEMENT STRATEGIES

Support Member Agency and Local Government Energy Management. Support member agencies in managing their energy consumption. RCEA will support ~~varying~~ activities that reduce and balance~~align~~ energy use with available clean and renewable supplies to reduce costs while aligning to performance-based action plans and Greenhouse Gas Emission Reduction goals. Additional activities will be prioritized where they support energy resiliency and independence.

Support Implementation of Codes and Standards. Support the State's goals related to residential and commercial net-zero-energy and zero-net carbon standards along with other green building standards, including ~~Support~~ the local implementation of Title 24 building energy codes, Title 20 appliance efficiency standards and individual projects that strive to achieve energy efficiencies that exceed state or local requirements. Support ~~the consideration and adoption of~~ implementation of above code energy ordinances.

Promote No Regrets Energy Efficiency, ~~Solar~~ Renewable Energy, and Storage Permitting. Support local ordinances that streamline permitting processes for energy efficiency, ~~solar~~ renewable energy, and storage technologies.

Assist with Facility Benchmarking. Assist local governments and businesses with facility benchmarking to evaluate and track the energy performance of non-residential buildings.

~~**Support Zero-Net–Energy Standards.** Support the State's goals related to residential and commercial net-zero-energy standards along with other green building standards that align to RCEA's IDSM strategies.~~

~~**Conduct Community Engagement.** Provide community facing information and resources that will support informed decision making as relating to customer energy use.~~

Support Energy Assessments. Support and encourage full knowledge of the costs and benefits (including product stewardship) of energy efficiency, conservation, generation and storage activities through assessments.

Integrate Distributed Energy Resources. Develop and implement customer programs that ~~S~~support, promote and integrate distributed energy resources, including but not limited to distribution-connected generation, energy storage, energy efficiency, electric vehicle and demand response technologies ~~into new and existing customer facing programs~~.

Integrate a Distributed Energy Resource Management System. Support the development and installation of systems needed for effective and responsive management of distributed energy resources. Evaluate the potential integration of~~Integrate~~ distributed energy resources into a unified system that would allow RCEA to~~can~~ aggregate and~~or~~ automate demand response activities.

Support and Deploy Microgrids. Support and deploy energy microgrids, focusing on critical infrastructure and community facilities, that through onsite generation, energy storage, and advanced control systems provide energy resiliency and emergency-response capabilities as well as ongoing economic and environmental benefits.

Use Advanced Metering Infrastructure. Use advanced metering infrastructure to make informed, data driven program decisions and allow customers visibility into their energy usage for more ownership and control of their energy related behavior and decisions~~.~~

ENERGY EFFICIENCY & CONSERVATION

Maximize the Efficiency of Buildings. ~~RCEA will s~~Support energy efficiency and conservation as core strategies toward achieving ~~the program's~~ environmental, economic, and community goals. Where feasible, energy efficiency technologies will be controllable and integrated as a distributed resource; any such efforts will be implemented with a commitment to respecting and protecting customers' rights to privacy. ~~RCEA will:~~

Support Electrification. Prioritize the development and implementation of ~~new~~ programs and ~~alterations to existing~~ services that promote the use of the most energy-efficiency electric equipment

including: air-source heat pump ~~domestic~~ hot water and space heaters, induction stoves ~~and~~ , electric clothes dryers, and the electrification of commercial and industrial processes.

Encourage Energy-Efficient Equipment. Encourage the use of the most energy-efficient equipment for space and water heating, ventilation, lighting, refrigeration, and air conditioning in all buildings and developments, including residential, ~~and~~ commercial and industrial facilities.

Promote Performance Contracting. Promote residential and commercial performance contracting that is consistent with current best practices for energy efficiency and environmentally sound construction techniques.

Develop and Support Behavioral, Commissioning and Operations Programs ~~(BROs)~~. **Promote,** d~~D~~evelop, ~~promote~~ and ~~support~~ implement programs that ~~promote~~ enable energy conservation and load-shifting through~~,~~ customer behavior changes, building system commissioning, and operational changes. ~~that reduce or change the time of energy use.~~

Replace Plug Loads. Replace existing plug load devices and install ~~line-signaling~~ smart technologies that save energy and provide an integrated solution that aligns with demand response and storage measures. Examples include internet-of-things enabled lighting, water and space conditioning, dish and clothes washing, and refrigeration.

DEMAND RESPONSE

Implement Demand Response Programs. ~~RCEA will s~~Support and prioritize demand response programs that ~~give~~ offer ratepayers ~~an opportunity to play~~ a role in balancing energy ~~load~~ usage with renewable energy supply**.** Demand response programs and offerings will, where possible, integrate with ~~distribution~~ distribution-connected efficiency systems and controls, ~~solar~~ renewable energy generation, and energy storage measures.

Support Time of Use. Notify, support, and enable action from customers ~~who express an interest in~~who want to participate in load shifting or peak shaving to reduce ~~evening hour coincident~~energy usage during times of peak demand**.**

Provide and Support Peak Day Pricing. ~~Notify~~ Provide notification and support for customer energy use changes during summer peak energy demand day events.

Enable Automated Demand Response. Install electrification, efficiency, and storage technologies that automatically reduce energy use during demand response events. Implement building demand response systems that allow for the curtailment of loads without major impacts to occupants and operations ~~in descending order of priority~~.

~~**Implement Grid Connected Buildings.** Implement grid connected buildings that allow for the curtailment of loads in descending order of priority.~~

DISTRIBUTED GENERATION & STORAGE

Support Customers' Installationing of Distributed Generation. ~~RCEA will s~~Support the deployment of distribution-level--~~connected~~ ~~solar~~ renewable energy and storage systems ~~technologies~~ as core strategies toward achieving environmental, economic, and community ~~goals~~stability/resilience goals.

~~**Administer and**~ **Implement the Public Agency Solar Program.** Continue to implement the solar and energy-storage technical assistance program for public agencies; integrate grid-connected resources, electrification and microgrids as feasible.

~~**Administer and**~ **Implement ~~a~~the Community Solar and Storage Program.** Evaluate, design and launch community solar and storage program services that support the increased adoption of grid-connected solar and storage technologies.

Integrate Vehicle to Grid Storage. Integrate vehicle to grid storage solutions with transportation and ~~IDSM~~ ~~integrated~~ demand side management goals and objectives.

Low-carbon Transportation

RCEA will decarbonize regional transportation through efforts to reduce vehicle miles travelled, increase advanced fuel vehicles adoption and fuel efficiency, and expand advanced fuel infrastructure.

Goals: **Accelerate the adoption of electric vehicles, with a target of over 6,000 electric vehicles on the road in Humboldt County by 2025 and 22,000 vehicles by 2030. Develop public, workplace, and residential electric vehicle charging infrastructure necessary to support these county-wide electric vehicle targets.**

Work with other local public entities to reduce vehicle miles traveled in Humboldt County by at least 25% by 2030.

By 2030 reduce greenhouse gas emission from transportation by over 65% through reductions in vehicle miles traveled, improved vehicle efficiency, the adoption of electric vehicles, and, where determined to be an effective emissions-reduction strategy, the use of ~~the~~ biofuels as a bridge to the full transition to zero-emissions vehicles. Establish and maintain a trajectory of emissions reduction to eliminate the use of fossil fuels by 2050.

REDUCE VEHICLE MILES TRAVELED

Strengthen Broadband Infrastructure. Support efforts to strengthen rural regional broadband infrastructure to facilitate remote access to educational and business opportunities, and deploy advanced, resilient grid management technology and integrated energy efficiency and demand response solutions.

Encourage Transportation-efficient Land Use Planning. Encourage infill, transit-oriented development, and walkable and bikeable communities through thoughtful zoning and land-use planning processes.

Facilitate Multi-modal Transportation Infrastructure. Support improving multi-modal transportation options through regional trail networks, transit infrastructure, and complete streets infrastructure strategies that support walking, biking, carsharing, ridesharing, and the use of public transportation.

INCREASE ADVANCED FUEL VEHICLE ADOPTION & FUEL EFFICIENCY

~~**Electrify Transportation**~~**Support Local Vehicle Fleet Owners Leading by Example**. Encourage local government and private fleets to maximize the use of low-carbon vehicles~~.~~ Aand support low-carbon transportation initiatives at other agencies.~~Provide local incentives for electric vehicles~~.

Promote Advanced Fuels. Equitably promote, support and incentivize low carbon vehicle and fuel adoption by local governments, commercial fleets, and the public. Encourage the use of non-fossil sources of advanced fuels that reduce greenhouse gas emissions, which may include electricity, hydrogen, biodiesel, ethanol, and renewable diesel.

~~**Promote**~~ **Support** ~~**PEV**~~ **Electric Vehicle Adoption.** Conduct public outreach campaigns to promote electric vehicles~~EV driving; fleet analysis~~. Offer electric vehicle incentives and ~~P~~provide customers with web and in-person decision support when considering the purchase of an electric vehicle. Conduct leadership by example among government agencies. ~~Support low-carbon transportation initiatives at other agencies.~~

Promote Efficient Driving Practices. Promote the use of energy-efficient driving practices that improve fuel efficiency, such as moderate speed changes and legal speeds, anti-idling, and traffic-calming features.

Support Shipping Efficiency. Support the implementation of trucking efficiency technologies and best-practices, including idle-reduction technologies, aerodynamic retrofits, and low rolling resistance tires. Support the analysis of other potential transportation modes that could provide efficient shipping alternatives such as barge and rail.

EXPAND FUELING INFRASTRUCTURE

Develop Transportation Electrification Infrastructure. Develop and implement Electric Vehicle ~~(EV)~~ charging stations. Provide local incentives for ~~EV~~ electric vehicle charging infrastructure and prioritize technologies that align with integrated demand-side management goals.

~~**Develop**~~ **Utilize Biofuels.** Promote use of biofuels with low California Low Carbon Fuel Standard (LCFS) scores, particularly those produced with local waste feedstocks. ~~waste oils and other biomass sources for biofuels production. Focus on waste oils and other biomass that are not already being used for other purposes, and explore potential opportunities and issues of new technologies for biofuels production from local resources.~~

Streamline Permitting for ~~PEV~~ Electric Vehicle Charging Infrastructure. Encourage local jurisdictions to~~L~~ list ~~PEV~~ vehicle charging as a permitted use across a broad range of zoning classifications. If a zoning review is triggered, consider ~~the EVSE~~ vehicle charging as an accessory use to another permitted use whenever possible. Develop a standard ~~EVSE~~ vehicle charging permitting process. ~~that can be used across the North Coast Region, etc.~~

Promote Vehicle-to-Grid Connection. Promote integration of ~~motor vehicles~~electric vehicles with the electric grid. ~~, including battery electric vehicles, fuel-cell vehicles, plug-in hybrid electric vehicles, and solar electric vehicles.~~ Evaluate the development status of vehicle-to-grid interconnect standards and the use of grid-connected vehicles for short-term energy storage.

Energy Generation & Utility Services

RCEA will address Humboldt County's supply-side energy needs ~~for Humboldt County~~ through its existing Community Choice Aggregation (CCA) program and development of new programs and initiatives ~~as appropriate~~.

Goals: **By 2025 100% of RCEA's ~~electricity~~ power mix will be from ~~net-zero-carbon-emission sources that are either~~a combination of state-designated renewable energy sources—solar, wind, biomass, small-hydroelectric, and geothermal—and state-designated net zero carbon emission existing large hydroelectric facilities.**

By 2030 Humboldt County will be a net exporter of renewable ~~energy~~electricity and RCEA's power mix will consist of 100% local, net-zero-carbon-emission renewable sources.

Humboldt County can effectively respond to regional and local disruptions to energy supply and distribution systems through modernization of the local electric grid, the deployment of local distributed energy resources, and the development of community microgrids.

POWER RESOURCES

Maximize the Use of Local Renewable Energy to the Extent Technically and Economically Feasible and Prudent. Use the CCA program with its renewable energy targets, and programs supporting distributed energy resources, to achieve this goalaim.

Minimize Greenhouse Gas Emissions Associated with RCEA's CCA Program. Procure a CCA power mix that has, at least, a 5% lower greenhouse gas emission rate than PG&E mix. Assess, evaluate, and monitor the short-term and lifecycle emissions from all generation sources to ensure power resources align with RCEA's greenhouse gas emissions goals.

Reduce Regulatory Barriers. Support efforts to increase the efficiency ofstreamlining the energy systemsrenewable energy permitting process and reduce any excessive regulatory barriers to renewable energy and distributed generation projects. Using RCEA's position as a power offtaker, Wwork withto developers on proactive strategies to reduce and mitigate the environmental and community impacts of potential energy projects.

Maximize Renewable Energy Content of RCEA's CCA Program. Procure a CCA power mix that is at least 5% more renewable energy (as defined by state law) than PG&E's power mix and reaches 100% clean and renewable content by 2025.

Ensure Diversity in Local Sources. Pursue development of a diverse, locally produced renewable energy supply , with an emphasis on renewable resources, that is price-competitive in the California power market and that can be generated in a way that minimizes adverse environmental and community impacts.

Promote Energy Feasibility Studies. Encourage and support feasibility studies of local wind, solar, hydro-power, and ocean energy resources. Make recommendations on preferred alternatives that are consistent with the County'scommunity goals for energy security and sustainability.

Power Resources: Distributed Generation

Designate "Renewable Energy Parks." Work with County and City planning departments to designate areas of the county preferred for renewable energy development.

Develop Distributed Generation. Encourage studies to identify key facilities locations throughout the county that would benefit from distributed generation and cogeneration energy systems. Encourage development of responsive environmentally preferable distributed generation demonstration sites. and cogeneration energy systems where appropriate. Encourage and publicize demonstration sites.

Provide Education on Renewable Energy and Distributed Generation. Provide educational and promotional programs that encourage and demonstrate the use of renewable energy and environmentally preferable distributed energy generation and cogeneration systems.

Provide Feed-In-Tariff Power Procurement Program for Small Generators. Offer long-term contracts at a market-adjusting ~~set~~ rate for Renewable Portfolio Standard ~~-~~eligible renewable energy generators of 1MW or smaller.

Power Resources: Solar

Support Solar Energy Development. Support local efforts to develop customer solar electric systems and solar hot water systems in the county. Support development of local training programs for solar contractors and installers. Educate the public about the benefits of solar energy systems. Develop programs that facilitate an increase in the number of solar energy systems in the county.

Procure Local Solar Energy. Contract for local onshore solar energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Offshore Wind

~~Pursue~~ **Develop Offshore Wind Energy.** Work with public and private entities to develop offshore wind energy off of ~~Humboldt County's~~the north coast region's coastline, and support establishing Humboldt Bay as a west-coast hub for the offshore wind industry.

Procure Local Offshore Wind Energy. Contract for local offshore wind energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Onshore Wind

Promote Large-Scale Wind Energy. Provide information about the potential for cost-effective, commercial-scale wind farms in the county. Educate the public about the benefits and impacts of wind energy systems. Work with utilities, local government, and private companies to develop onshore wind energy projects.

Procure Local Onshore Wind Energy. Contract for local onshore wind energy as part of RCEA's community choice energy portfolio to the extent economically feasible and compatible with portfolio diversity needs.

Power Resources: Bioenergy

Support Biomass Fuels Reduction and Utilization. Develop strategies and technologies for improved biomass utilization in ways that effectively support restoration objectives and fire management priorities. Coordinate with local agencies, communities, and landowners to develop biomass energy plans that are consistent with sustainable forest management, hazardous fuels reduction, fire safety, and restoration needs.

~~Contract for 20MW~~**Procure Local Biomass Energy.** ~~Contingent on price and market conditions, contract for a target of around 20MW of local biomass energy.~~Contract with local biomass facilities at a scale matched to the local supply of wood waste from mills and, when feasible and appropriate, from forest management and restoration activities. Require and support a high standard of environmental compliance from RCEA's biomass suppliers through the deployment of the best-available emissions control technologies. Analyze and confirm on an ongoing basis that, within the context of local commercial forest land

management practices and the forest-products sector, local biomass power generation sector has net-zero greenhouse gas emissions on both a short-term and long-term basis.

Promote Small-Scale Biomass Generation Sites. Monitor feasibility of smaller and/or mobile biomass electric generators fed with wood waste and very small diameter logs (e.g., from thinning for fire safety and timber harvest slash in National Forest areas). If/when technology proves feasible and cost effective, promote its use in county areas where appropriate. near National Forests where existing electric transmission lines are available.

Pursue Biogas Development. Support HWMA and others in the developmenwith the development of a organicfood waste digesters. Develop and publicize dairy biogas demonstration sites and work with local farm organizations to promote dairy biogas energy systems where appropriate. Publicize the use of biogas at existing local wastewater treatment facilities and encourage its use at additional facilities where appropriate. Encourage biogas use to produce electricity onsite rather than pipeline injection to avoid the potential greenhouse gas emission impacts of pipeline leaks.

Power Resources: Wave and Tidal

Pursue Wave and Tidal Energy Development. Build on the previous WaveConnect and CalWave projects to explore and evaluate opportunities for local wave and tidal energy research, development, and pilot -deployment.

Power Resources: Hydro

Support Existing and New Local Small-scale Hydroelectric Power. Evaluate options for contracting with existing small hydroelectric projects as well as the development of new small-scale run-of-the-river hydroelectric projects that would be eligible for Renewable Portfolio Standard designation and compatible with environmental and cultural priorities. Encourage appropriate local agencies to pPrepare an uUpdated the Oscar Larson and Associates' 1982 assessment of small hydroelectric resources potential in the county.

UTILITY ENERGY SERVICE

Minimize Energy Interruptions. Work with local utility providers to minimize the impact of power outages and improve the reliability and resiliency of the local electricity delivery service.

Provide Energy via Direct Access or Core Transport Agent Agreements. Explore the feasibility of RCEA acting as an electricity provider through direct access and/or acting as a natural gas core transport agent for local energy customers.

Review Utility Options. Review the effectiveness of PG&Ethe incumbent utility in meeting Humboldt County's long-term energy needs and evaluate the feasibility of establishing a local municipal electric utility.

Provide Outstanding Customer Service to RCEA Ratepayers. Ensure that participants in RCEA's community choice energy program receive high-quality customer service related to enrollment, rates,

billing, and customer programs supported by CCE ~~community choice energy~~ program ratepayer funds.

RATES & TARIFFS

Provide Community Choice Aggregation Program Customer Rate Savings. Provide customer savings relative to corresponding PG&E generation rates and departing load charges ~~with PG&E PCIA fees factored in~~ averaging at least $2 million per year.

Provide Electricity Buyback from Self Generators. Provide a net energy metering program that encourages more distributed local generation and more equitably compensates such generation.

Retain and/or Redirect Rate-Payer Dollars Back into Humboldt County. Work to maximize the amount of rate-payer dollars retained~~directed back~~ in~~to~~ Humboldt County when taking into consideration local power procurement, ~~customer~~ electricity rate~~s savings~~, local program spending, and allocations toward building the reserve~~/contingency~~ fund for RCEA's Community Choice Aggregation program.

Provide Match Funding for State, Federal, and Foundation Energy Grants. Support bringing resources into Humboldt County to pursue CCA community energy goals.

Support Transition to Time of Use Rates. Support customer adoption and transition~~s~~ to time of use electricity rates.

TRANSMISSION & DISTRIBUTION INFRASTRUCTURE

Perform Transmission Assessments and Monitoring. Encourage development of long-term transmission assessments and, if necessary, electrical transmission grid upgrade and/or expansion plans. Monitor local electricity transmission system planning to ensure that projected growth areas are adequately served and to support the development of local renewable energy projects.

Support **Upgrade** of **the Electricity Transmission and Distribution System.** ~~Upgrade~~ Collaborate with PG&E, the California Independent System Operator, and renewable energy developers to upgrade the regional transmission and distribution electrical grid to enable increased development of both utility-scale renewable energy projects and ~~as well as~~ community-scale distributed generation systems, including capability to export surplus renewable electricity ~~generation~~ from Humboldt County to other areas of the state.

This page intentionally left blank.

RCEA's **Comprehensive Action Plan for Energy** 2019 Update

Existing RCEA planning documents

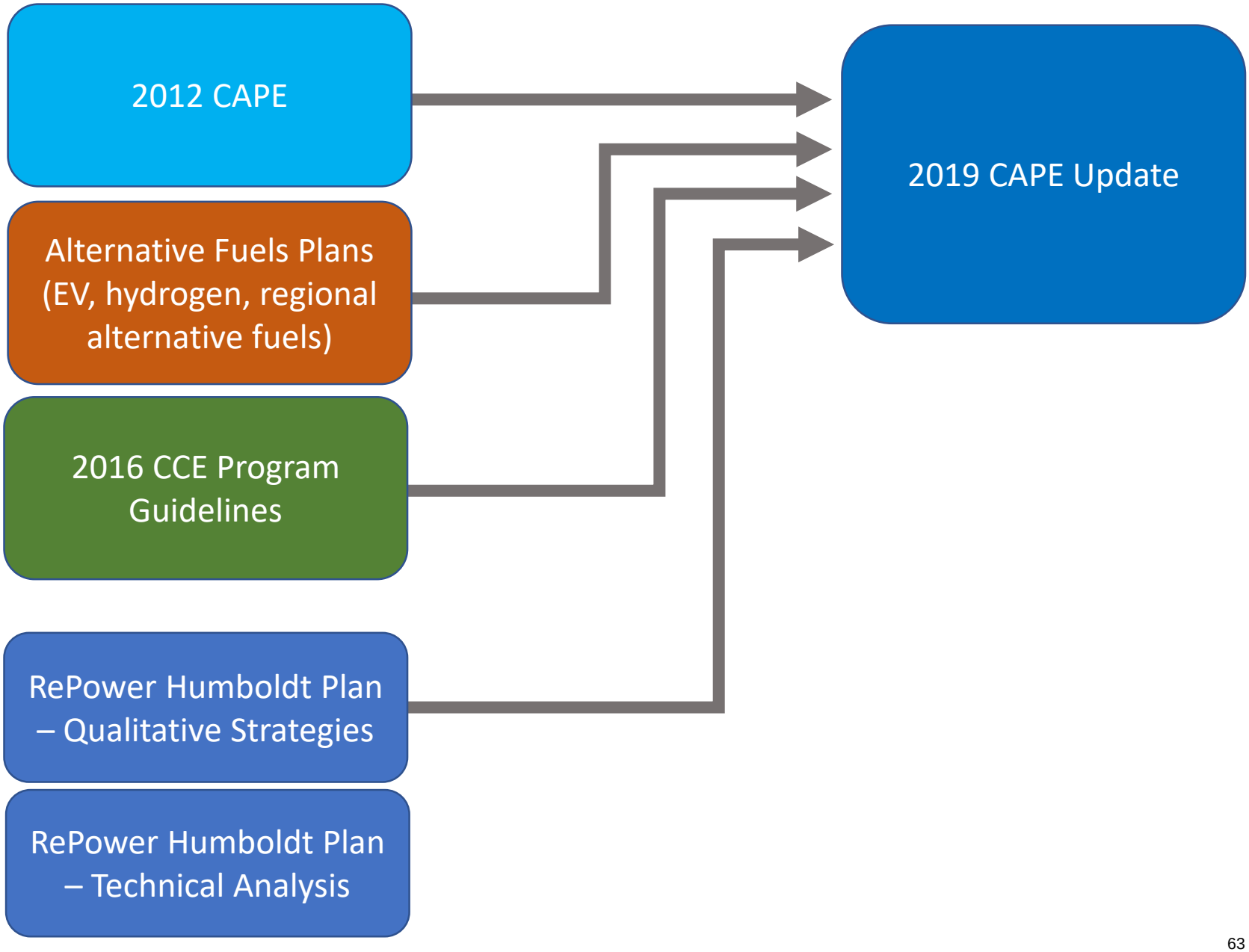
2012 CAPE

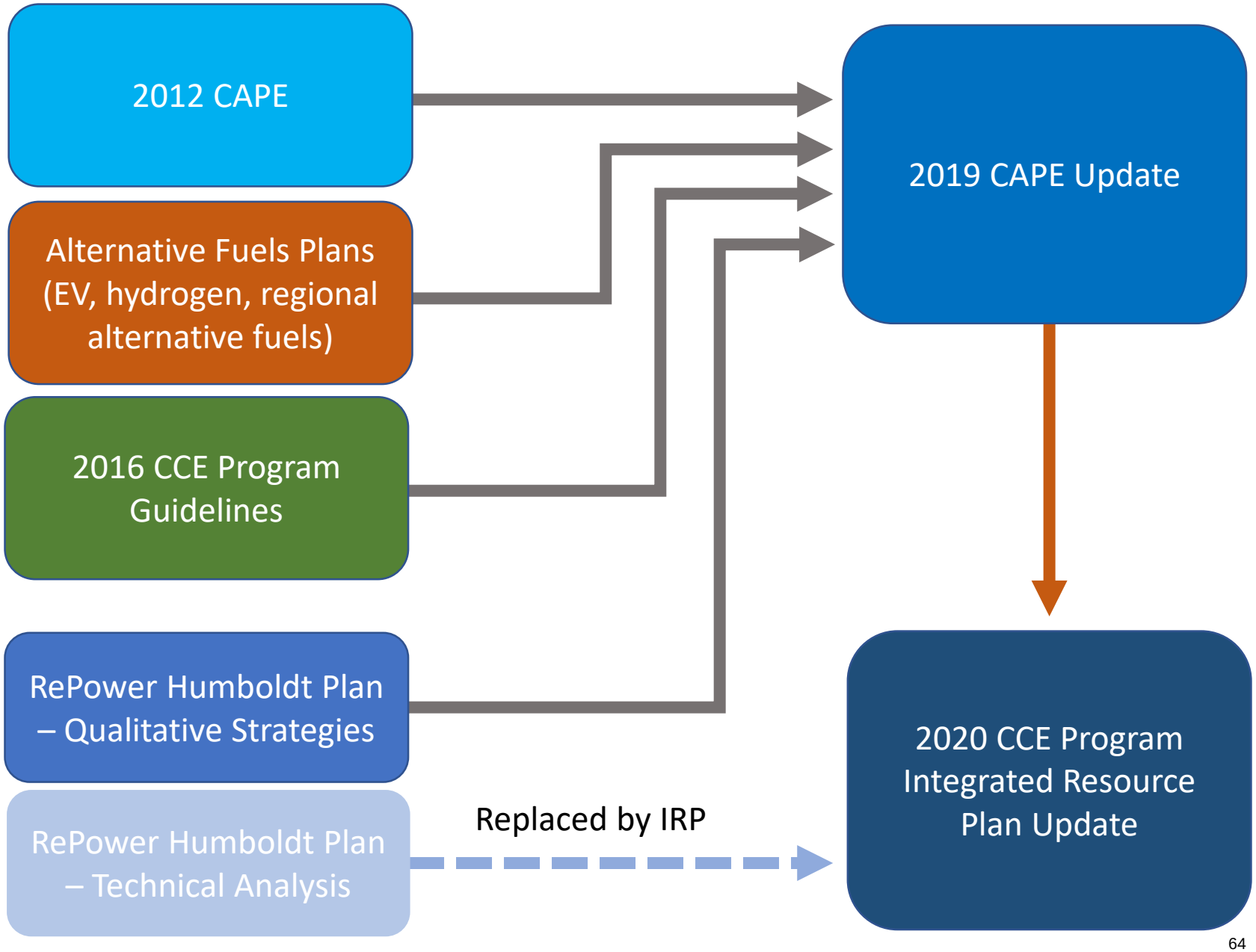
Alternative Fuels Plans (EV, hydrogen, regional alternative fuels)

2016 CCE Program Guidelines

RePower Humboldt Plan – Qualitative Strategies

RePower Humboldt Plan – Technical Analysis


2012 CAPE
Alternative Fuels Plans (EV, hydrogen, regional alternative fuels)
2016 CCE Program Guidelines
RePower Humboldt Plan – Qualitative Strategies
RePower Humboldt Plan – Technical Analysis
2019 CAPE Update


2012 CAPE
Alternative Fuels Plans (EV, hydrogen, regional alternative fuels)
2016 CCE Program Guidelines
RePower Humboldt Plan – Qualitative Strategies
RePower Humboldt Plan – Technical Analysis
Replaced by IRP
2019 CAPE Update
2020 CCE Program Integrated Resource Plan Update

RCEA's

~~Comprehensive~~

~~Action Plan~~

~~for Energy~~

RePower Humboldt

2019 Update

Strategies regrouped into 4 areas

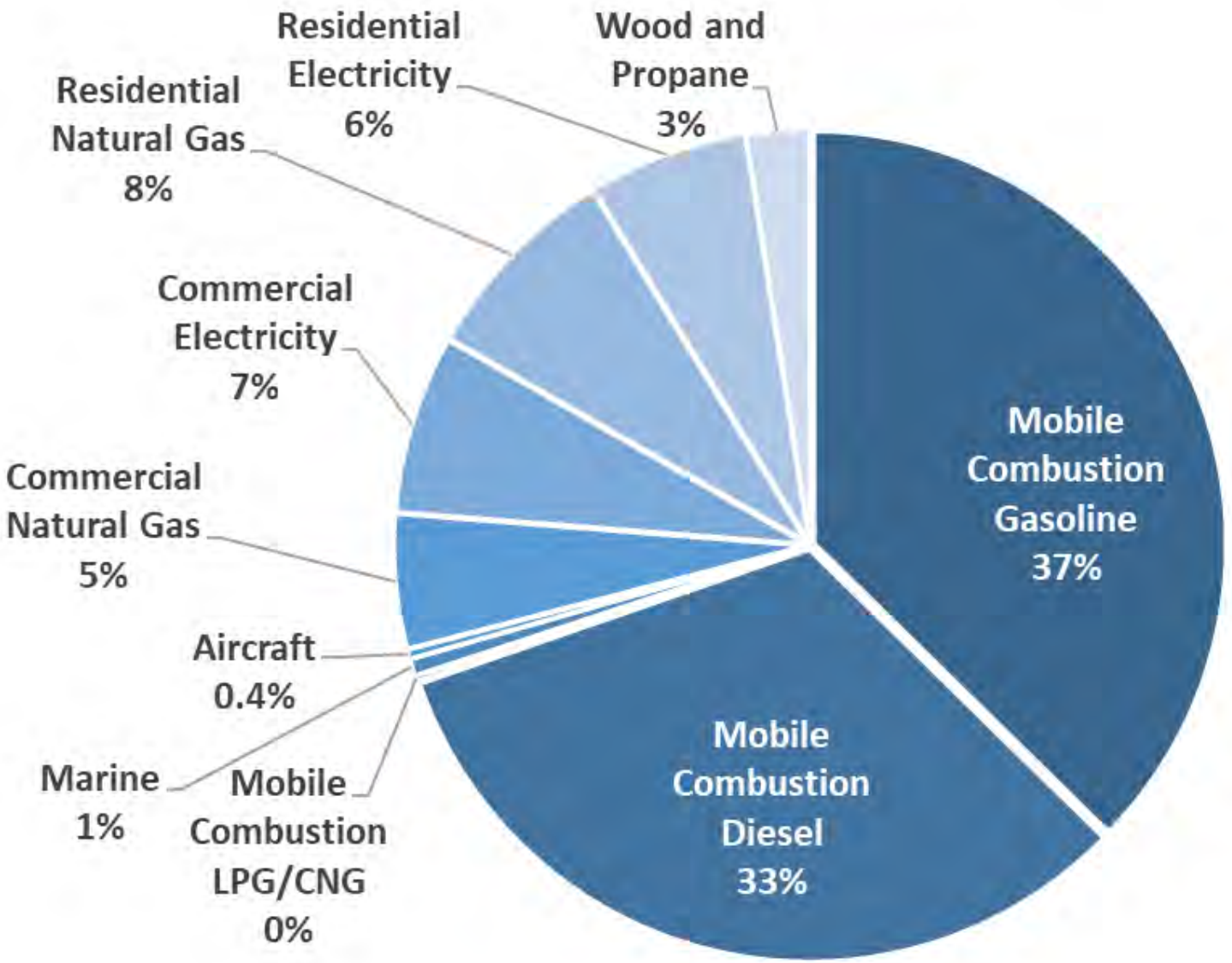
Regional Planning & Coordination

Energy Generation & Utility Services

Integrated Demand Side Management

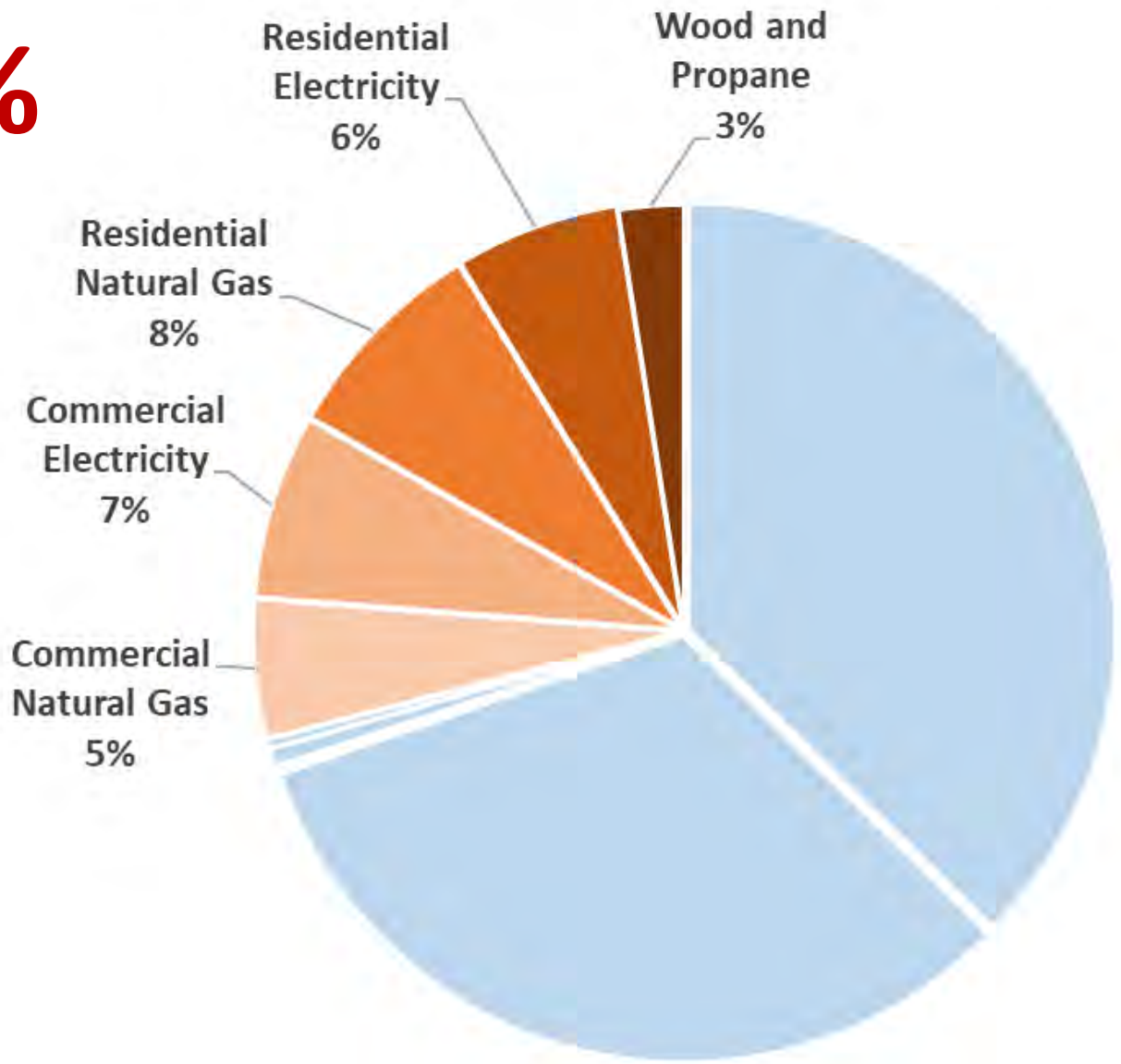
Low-carbon Transportation

Humboldt County Energy End Use Greenhouse Gas Emissions



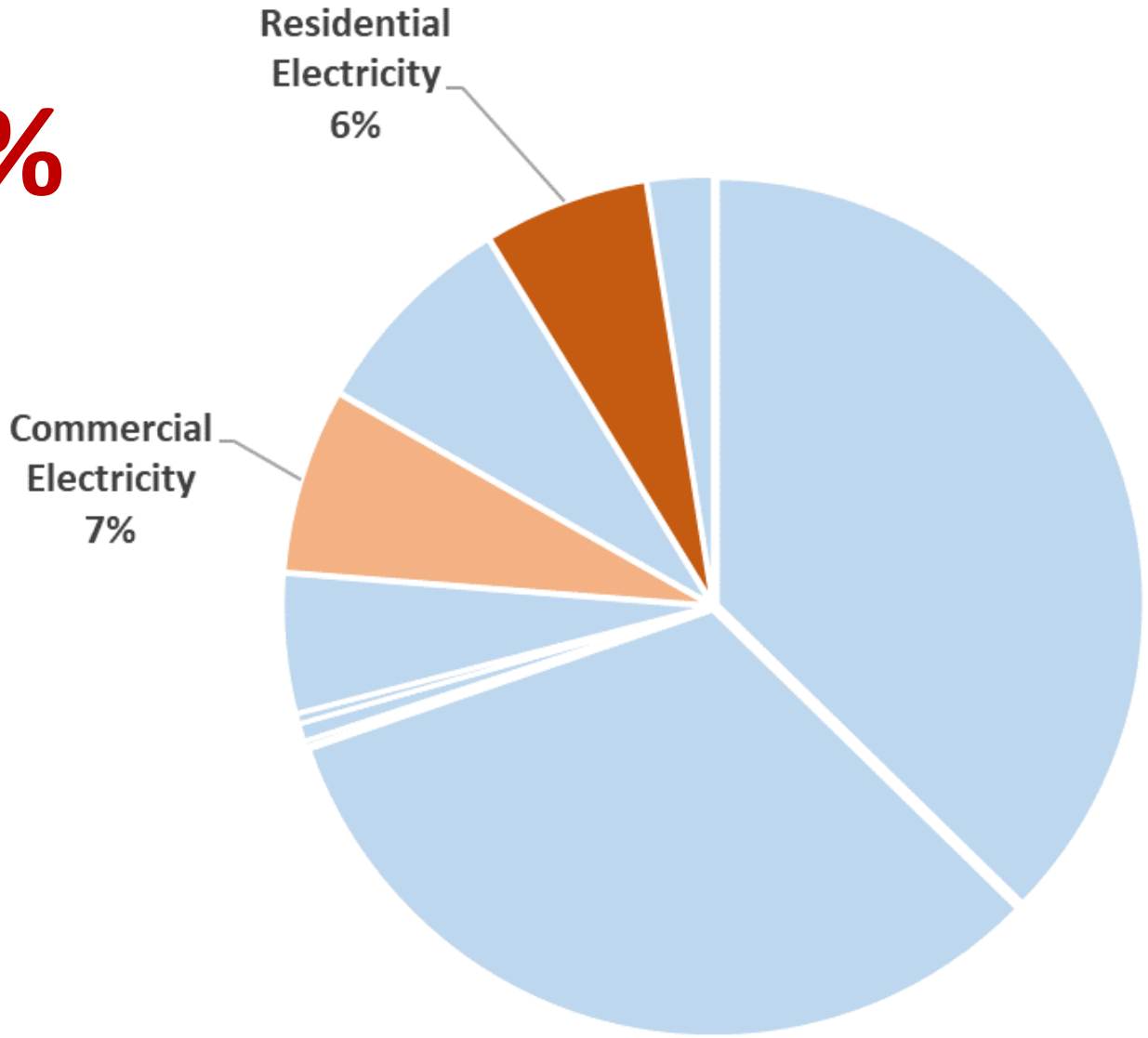
Built Environment End Use Emissions

29%

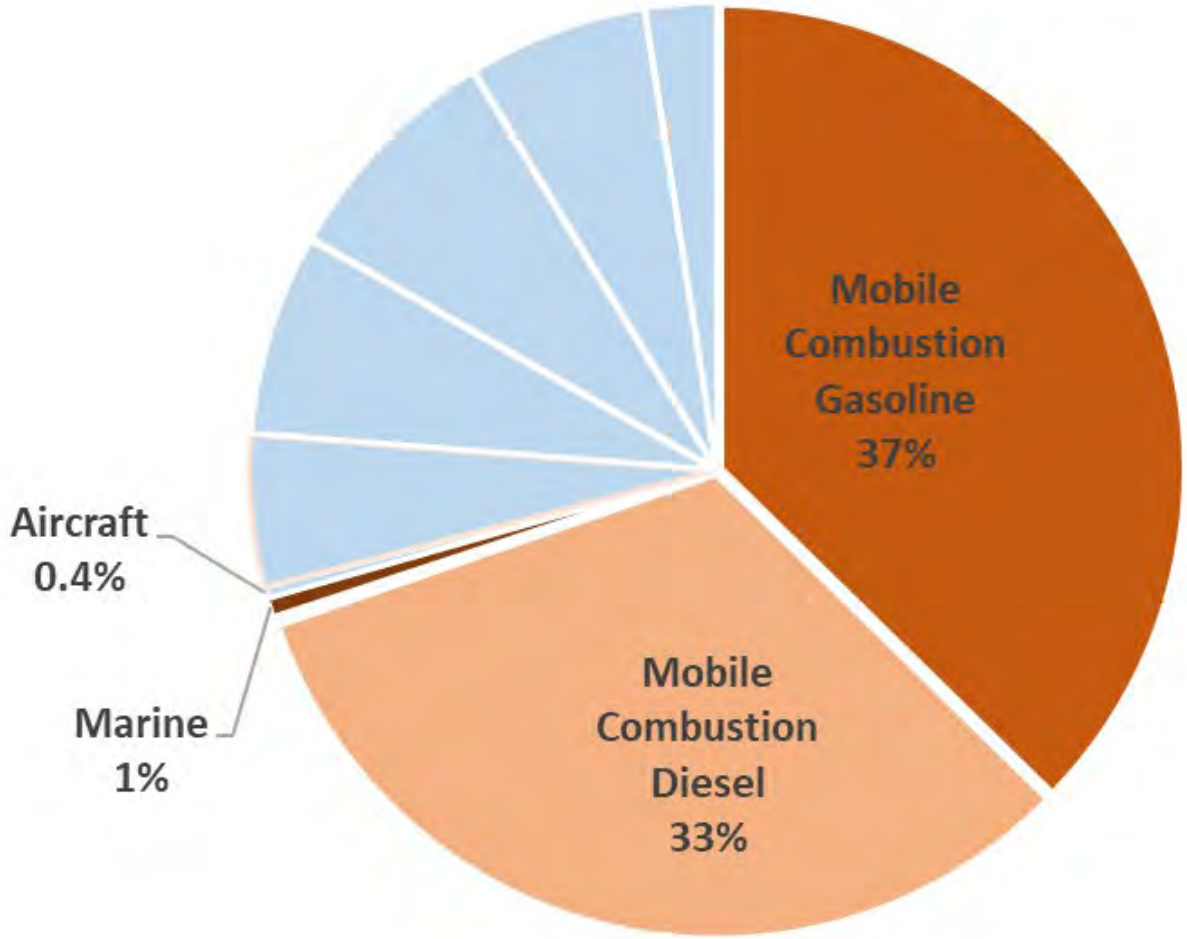


Electricity End Use Emissions

13%



Transportation End Use Emissions



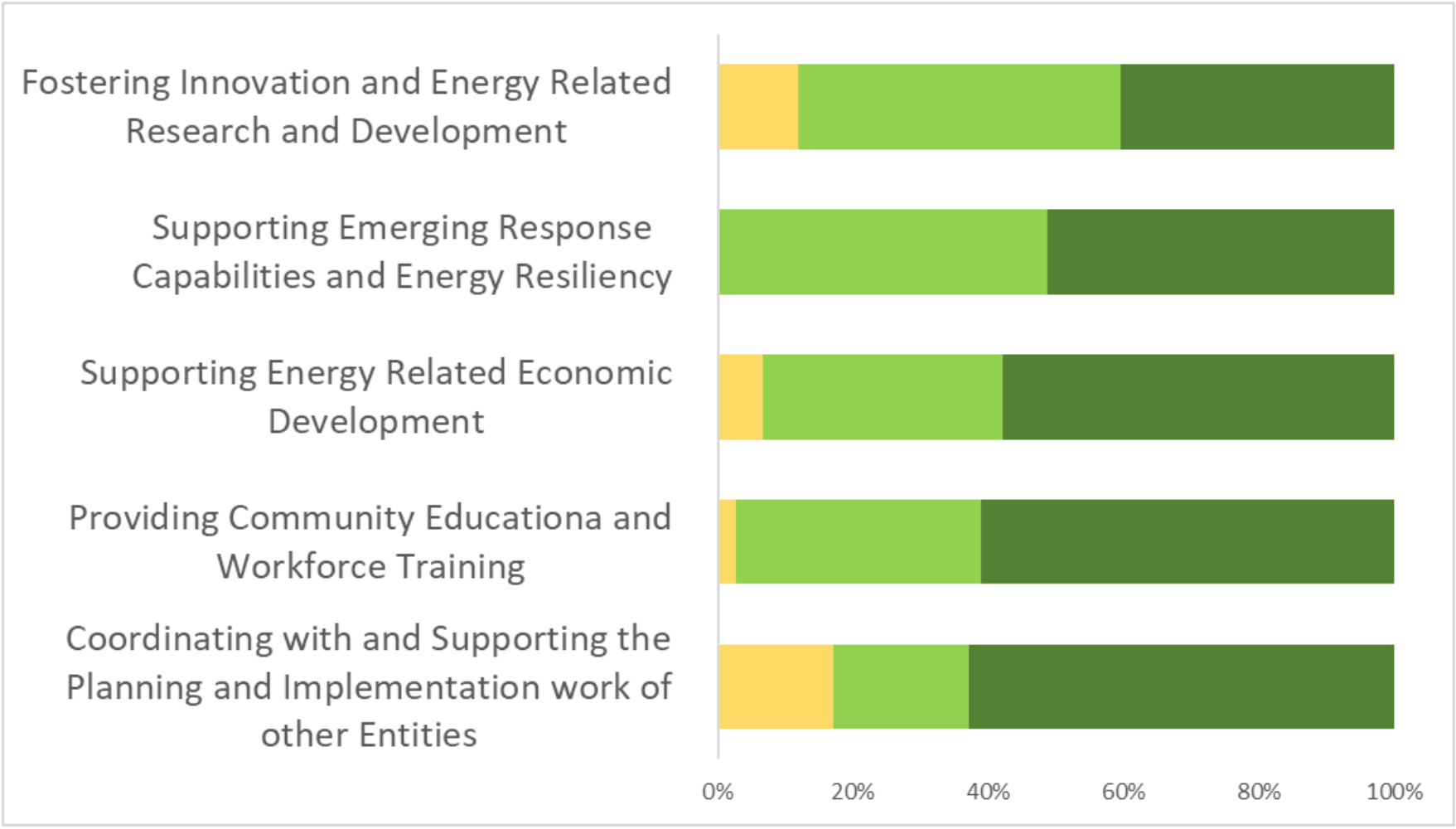
71%

Public input to date

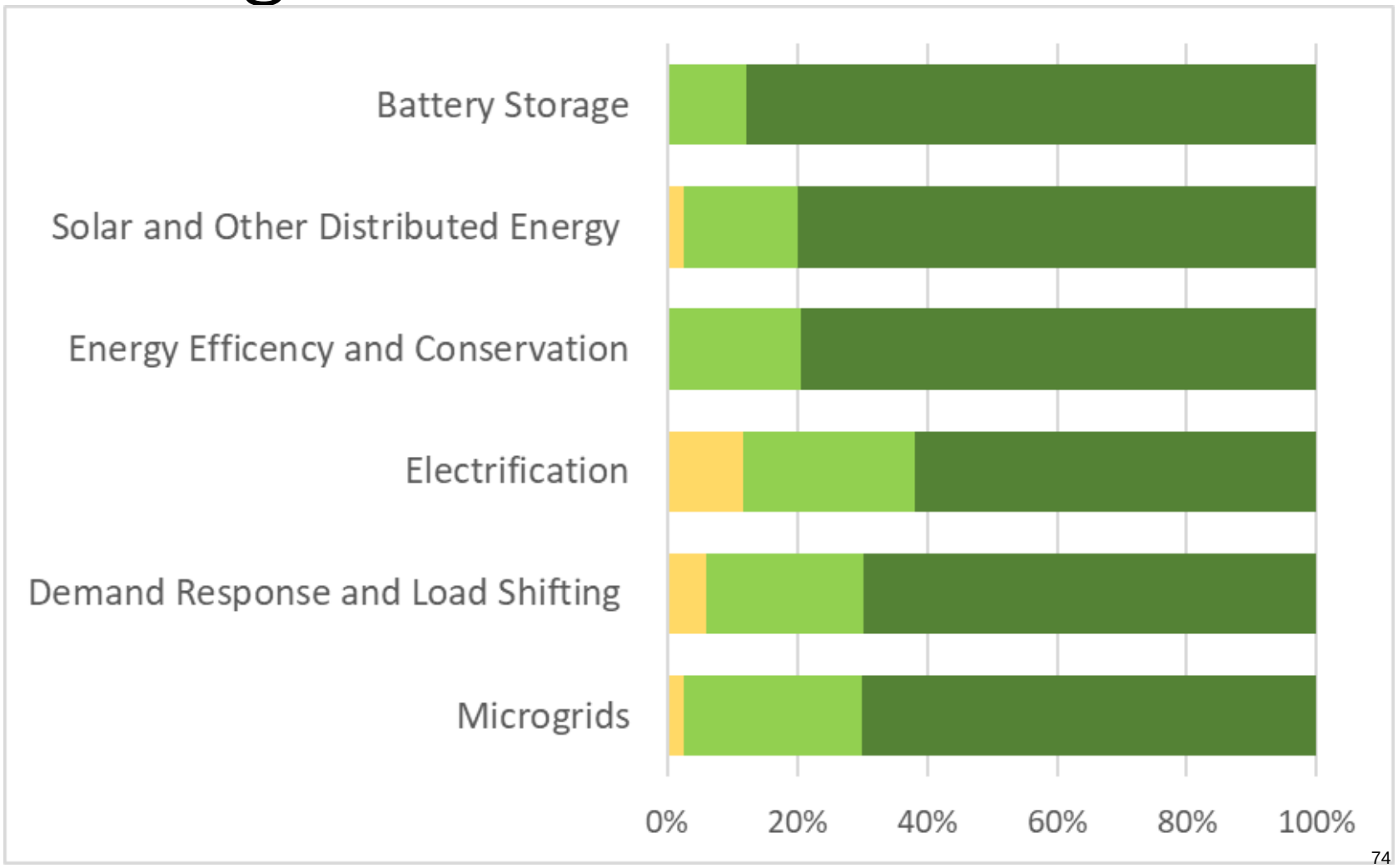
Aug-Sep 2019
RCEA Public Workshop Voting
Eureka, Orleans, and Redway
56 total attendees

- Do not include
- Minimize and only include as needed to support other goals
- Include as a key element of a balance mix
- Maximize to the greatest extent possible

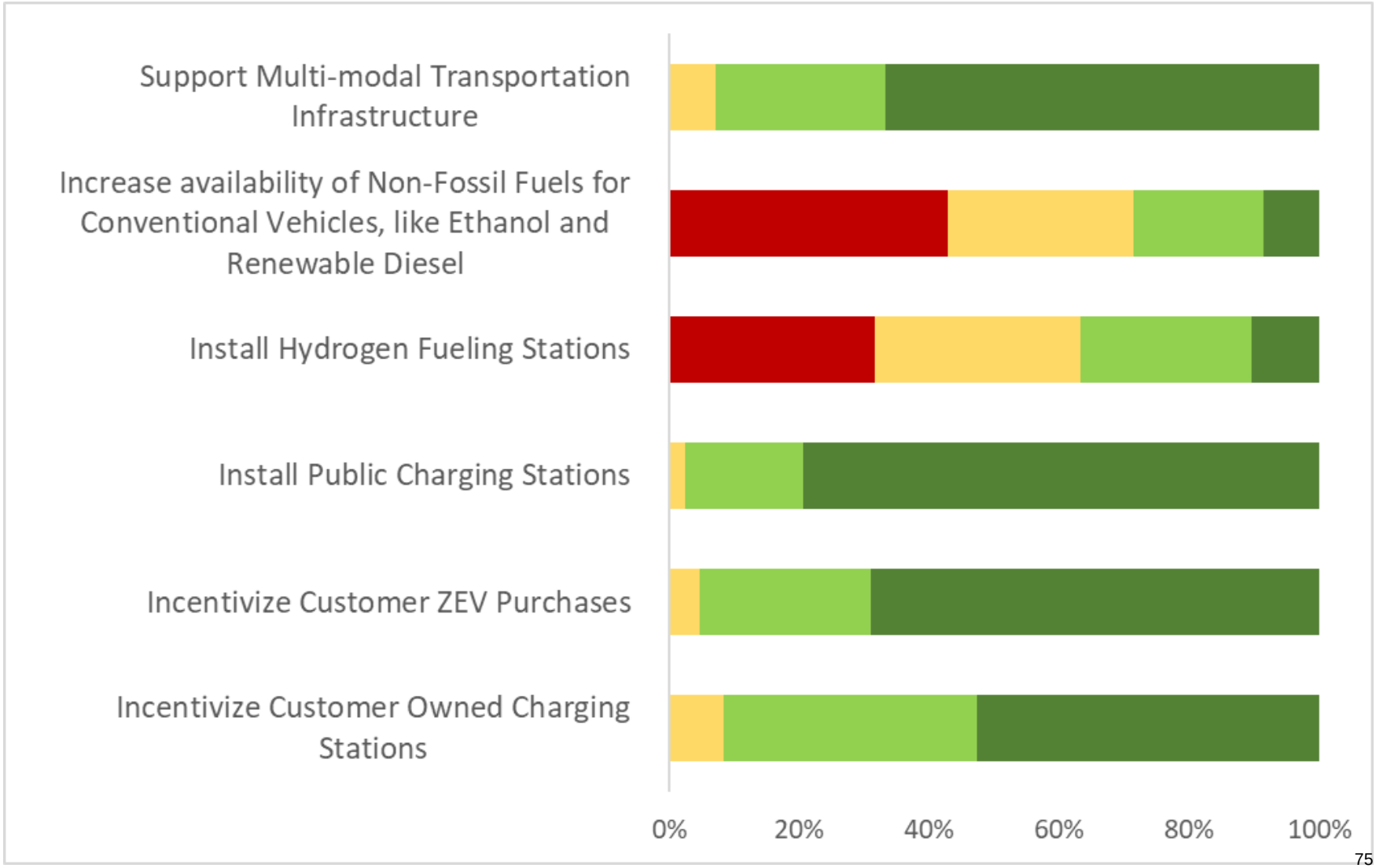
Planning & Regional Coordination



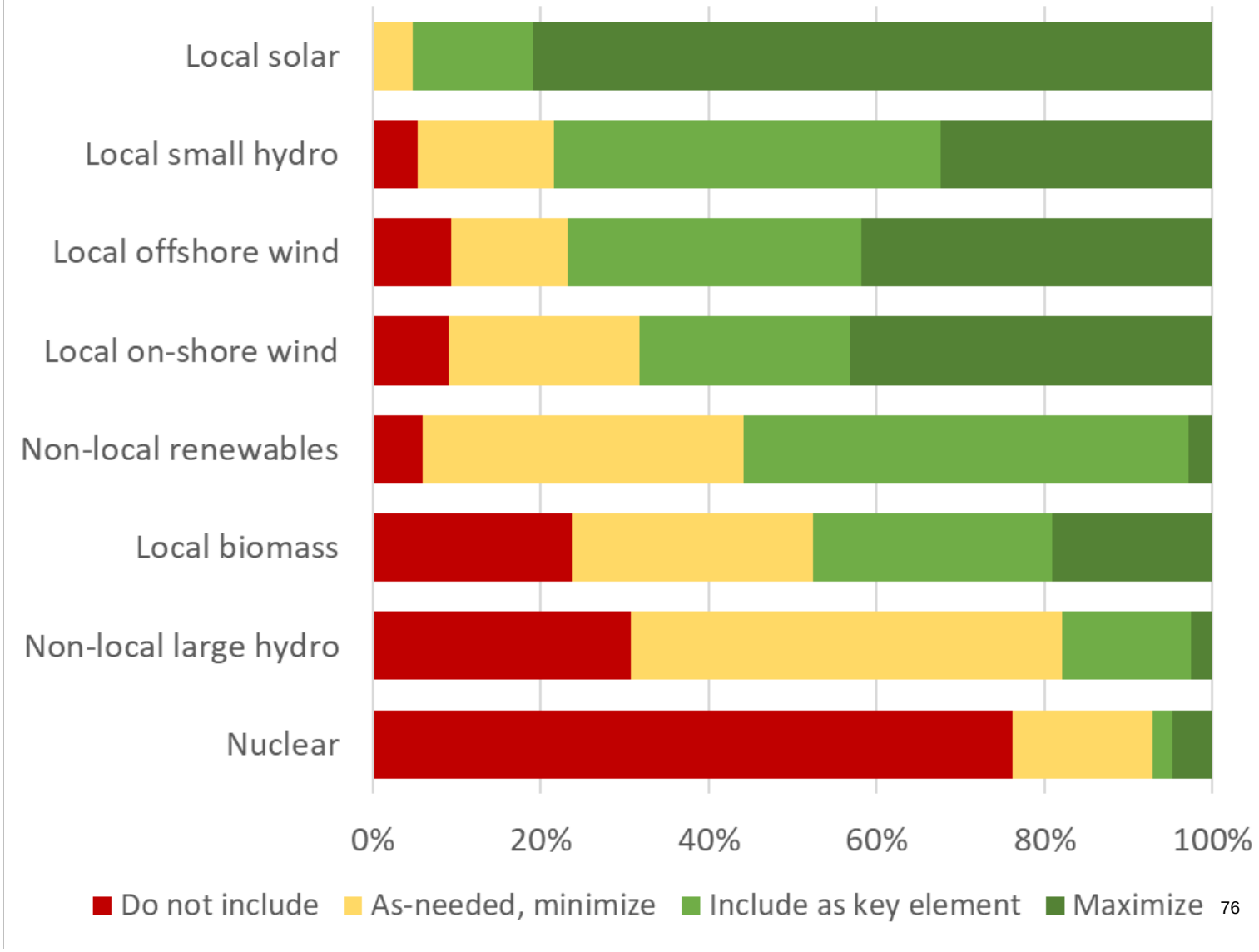
Integrated Demand-side Management



Low-Carbon Transportation



RCEA Power Mix



380 Written Comments

Category	Comments
Energy efficiency	3
General	6
Generation	390
Planning	5
Process	7
Transportation	5

Note: Totals to more than 380 because some comments addressed multiple topics

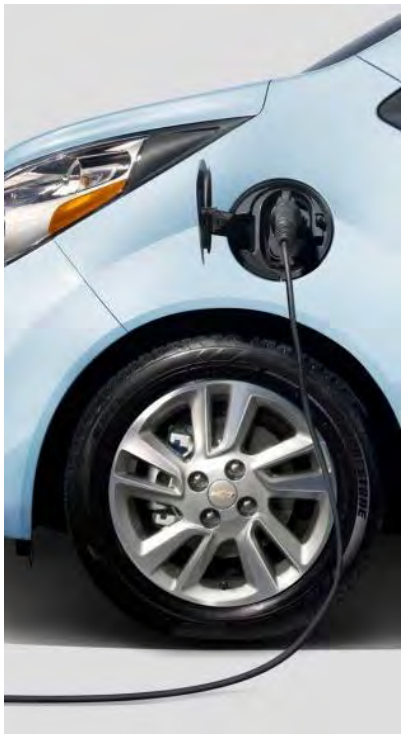
Written Comments

Generation category	Total	Support	Against	Mixed
Bioenergy	349	320	22	7
Onshore wind	14	4	8	2
Offshore wind	1	1	0	0
Solar	12	12	0	0
General power resources	8			
Distributed generation	2			
Rates and tariffs	3			
Infrastructure	1			

Draft 2.0: Proposed Targets

Regional Planning & Coordination

Integrated Demand Side Management



Low-carbon Transportation

Energy Generation & Utility Services

Regional Planning & Coordination

RCEA will take a leadership role to develop and advance strategic regional energy goals through economic development, funding, planning efforts, and education.

Regional Planning & Coordination

Goal 1: Achieve net-zero greenhouse gas emissions county-wide by 2030.

Regional Planning & Coordination

Goal 2: By 2030 Humboldt County can affordably and reliably meet its local energy needs with local resources and has the robust local capabilities and infrastructure necessary to effectively respond to any energy emergencies or disruptions in energy supply.

Regional Planning & Coordination

Goal 3: Build the clean energy sector into a cornerstone of the local economy through a breadth of strategies that include innovation, research and development, local energy-related business development, and Humboldt Bay as the primary west coast hub for the offshore wind energy industry.

Integrated Demand Side Management

RCEA will use an Integrated Demand Side Management approach to develop distributed energy resources and reduce energy consumption and to align customer energy use with variable clean and renewable energy supplies.

RCEA will prioritize efforts that enhance local energy resiliency and independence.

Integrated Demand Side Management

Goal 1: Support the wide-spread installation of customer solar energy systems, with a target to increase installation to a rate of one system every day for the next decade to reach 30MW of customer solar installed by 2025 and 50MW installed by 2030.

Integrated Demand Side Management

Goal 2: Provide energy efficiency and conservation services to every household and business in the county by 2030.

Integrated Demand Side Management

Goal 3: Implement expanded efficiency and electrification programs to reduce greenhouse gas emission from natural gas use by 20% by 2030 and establish and maintain a trajectory to reduce emission from natural gas by 90% by 2050.

Integrated Demand Side Management

Goal 4: Deploy a network of community microgrids and renewable energy back-up power systems across the county to reduce greenhouse gas emissions and to provide energy resiliency and long-duration emergency energy supply at all critical facilities by 2030.

Low-Carbon Transportation

RCEA will decarbonize regional transportation through efforts to reduce vehicle miles travelled, increase advanced fuel vehicles adoption and fuel efficiency, and expand advanced fuel infrastructure.

Low-Carbon Transportation

Goal 1: Accelerate the adoption of electric vehicles, with a target of over 6,000 electric vehicles on the road in Humboldt County by 2025 and 22,000 vehicles by 2030.

Develop public, workplace, and residential electric vehicle charging infrastructure necessary to support these county electric vehicle targets.

Low-Carbon Transportation

Goal 2: Work with other local public entities to reduce vehicle miles traveled in Humboldt County by at least 25% by 2030.

Low-Carbon Transportation

Goal 3: By 2030 reduce greenhouse gas emissions from transportation by over 65% through:

- reductions in vehicle miles traveled,
- improved vehicle efficiency,
- the adoption of electric vehicles,
- and, where determined to be an effective emissions-reduction strategy, the use of biofuels as a bridge to a full transition to zero-emissions vehicles.

Establish and maintain a trajectory of emissions reduction to eliminate the use of fossil fuels by 2050.

Energy Generation & Utilities Services

RCEA will address Humboldt County's supply-side energy needs through its existing Community Choice Energy program and the development of new programs and initiatives.

Energy Generation & Utilities Services

Goal 1: By 2025 100% of RCEA's power mix will be from a combination of state-designated renewable energy sources—solar, wind, biomass, small-hydroelectric, and geothermal—and state-designated net zero carbon emission existing large hydroelectric facilities.

Energy Generation & Utilities Services

Goal 2: By 2030 Humboldt County will be a net exporter of renewable energy and RCEA's power mix will consist of 100% local, net-zero-carbon-emission renewable sources.

Energy Generation & Utilities Services

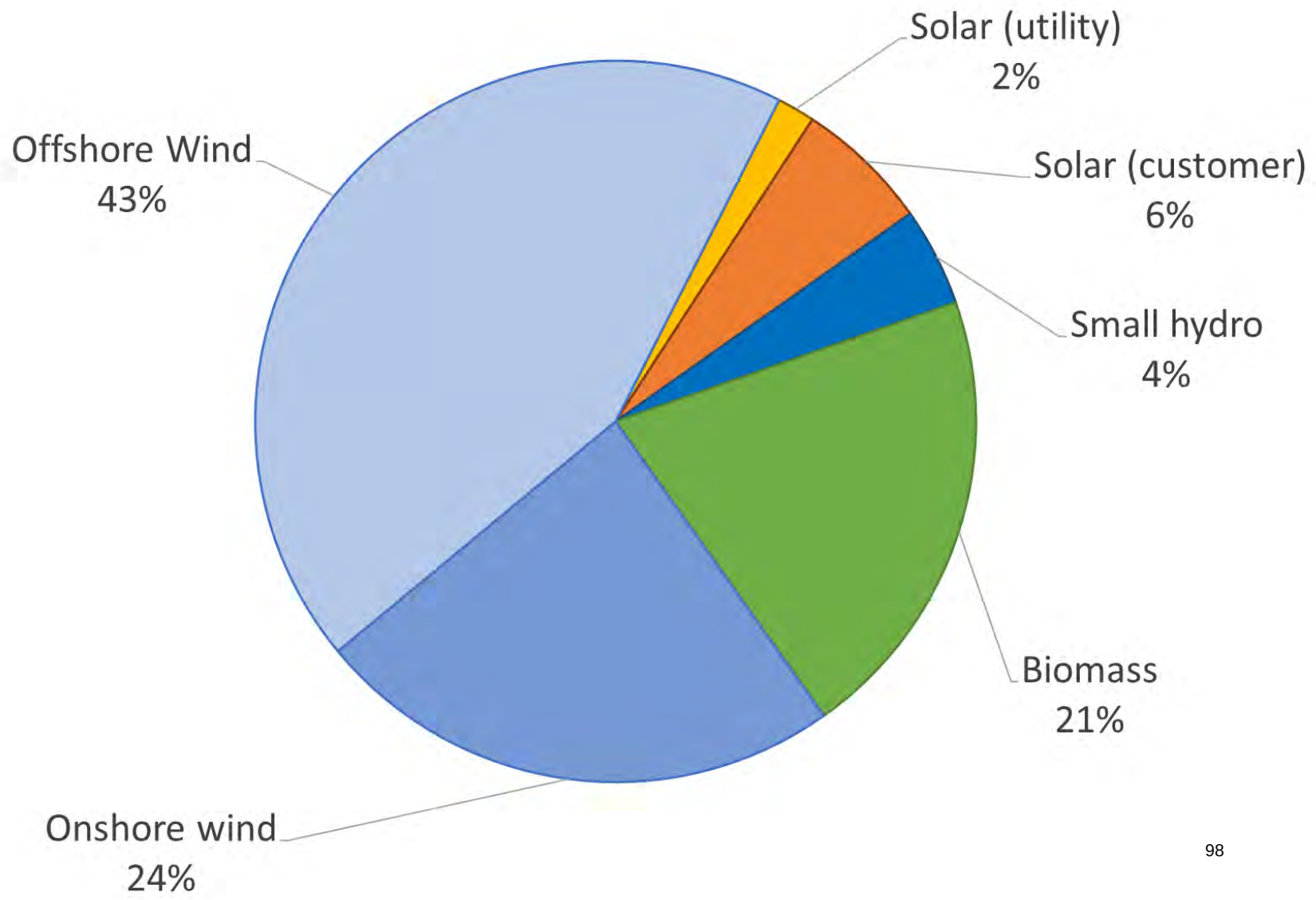
Goal 3: Humboldt County can effectively respond to regional and local disruptions to energy supply and distribution systems through modernization of the local electric grid, the deployment of local distributed energy resources, and the development of community microgrids.

2030 Local Power Generation Targets

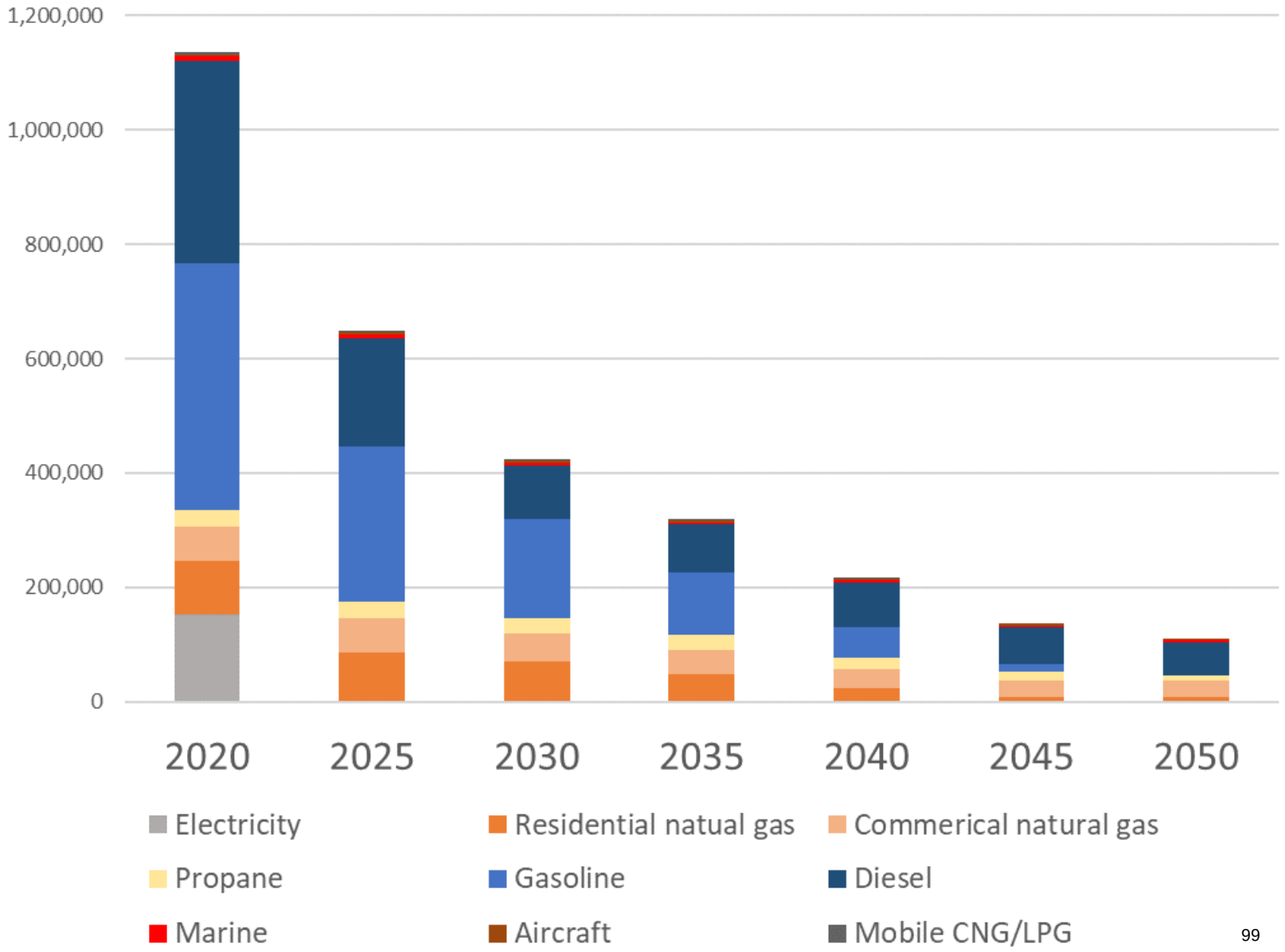
Target installed capacities:

Solar (utility):	8 MW
Solar (customers'):	50 MW
Offshore wind:	150 MW
Onshore wind:	125 MW
Biomass:	50 MW
Small hydro:	21 MW

2030 Local Power Generation Targets



Energy End-use Emissions Reduction Targets



Next Steps

USEFUL ACRONYMS/TERMS TO KNOW

BOD	Board of Directors
BOEM	Bureau of Ocean Energy Management, an agency within the U.S. Department of the Interior
CAC	RCEA's Community Advisory Committee – a 15-member citizen volunteer committee who support RCEA public engagement efforts and provide decision-making support and input to the RCEA Board.
CAEECC	California Energy Efficiency Coordinating Committee
CAISO	California Independent Systems Operator, a non-profit entity overseeing operation of California's bulk electric power system, transmission lines and electricity market generated and transmitted by its member utilities
CalCCA	The California Community Choice Association, an organization advocating for the development and sustainability of locally-run Community Choice Aggregation electricity providers.
CAP	Climate action plan, a detailed and strategic framework for measuring, planning, and reducing greenhouse gas emissions and related climatic impacts.
CAPE	RCEA Board-adopted Comprehensive Action Plan for Energy, supports achieving energy-related goals in Humboldt County. This is a guiding document for RCEA.
CARE	PG&E's California Alternate Rates for Energy program, provides gas and electricity discounts for income-qualified customers
CCA	Community Choice Aggregation, a legal term used by the State of California
CCE	Community Choice Energy
CEC	California Energy Commission, the state's primary energy policy and planning agency
CEQA	California Environmental Quality Act, a statute requiring state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CPUC	The California Public Utilities Commission regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises.
DSM	Demand-Side Management, also known as demand-side response or energy demand management, is the modification of consumer demand for energy through various methods such as financial incentives and behavioral change through education.

ERRA	Energy Resource Recovery Account
FERA	PG&E's Family Electric Rate Assistance Program, provides electricity discounts for income-qualified customers
FY	Fiscal Year – RCEA operates on a July 1 – June 30 fiscal year
GHG	Greenhouse gas
IOU	Investor Owned Utility (e.g. PG&E)
JPA	Joint Powers Authority, an entity allowing two or more public agencies to jointly exercise common powers. RCEA is a joint powers authority.
MW	Megawatt (Power = how fast energy is being used at one moment)
MWh	Megawatt-hour (Energy = how much energy is used over time)
NEM	Net Energy Metering, self-generation power credited to customer's bill
PACE	Property Assessed Clean Energy financing, a means of financing energy efficiency upgrades, disaster resiliency improvements, water conservation measures, or renewable energy installations of residential, commercial, and industrial property owners.
PCIA	Power Charge Indifference Adjustment *(This fee is intended to ensure that customers who switch to RCEA pay for certain costs related to energy commitments made by PG&E prior to their switch.)*
PV	Photovoltaics for making electric energy from sunlight
Prop 39	California Proposition 39, the California Clean Energy Jobs Act allocating revenue to local educational agencies to support energy efficiency and alternative energy projects.
RCAA	Redwood Community Action Agency, locally-based, private nonprofit providing weatherization and energy-efficiency services to low- and moderate-income Humboldt County residents
RCEA	Redwood Coast Energy Authority
REC	Renewable energy certificates, also known as "green tags" or "green credits," represent the environmental attributes associated with a megawatt-hour of clean, green energy.
REN	Regional Energy Network, a new model, under the CPUC, for local governments to administer energy efficiency programs outside the traditional investor-owned utility-administered paradigm.

REpower	RCEA's community choice energy default electricity service costing slightly less than PG&E's electricity and offering a slightly higher percentage of renewable energy
REpower+	RCEA's community choice energy premium service offering 100% renewable energy
RFP	Request for Proposal
TOU	Time of Use, used to refer to rates that differ by time of day
WECC	Western Electricity Coordinating Council
WREGIS	Western Renewable Energy Generation Information System – a system that tracks renewable energy generation from registered units

See also the California Energy Commission's extensive glossary of energy terms at http://www.energy.ca.gov/glossary/.

Materials Received After Agenda Publication

Biomass Power

Summary of Workshops and Research

Michael J Furniss
Climate and Forests Consultant to RCEA

Terminology

Biomass

Renewable

“Clean”

Minus (Disadvantages, issues, concerns)

Emissions of air pollutants such as PM 2.5 (fine particulate matter) that impact public health

Emissions of GHG (CO_2 mainly)

Cost is relatively high compared with other renewables:

- More expensive than natural gas
- Relatively low energy density

Concerns about feed material and sustainable forestry

Public opposition

Emissions of pollutants such as PM 2.5 *(fine particulate matter)* that impact public health

Emissions by type of Combustion in pounds emitted per ton of Woody Biomass consumed

	PM- 2.5 (lb/ton)	No_x (lb/ton)	CO (lb/ton)	VOC (lb/ton)	CO_2 (lb/ton)
Industrial (dry fuel) [1]	0.7 – 6.5	8.8	10.8	0.31	3120
Residential Stove [2]	6 - 23	2 - 14	46 - 160	10 - 44	~ 2800
Prescribed Burn [3]	12 - 34	6	167	19.0	~ 2700
Wildfire [3]	~ 30	4	140	12 - 24	~ 2600

Sources:
1. US EPA. AP42, Fifth Edition, Volume 1, Chapter 1
2. McDonald et. al. 2000. Environmental Science and Technology (34:2080-2091)
3. USDA Forest Service, various reports

Air quality impacts for boiler-spinners

Air Emissions	Coal Fueled Boiler (lb/Million Btu)	Biomass Fueled Boiler (lb/Million Btu)	Natural Gas Boiler (lb/Million Btu)
CO	0.02 – 0.67	0.60	0.058
CO_2 fossil	178 - 231	0	117.6
CO_2 non fossil	0	195.0	0
NO_x	0.27 – 1.15	0.22 – 0.49	0.031 – 0.27
SO_x	1.3	0.025	0.0005
VOC	0.002 – 0.048	0.017	0.005
Methane	0.002	0.021	0.002
Particulates	0.37 – 2.4	0.05 – 0.56	0.007

Source: US EPA. AP42, Fifth Edition, Volume 1, Chapter 1

Emissions of Greenhouse Gasses*(CO2 mainly)*

Natural gas: 118 lb CO2/mmbtu

Bituminous coal: 205 lb CO2/mmbtu

Wood: 213 lb CO2/mmbtu (bone dry)

Cost is relatively high

Cost is relatively high compared with other renewables:

- Wood has relatively low energy density
- More expensive than other renewables and natural gas
- Price to produce not likely to decrease

Concerns about feed material and forest sustainability

- Biggest issue in biomass power elsewhere
- Not here currently, feed is mill waste only
  - *But plants accept arborist waste and SOD sanitation logs (tanoak)*
- Potential to use direct forest products
  - Pre-commercial thinning for fire resilience
  - But economics of transport keeps it in the woods (lots of R&D for onsite processing.)
  - Sawlogs always far more valuable for lumber manufacture
  - Biomass incentivizes excessive forest harvest. (no is doesn't)

Feed material for 2 contracted plants

Mill waste

- History
- Character
- Volume

Volume Slide

Public opposition

CAC and BoD know this well

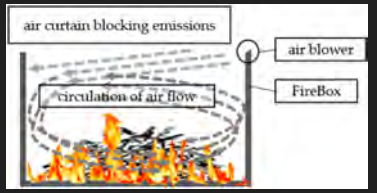
Full support of community is not likely or possible

350 Humboldt and EPIC are “neutral”

Seen as a solution and sense of pride in many other places (LASUCO in VN)

Plus (advantages, opportunities, benefits)

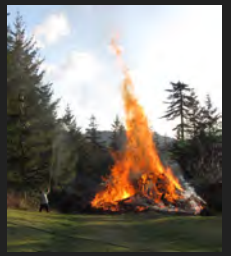
Local renewable power



Non-fossil energy

Reduces emissions from wildfires, burn piles, “air curtain burning”

Abundant local feed material



Delivers distributed, baseload generation. Dispatchable power

Promotes healthy forests and defensible communities

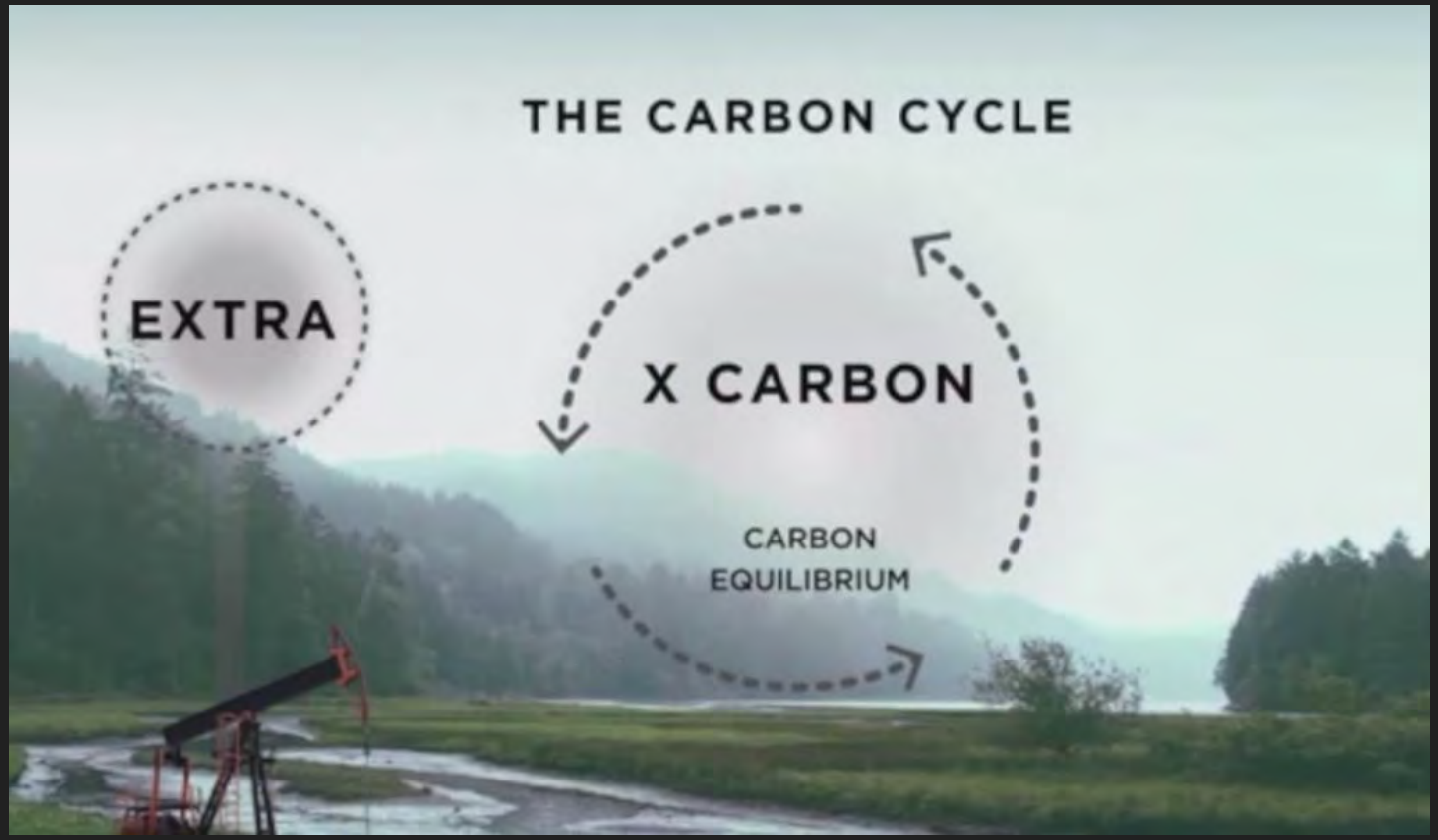
Considered a climate change solution by most

Local renewable power

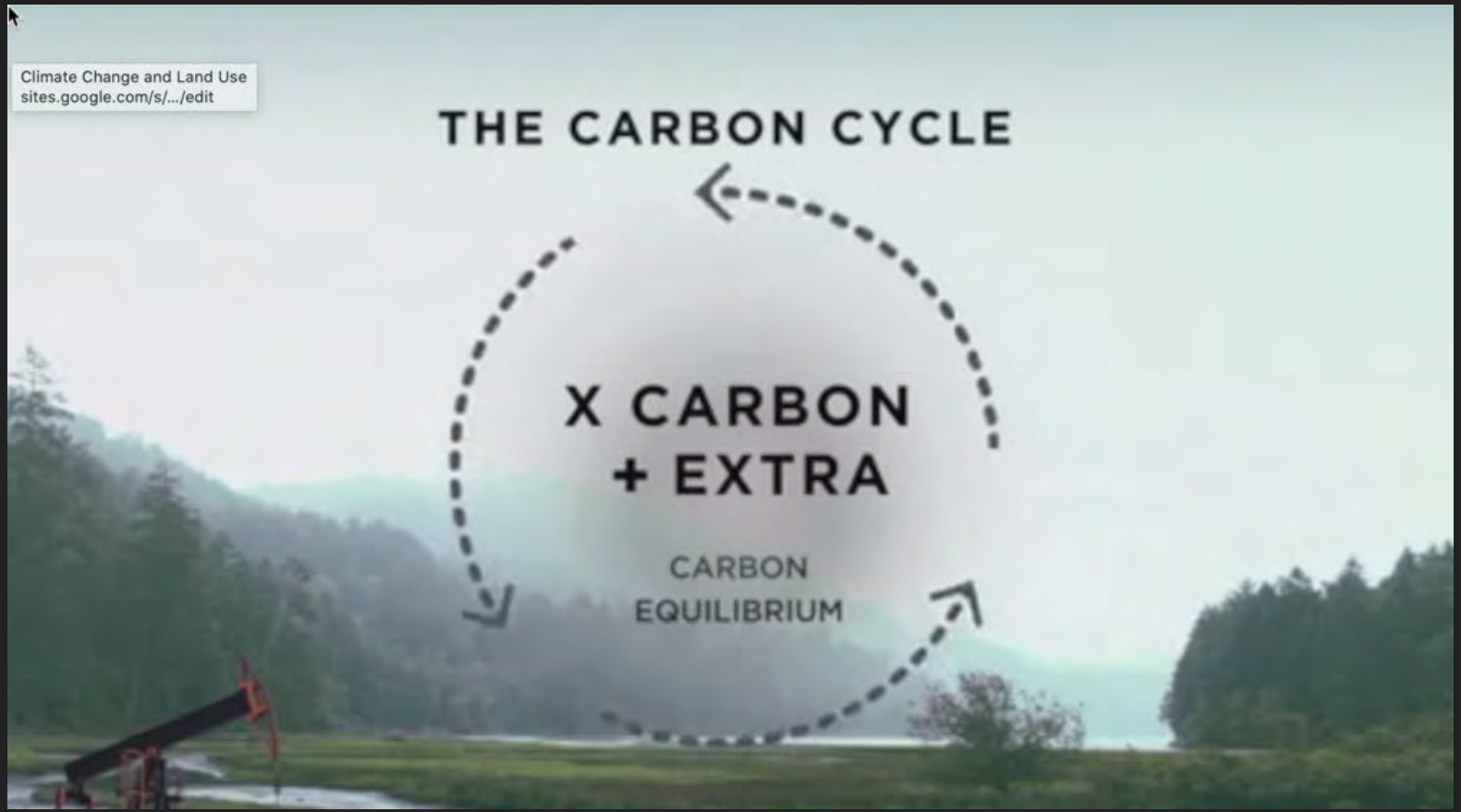
At present, biomass is the only local renewable power at the utility scale.

Others in the wings, but years away.

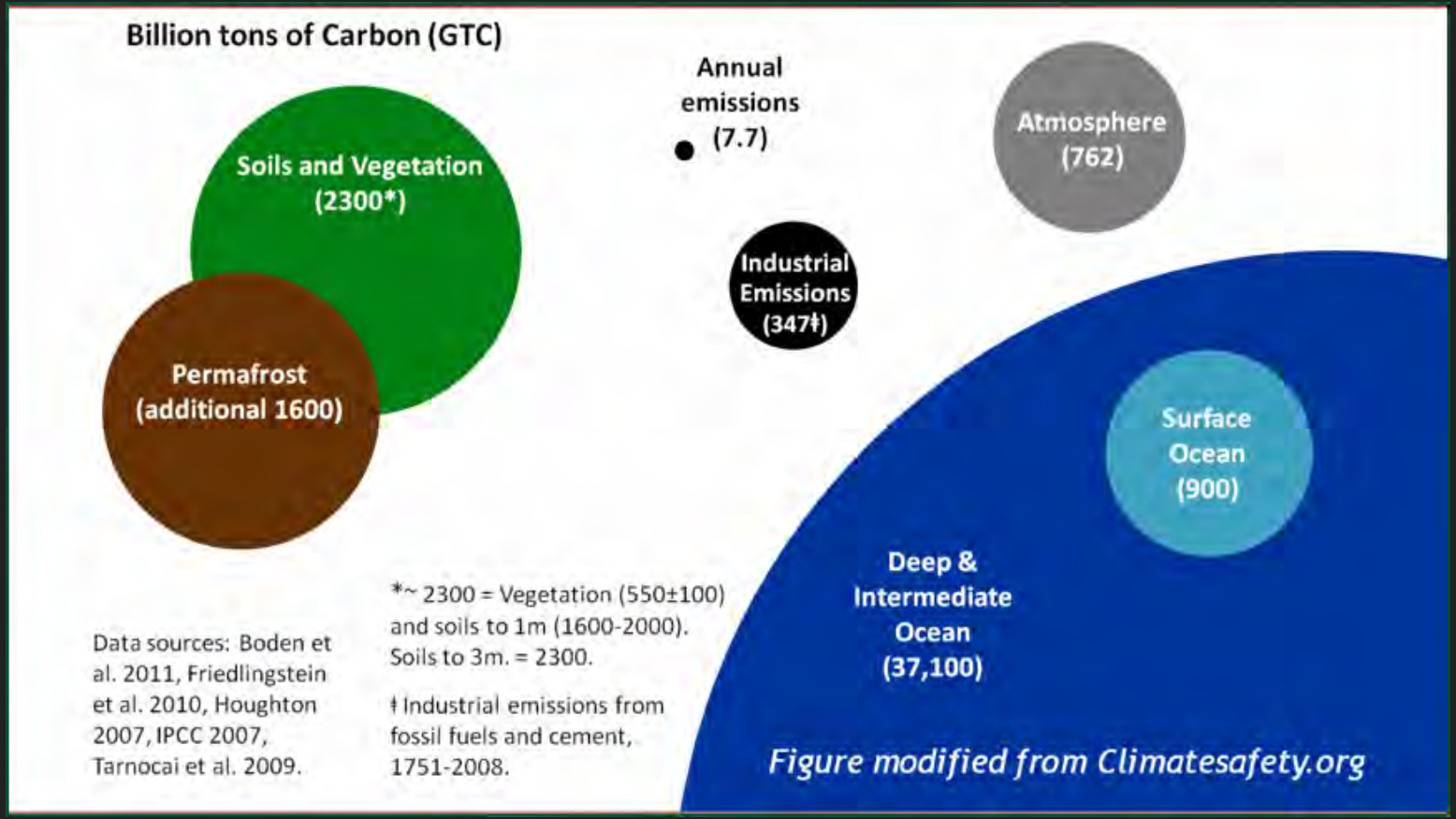
Non-fossil energy



Non-fossil energy



Non-fossil energy *Carbon stocks and emissions*



Non-fossil energy

Inside the global C cycle

But complicated! Scientists are divided. Time frame is crucial.

Must have a LCA

And any LCA involvers assumptions

SERC has this underway. May not handle mill waste LCA

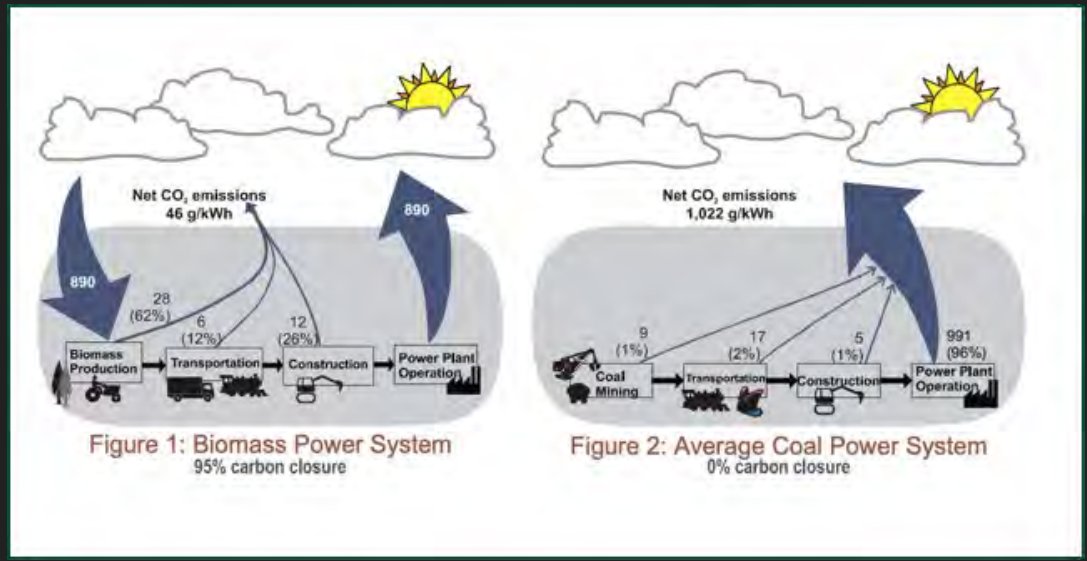
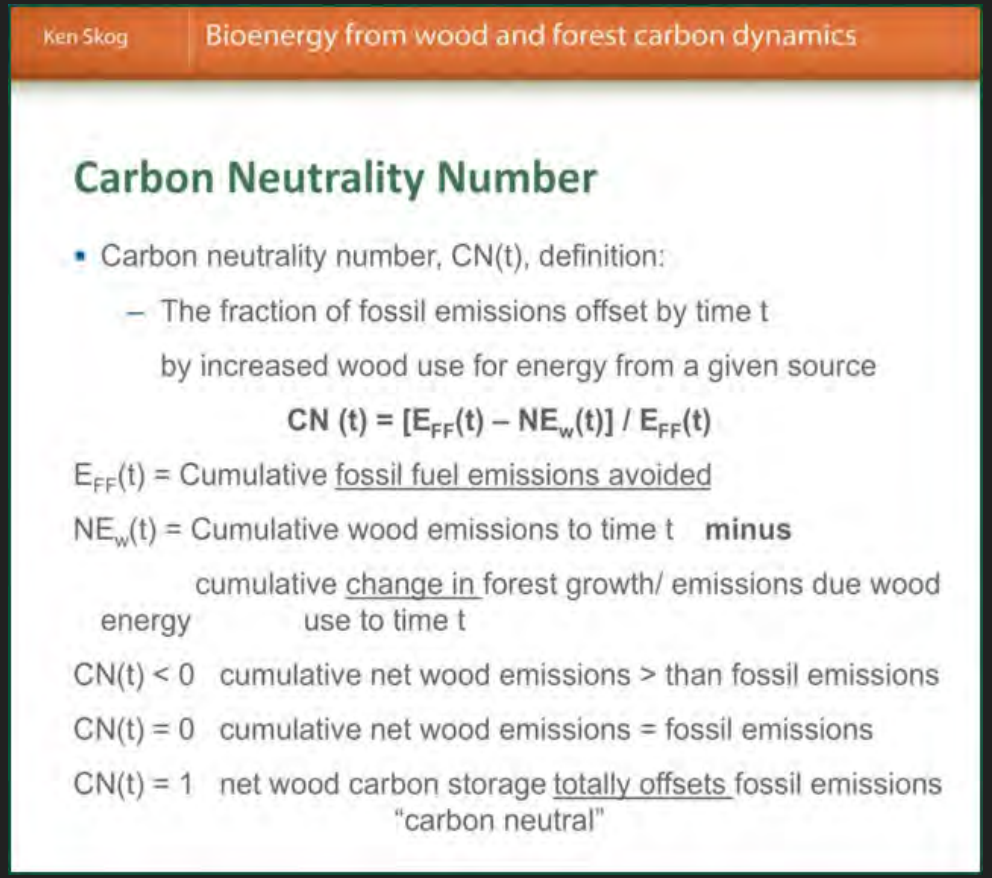


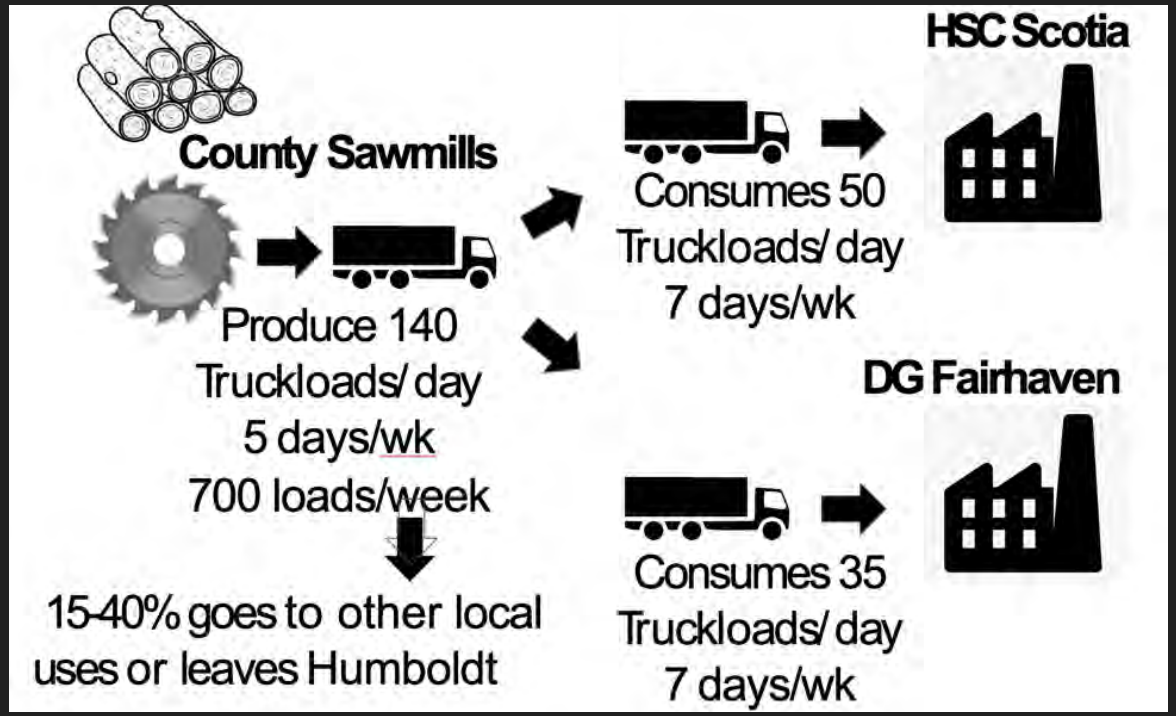
Figure 1: Biomass Power System
95% carbon closure

Figure 2: Average Coal Power System
0% carbon closure

Non-fossil energy - *"Carbon Neutral"*



Abundant local feed material



Promote healthy forests, defensible

Potential

Need local mills to accomplish

Mills need reasonably economic waste disposal

Less air pollution than open burning

Both prescribed burning and wildfires produce greater volumes of air pollution than controlled biomass combustion in an energy facility

Baseload, dispatchable power

Delivers distributed, baseload generation, Dispatchable power

Necessary

Alternatives for mill waste

Manufactured products

Direct products (chips for paper, pellets, mulch, etc.)

Compost

Biochar

Torrefaction

Gassification

Biochar

Charcoal

Highly effective long-term sequestration

Some C is emitted
Expensive
Consumes energy to make
No local market

Biochar

Charcoal

Highly effective long-term sequestration

Most C is emitted
Expensive
Consumes energy to make
No local market yet

Torrefaction, Gassification, and so on

Promising technologies.

In development

But so far expensive and not economical at scale

Products intended to be burned for energy, not sequestered

Composting?

Sawdust commonly added to biosolids to make compost. Small volume.
Compost manufacture and biosolids disposal is the objective, not millwaste disposal

Challenges

- Large volume of material
- Need to add N-rich material to support decomposition
- Most C returns to the atmosphere in years or decades
- Concerns about invasive plants and pathogens
- Piles sometimes catch fire
- Composting releases methane
- Little or no local market

PLUS: Improves soils and furthers soil C sequestration
Some C will form long-term humus, especially when lignin-rich wood is source

Context for the future

Capital investment in lower emissions vs contract duration

Other local renewable sources

Fate of PG&E natural gas plant

Forestry

- Mills
- Forest health

Recommendations for the future

Provide enough purchasing assurance to enable investment in pollution control.
Encourage pollution control improvements

Monitor changes in context and adapt power mix

- Technology
- Competing power sources
- Policy
- Markets