Mike Strong

From: noreply@escondido.org
Sent: Tuesday, August 11, 2020 9:51 AM
To: Kirsten Peraino; Mike Strong; Adam Finestone
Subject: Form Submission Received - (Community Development Department and related decision-making body Comment Form)

From Url: https://www.escondido.org/public-comment-form.aspx
From IP Address: 71.193.150.32

Email earthlover@sbcglobal.net
Meeting type Planning Commission
Meeting Date 8/11/2020
Planning Case # Climate Plan agenda item
Subject ECAP discussion
Position No Position
First and Last Name Laura Hunter
Escondido Resident False
Street Address 744 Quiet Hills Farm Road
City Escondido
State CA
Zip 92029
Comments Dear Commissioners, I am an active member of the Environmental Community Advisory Group and have worked on the ECAP for over a year. We are happy to see the plan moving into its final stage and we look forward to the next draft. As a recommendation for areas of future presentations and discussion, I would recommend that you receive a presentation on the recommendation for the Phased single-use plastics ban, inclusion of social equity in the CAP, and building energy efficiency. Thank you for your consideration of the Community Advisory Groups recommendations. Laura Hunter

A form has been submitted, click the link below to view the submission:
https://www.escondido.org/FormWizard/ViewSubmission.aspx?mid=5324&pageid=3185&rid=fe219065-5641-45a8-88d3-f396e7840263

Mike Strong

From: noreply@escondido.org
Sent: Tuesday, August 11, 2020 10:01 AM
To: Kirsten Peraino; Mike Strong; Adam Finestone
Subject: Form Submission Received - (Community Development Department and related decision-making body Comment Form)

From Url: https://www.escondido.org/public-comment-form.aspx
From IP Address: 68.7.59.7

Email matthew@climateactioncampaign.org
Meeting type Planning Commission
Meeting Date 8/11/2020
Planning Case # 1
Subject Climate Action Plan Update
Position In Favor
First and Last Name Matthew Vasilakis
Escondido Resident False
Street Address 3900 Cleveland Ave, Suite 209
City San Diego
State CA
Zip 92103
Comments Dear Commissioners, My name is Matthew Vasilakis, Co-Director of Policy at Climate Action Campaign and an active member of the Environmental Community Advisory Group. I have had the honor of working with the group for nearly a year, and I am excited to see Escondido move forward on adopting a robust, gold-standard Climate Action Plan. There is still more work to be done, and I highly recommend future presentations and discussions on the inclusion of social equity in the CAP, a phased single-use plastics ban, and building energy efficiency. Thank you for your consideration of the Community Advisory Groups recommendations. We look forward to building a Zero Carbon future in Escondido with the commission and community.

A form has been submitted, click the link below to view the submission:
https://www.escondido.org/FormWizard/ViewSubmission.aspx?mid=5324&pageid=3185&rid=2b1395db-54cb-440e-94f2-0eb0ae5204f0

Mike Strong

From: noreply@escondido.org
Sent: Tuesday, August 11, 2020 3:13 PM
To: Kirsten Peraino; Mike Strong; Adam Finestone
Subject: Form Submission Received - (Community Development Department and related decision-making body Comment Form)

From Url: https://www.escondido.org/public-comment-form.aspx
From IP Address: 72.214.63.57

Email nathan@escondidocreek.org
Meeting type Planning Commission
Meeting Date 8/11/2020
Planning Case # PHG 18-0009
Subject RE: Review of Draft ECAP by Planning Commissioners
Position In Favor
First and Last Name Nathan
Escondido Resident True
Street Address 11029 Arco Drive
City Escondido
State CA
Zip 92026
Comments Dear Commissioners, As a member of the Environmental Community Advisory Group, I have been actively involved with discussions around the ECAP. I am impressed with the dedication of City staff on the current document. I support the staff creating a new version of the draft ECAP reflecting the public input, including the Riparian Restoration Initiative and coordinating with regional planning efforts for the Open Space Conservation Plan. I would recommend that you join us for a presentation and discussion on land use, inclusion of social equity, and riparian restoration in the CAP. Thank you for your consideration of the Community Advisory Groups recommendations. Nathan Serrato

A form has been submitted, click the link below to view the submission:
https://www.escondido.org/FormWizard/ViewSubmission.aspx?mid=5324&pageid=3185&rid=d3e24688-0c2d-4798-9319-329ff836f895

Mike Strong

From: noreply@escondido.org
Sent: Tuesday, August 11, 2020 5:36 PM
To: Kirsten Peraino; Mike Strong; Adam Finestone
Subject: Form Submission Received - (Community Development Department and related decision-making body Comment Form)

From Url: https://www.escondido.org/public-comment-form.aspx
From IP Address: 162.201.151.25

Email TIMOTHYS@PHENOMENEX.COM
Meeting type Planning Commission
Meeting Date 8/11/2020
Planning Case # n/a
Subject Urban Forestry / ECAP
Position In Favor
First and Last Name Timothy Swift
Escondido Resident False
Street Address 2147 Willowbrook St
City Escondido
State CA
Zip 92029-5326
Comments Commissioners, I'm an active member of Esconido's ECAG (Environmental Community Advisory Group), and for the better part of a year we've spent countless hours laying out an ambitious & comprehensive climate action plan and where I've personally focused on land use planning and research & development of Urban Forestry & tree canopy initiatives that fit neatly into our overarching initiative to achieve social equity with target tree canopy goals for priority neighborhoods. Additionally, we as a group are very much in support of an ambitious plan to plant 1 new tree for every new resident through 2088, and so I would like to recommend that the planning commission receive a brief educational presentation from the ECAG on Urban Forestry, which will also highlight significant avenues for grant funding. Thank you!

A form has been submitted, click the link below to view the submission:
https://www.escondido.org/FormWizard/ViewSubmission.aspx?mid=5324&pageid=3185&rid=0a6a1499-53b0-45a2-aa7f-76d7ae7f7227

Mike Strong

From: Angeli Calinog <Angeli@biasandiego.org>
Sent: Thursday, August 13, 2020 10:11 AM
To: Mike Strong; Mike McSweeney
Subject: [EXT] RE: Escondido CAP Update

Good morning, Mike,

Thank you so much – we will send this update to our membership through our government affairs update newsletter.

Best,

Angeli Calinog
Policy Advisor
BIA of San Diego
angeli@biasandiego.org
858-514-7013

From: Mike Strong <mstrong@escondido.org>
Sent: Wednesday, August 12, 2020 7:17 PM
To: Angeli Calinog <Angeli@biasandiego.org>
Subject: Escondido CAP Update

Angeli,

As you know, the City of Escondido is updating its Climate Action Plan, which will consist of strategies intended to guide efforts for reducing greenhouse gas emissions. As part of the update process, I presented to your membership. Some time has passed since then, and I want to make sure your group has access to the latest.

The City recently released the draft CAP for public review and comment. I am providing a newsletter that was released shortly thereafter.

Please let me know if you need anything.

Mike Strong
Director of Community Development
Community Development Department | City of Escondido
Direct: 760-839-4556
www.escondido.org

For local information and daily updates on COVID-19, please visit **San Diego County Coronavirus**. To receive updates via text, send **COSD COVID19** to **468-311.**

Mike Strong

From: Alex MacLachlan <amaclachlan1@gmail.com>
Sent: Wednesday, August 12, 2020 7:55 PM
To: Mike Strong
Subject: [EXT] Re: Escondido CAP update

Thanks Mike

On Wed, Aug 12, 2020 at 7:20 PM Mike Strong <mstrong@escondido.org> wrote:

Alex and James,

As you know, the City of Escondido is updating its Climate Action Plan, which will consist of strategies intended to guide efforts for reducing greenhouse gas emissions. As part of the update process, I presented to your membership and/or discussed with you separately. Some time has passed since then, and I want to make sure you and your group has access to the latest.

The City recently released the draft CAP for public review and comment. I am providing a newsletter that was released shortly thereafter.

Please let me know if you need anything.

Mike Strong

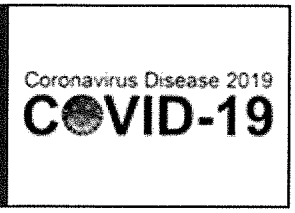
Director of Community Development

Community Development Department | City of Escondido

Direct: 760-839-4556

www.escondido.org

For local information and daily updates on COVID-19, please visit **San Diego County Coronavirus**. To receive updates via text, send **COSD COVID19** to **468-311.**



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Sincerely,

Alex MacLachlan
President | Escondido Downtown Business Association
Event Co-Owner & Organizer | Escondido Tamale Festival
Email: Alex@EscondidoTamaleFestival.org | Web: www.EscondidoTamaleFestival.org

The Escondido Tamale Festival is presented by the Escondido Downtown Business Association, a 501(c)6 Non-Profit, for the marketing, support, and preservation of the 127 year Old Historic Downtown Business District. Escondido Downtown Business Association, 243 S Escondido Blvd #701, Escondido, CA 92025

Mike Strong

From: earthlover@sbcglobal.net
Sent: Thursday, September 03, 2020 11:15 AM
To: Mike Strong; Kate Barba
Cc: EscondidoCECAG@groups.io; Ana Marie Velasco; Charlie Jungk; Christine Nava; Janis; margaret martin; Pe Church; shasta71@gmail.com; tutuli760@yahoo.com; Aisha Wallace-Palomares; Matthew V; nathan@escondidocreek.org; Patricia Borchman; Richard Miller; Swift, Timothy; Val Esqueda
Subject: [EXT] ECAG memo for Planning Commissioners re: Sept 8th presentation
Attachments: Background Info for ECAG Planning Commission Presentation.pdf; ECAP_SubCommittee_Effective Measures_Supplemental.pdf; Solid Waste Mgmt Final (1).pdf; ComAdvJulyRecsECAP.pdf

Dear Mike,
Please share this with the full commission. Thanks
Laura

Dear Planning Commissioners,
Please find our memo and background information related to our presentation at your next meeting.
Thank you,
Laura Hunter

"May your choices reflect your hopes, not your fears."
--Nelson Mandela

Escondido Community Advisory Group
on Environmental Impacts and Climate Action

MEMORANDUM

September 3, 2020

TO: Escondido Planning Commissioners
FR: Escondido Environmental Community Advisory Group (ECAG)
RE: Background to our ECAG presentation for September 8, 2020, 7 PM

Dear Commissioners,

Please find links (below) and email attachments as background for our recorded presentation on September 8th. It is a lot of material to cover, (we have had over 20 meetings ourselves!), but this is our best attempt to bring it all together. The detail of our specific comments is found in the edited version of the draft ECAP which you have already received. We are available to any of you for questions in advance. Please contact Tim Swift at TimothyS@phenomenex.com or Laura Hunter at earthlover@sbcglobal.net

Background Documents and Links

1. **ECAP Supplemental** and supporting research for recommendations. Attached.

2. **Solid Waste Supplemental** and supporting research for recommendations. Attached.

3. Link to full **Solid Waste & ECAG Recommendation** presentation

   https://us02web.zoom.us/rec/share/ys90L7bZ0HtLE53z62CAeYgaIo_Feaa80SVI-KcKyUfatnTrlcXBmVgsKobaoz3D?startTime=1594690561000

   Related Power Point: Attached

4. **Additional information relevant to ECAG recommendations**

   SOCIAL EQUITY: *New York Times, August 29, 2020: How Decades of Racist Housing Policy Left Neighborhoods Sweltering*

   This analysis is very relevant and looking at the maps of Escondido will demonstrate much of the same issue. Older neighborhoods, with lower income residents and more pollution exposures, have the least tree cover and will be impacted more by the heat waves and other impacts that are expected as the climate changes.
   https://www.nytimes.com/interactive/2020/08/24/climate/racism-redlining-cities-global-warming.html

   ELECTRIFYING TRANSPORTATION: *San Diego Union Tribune, August 27, 2020, California adopts major pollution cuts for diesel trucks and ships*

Recent CARB action on diesel truck pollution should inform our ECAP to create the electric infrastructure and requirements on truck routes through Escondido. https://www.latimes.com/california/story/2020-08-27/california-diesel-trucks-ships-pollution-cuts

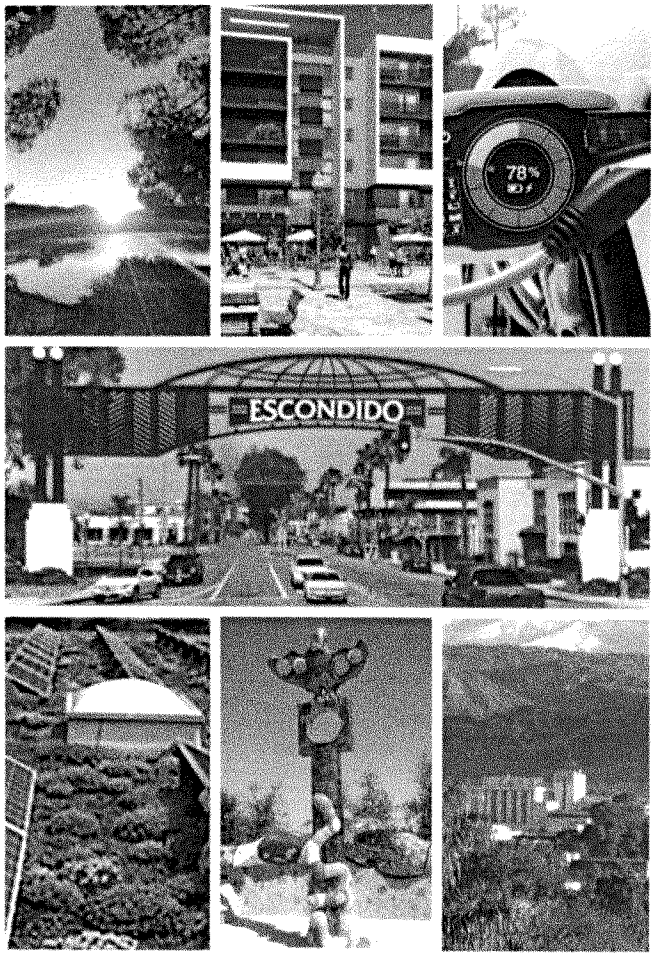
New York Times, August 27, 2020: Soon the kitty litter will come by electric truck. Article about deployment of electric delivery vans. https://www.nytimes.com/2020/08/27/business/electric-delivery-vehicles-ups-fedex-amazon.html

JOB CREATION: A new report out from UCB, https://laborcenter.berkeley.edu/putting-california-on-the-high-road-a-jobs-and-climate-action-plan-for-2030/

The report addresses workforce interventions to ensure that the transition to a carbon-neutral economy:

- Creates high-quality jobs;
- Prepares workers with the skills needed to adapt to and master new, zero- and low-emission technologies;
- Broadens career opportunities for workers from disadvantaged communities; and
- Supports workers whose jobs may be at risk.

This report presents a comprehensive strategy that identifies roles for state and local climate, economic development, and workforce development agencies in achieving these goals, alongside key partners such as business, labor, community, and education and training institutions. All recommendations align with the CWDB's Unified Strategic Workforce Development Plan, which has put forth a set of actions to leverage and coordinate the state's myriad workforce and education programs to support high-quality careers for Californians



ECAP Recommendations

July 13, 2020

Escondido Community Advisory Group for Environmental Impacts and Climate Action

Escondido Community Advisory Group Activities 2020

Meetings

- Community Advisory Group created Subcommittees
  - Reduce Single-use plastics/Zero waste
  - Escondido Climate Plan measures
- Participated in in-person meetings (City and Roundtable Pizza)
- Held 11 Subcommittee meetings by Zoom (March- May)
- Convened full Community Advisory Group meeting April 6 (22 attendees)
- Met with staff and elected officials to receive input

Work Products

- Recording of April 6 full Advisory Group presentation.
- Supplemental Report of rationale and evidence supporting recommendations.
- Full power point presentation
- Summary power points

Escondido Climate Action Plan Update released June 24, 2020

Executive Summary

Chapter 1 Introduction, Background

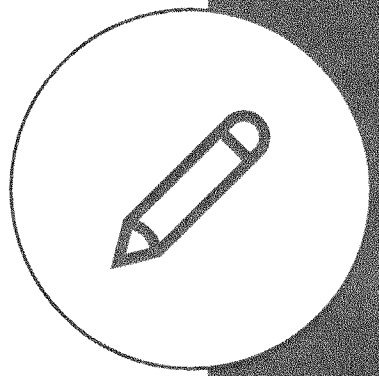
Chapter 2 GHG emissions, inventory, targets

Chapter 3 GHG reduction strategies, measures

Chapter 4 Implementation

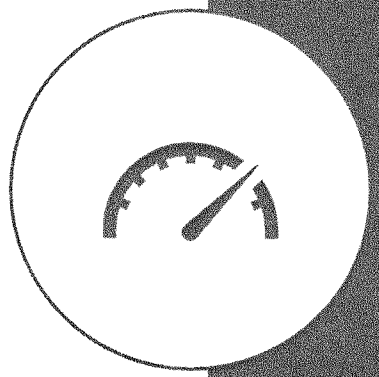
Chapter 5 Adaptation Measures

Appendix F Outlines methods for addressing adaptation, social equity, and environmental justice



Each Strategy includes:

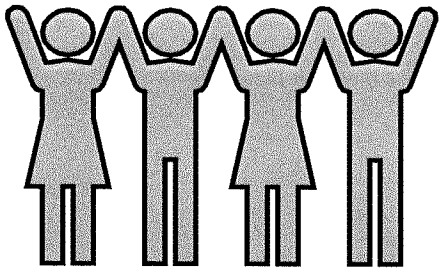
- Measures and descriptions
- Performance metric with ghg reduction potential
- Timeline for achievement
- Supporting Actions

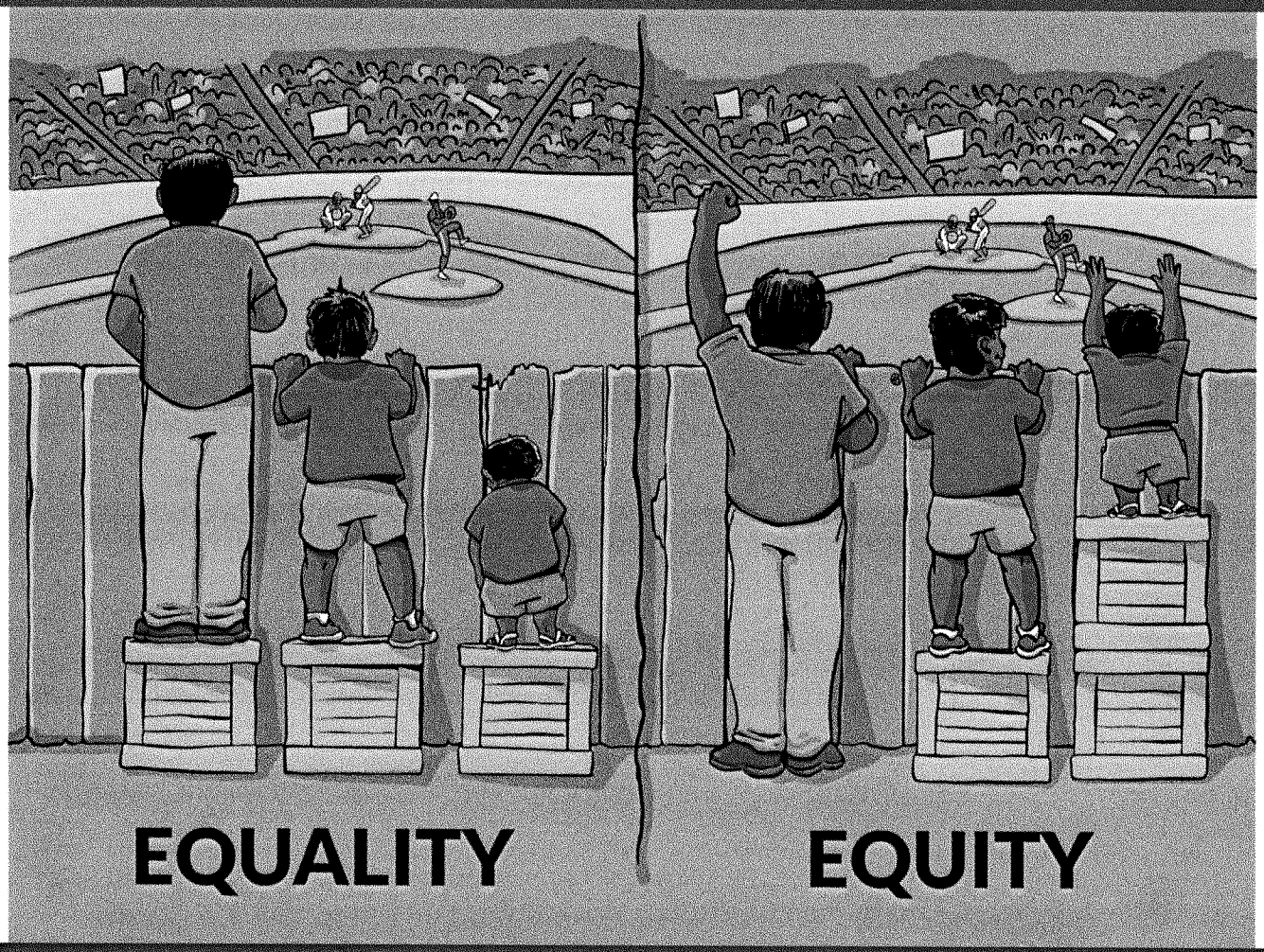


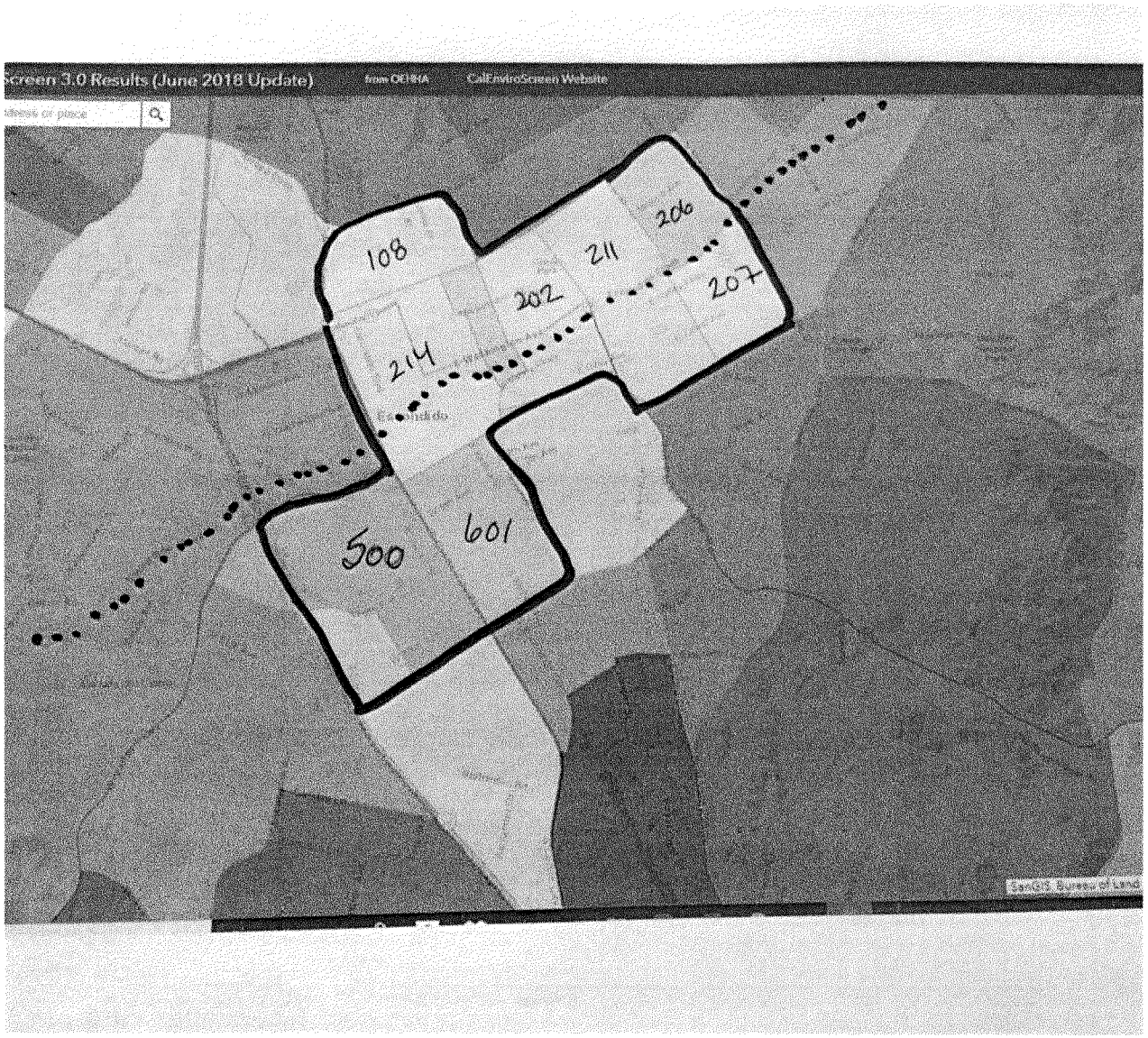
Process

- Now — Finalize Community Advisory Committee input on recs
- July — ECAP Subcommittee meetings with staff
- July 31 — Draft CEQA document comments due
- August 25 — ECAP Planning Commission
- Sept/Oct? — ECAP to City Council

Integrating Social Equity into the Escondido Climate Action Plan




EQUALITY
EQUITY



Proposed Priority Investment Neighborhoods

Chapter 3 GHG Emission reductions

- Social equity measures need to be specifically included in Chapter 3.
- Priority investment Neighborhoods should be designated for priority education, investment, and action.
- A map based on CalEnviroscreen and other relevant criteria to indicate the specific PINS.
- Green jobs are a major economic benefit to the city from CAP implementation and CAP should include goal and plan to increase these.
- These measures need to be enforceable
- Aspirational goal of Carbon Neutral City before 2088 or earlier.

Chapter 3--Strategy 2 and 3

Reduce Fossil Fuel use

Zero Emissions Vehicles:

- The City commit to converting its fleet to ZEVs by 2035.
- Electric Heavy-duty truck charging infrastructure should be included.
- Move up conversion deadlines.

Reduce VMT

Commuter Mode Share:

- ECAP should include more ambitions mode share targets for transit and biking
- Should include overall target for pedestrian mode share.

Strategy 4- Building Energy Efficiency

- **Building Energy Retrofit Program:** The ability to reduce ghg in existing buildings is unaddressed. Building retrofit program including weatherization, energy and water efficiency programs and triggers for upgrades.
- **Not just model homes:** The many measures that apply only to model homes and to installing charging stations as opposed to vehicles should be moved to 'supporting actions' as they are not meaningful reduction measures. We recommend applying the measures to all residential units.
- **Move deadline for new building electrification to 2021.**

Strategy 5: Renewable Energy

- **Commit to CCE and/or 100% clean energy:** We recommend a commitment to a CCE or, at a minimum, an ordinance to 100% clean energy by 2035.

- **Support Energy Equity Program:** We support the Energy Equity Program and recommend addition as a measure.

Strategy 8- Solid Waste

S-8.1 Zero Waste:

The CAP does not commit to 90-100% waste diversion. Recommend:

- 75% diversion for 2022
- 90% diversity in 2027
- 100% diversion by 2035
- Adoption of a phased single-use plastics ordinance.

Tree Canopy Goals
City-wide and for PINs

The CAP needs to improve its tree planting goal and establish a citywide tree canopy goal. We recommend:

- Assure total city-wide urban tree canopy coverage of 25% by 2035.
- For identified heat islands and Priority Investment Neighborhoods, a total canopy coverage goal of 35%

Land Conservation, Carbon Sequestration, Smart Growth

C-9.3 Land Conservation Program

- **Remove 500 units** from habitat from natural open space, habitat, and high fire risk areas.
- **Agriculture**: Set goals to incentivize farming techniques. Pursue eligible Ag management practices and subsequent funding.
- Develop a **Riparian Restoration Initiative** that supports collaboration with California Department of Fish & Wildlife and other conservation groups to prioritizes opportunities for the restoration of Escondido Creek and Reidy Creek—including the channelized portion—for carbon sequestration, heat relief in priority neighborhoods, and wildlife habitat mitigation.
- Include **Adoption of an MHCP** Subarea Plan in the CAP

Stronger Smart Growth Inclusionary Housing

- **Smart Growth Strategies:**
  - The CAP should commit to smart growth strategies to facilitate appropriate densities, housing affordability, and transit-oriented development in the urban footprint.
  - WAP should include measures to avoid development in high-risk fire and VMT-inducing areas (sprawl) and increase urban infill and increase neighborhood amenities for existing developed areas.
- **Inclusionary Housing Ordinance:** CAP should include an inclusionary housing ordinance.

Climate Benefits:

- 20-40% less driving
- Emits 13 MMt carbon/home/yr less than suburban units

Chapter 4- Implementation

- **CEQA Streamlining Checklist** is too lenient and will do little to reduce ghg overall. Only measures that actually result in emission reductions should be included in the list, threshold limits be lowered, and streamlining only apply to urban infill projects.
- **Climate Commission and Full-Time Staff :** Recommend a public stakeholder Escondido Climate Commission and a dedicated, full-time coordinator on staff.
- **Climate Investment Fund:** Recommend the city create and fund a CIF as a mechanism to contain and expend funding for programs that reduce GHG and improve adaptation.
- **Annual Monitoring:** GHG updates should occur every two years. We support the annual report.
- **Require mitigation action locally:** We oppose the regional offsets for ghg reductions. Creation and funding of the Climate Investment Fund should be invested in the city for LOCAL projects.

Support Actions proposed in Draft

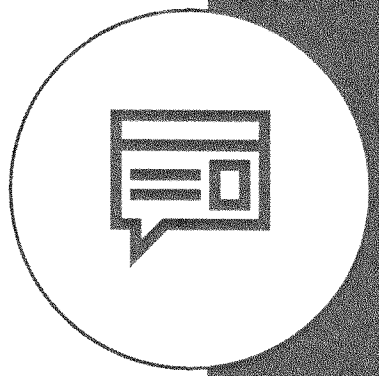
- Development of Energy Equity Program
- Neighborhood Climate Ambassadors program
- Support of Community Gardening initiatives, fruit tree planting.
- Analysis of Point-of-sale and new resident energy efficiency audits.
- New plant palettes (should prefer natives, ban for invasive)
- Micro-grid feasibility study
- Pursuit of stable and accelerated funding sources to sustain native and green infrastructure in public rights-of-way.
- Partnerships with NTCD and schools

Q & A and Next Steps

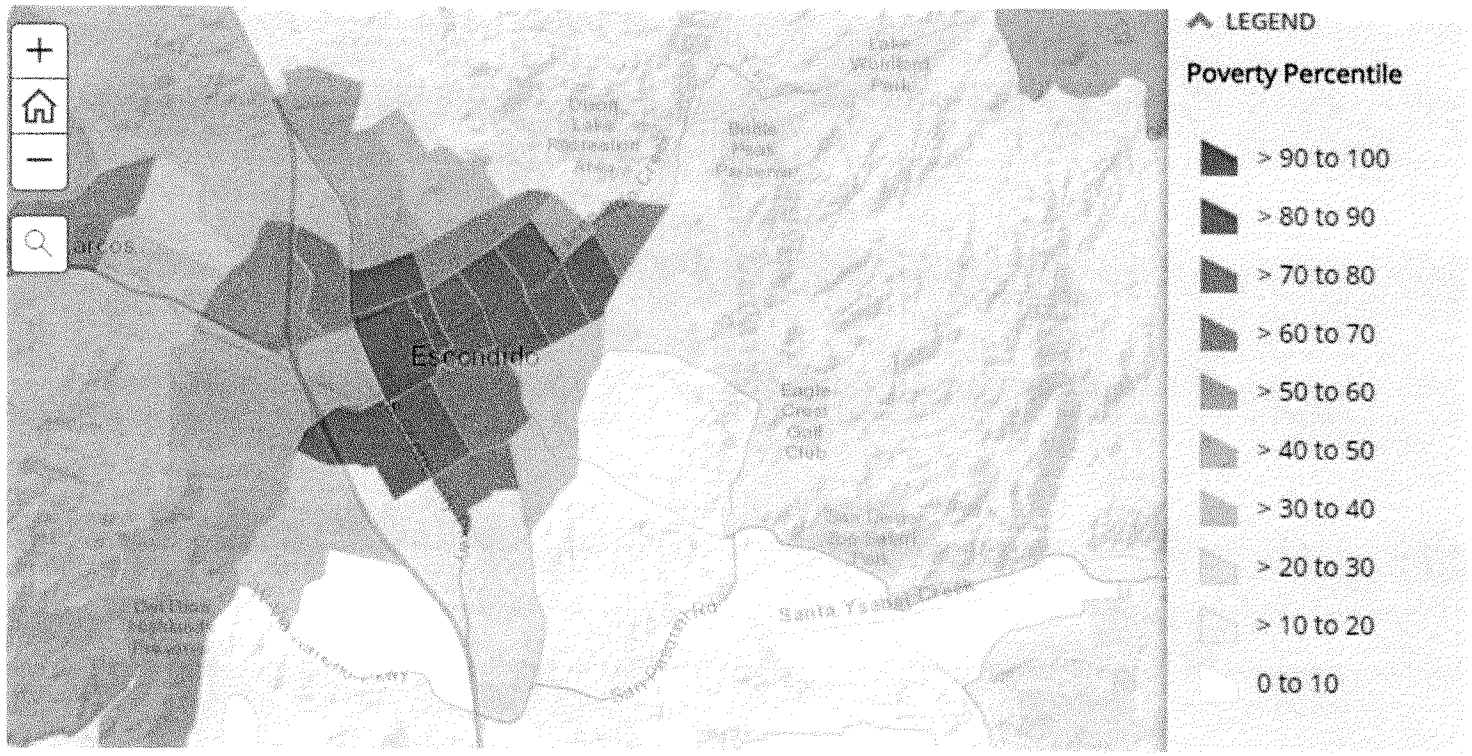
Input for Committee

Email your comments to Mayor and City Council

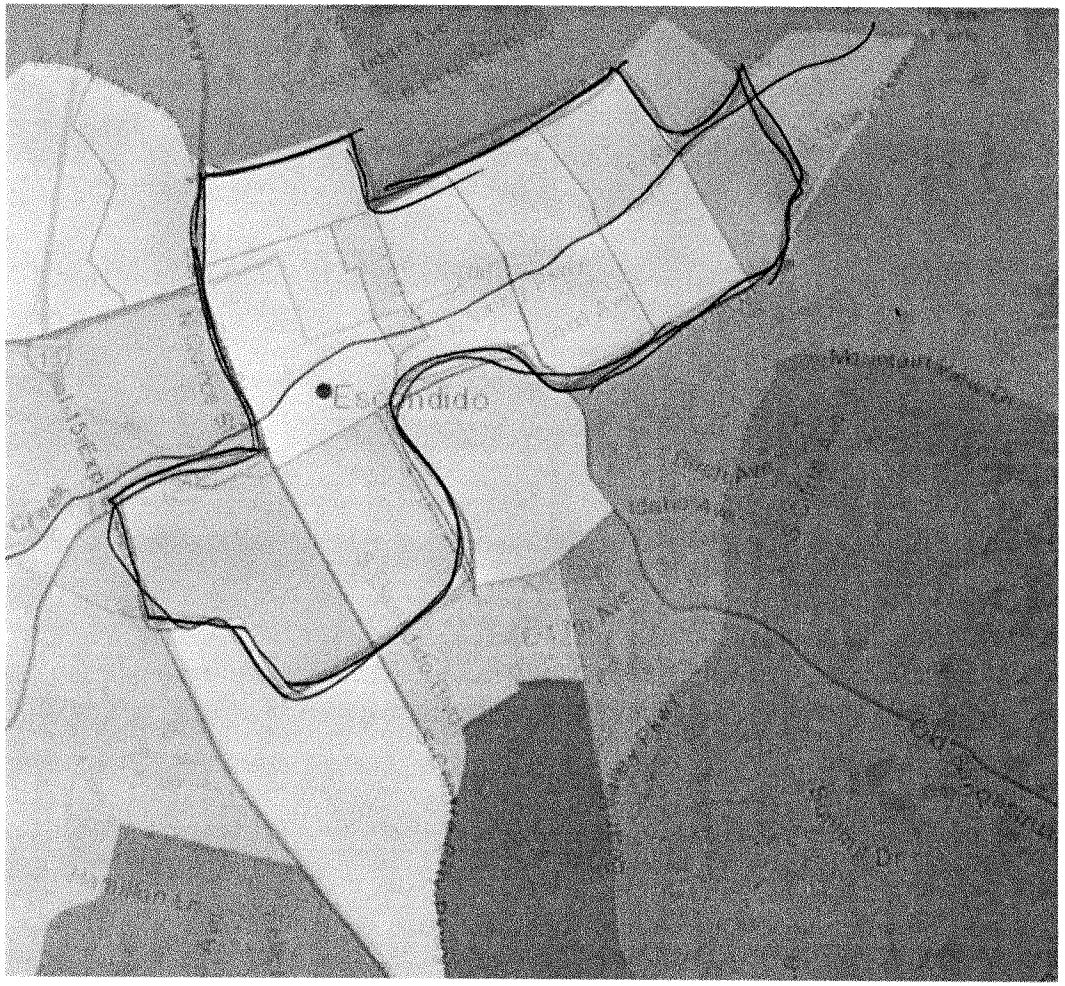
https://www.escondido.org/city-council-contact-us.aspx



Cal Environ Poverty only



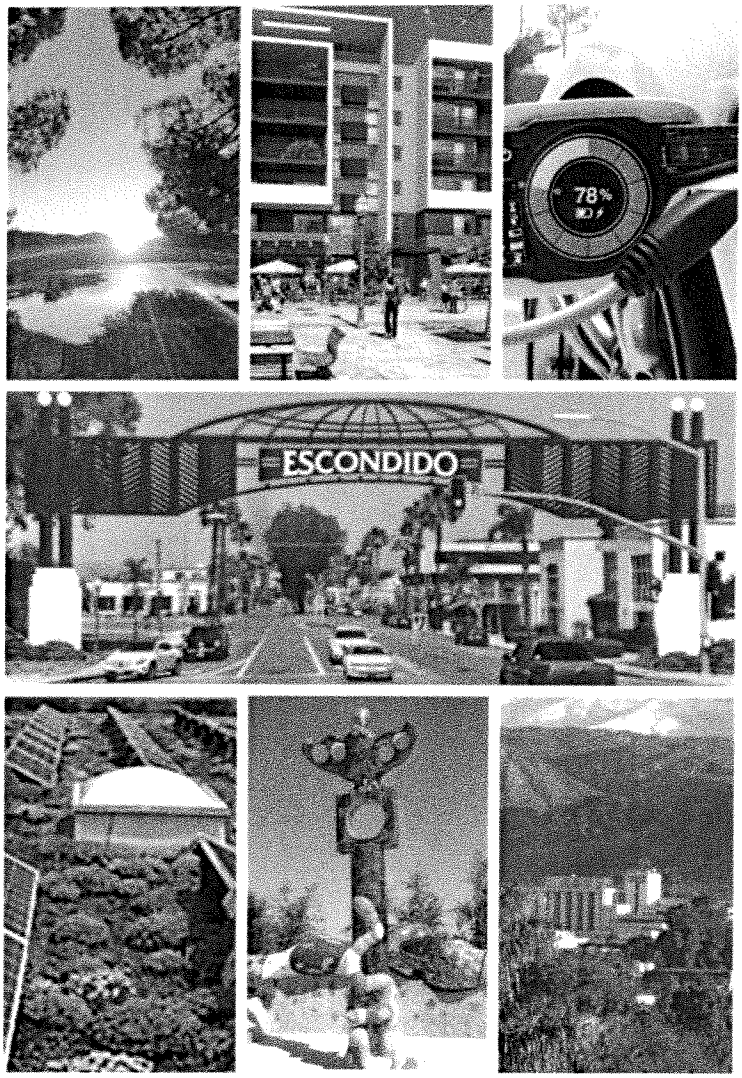
Cal enviro and income



Escondido Community Advisory Group Subcommittee
Summary of Research for Effective & Equitable E-CAP

Community Recommendations for Escondido Climate Action Plan Update

2020



Contributors: Tim Swift, Kate Barba, Richard Miller, Matt Vasilakis, Nathan Serrato, Vickie Castillo-Mercado, Laura Hunter, Charlie Jungk, Aisha Wallace-Palomares, Patricia Borchmann, Marian Sedio, Phil Church

Climate Impacts in San Diego County

San Diego County boasts many unique characteristics, which among other variables, all determine vulnerabilities to climate change and related adaptation measures. San Diego County will be confronted by increasingly warmer average temperatures, more frequent and more intense heat waves, more droughts but with occasionally increased heavy rainfall events and floods, continuing Santa Ana winds and wildfire threats. The impacts will play out in different ways across the complex terrain and differing climates within San Diego County, and ultimately will have an impact on our ecosystem, one of the most biodiverse in the US.

Future changes in global and California temperatures will depend on the accumulation in the atmosphere of carbon dioxide and other heat-trapping gases emitted from human activities. The emissions and buildup of greenhouse gases (GHGs) could take a range of pathways, depending on the success of international and combined local efforts to reduce GHG emissions. The warming experienced under different future conditions are projected using Representative Concentration Pathways (RCPs). The Fourth Assessment uses two RCPs from the Fifth Intergovernmental Panel on Climate Change (IPCC), one of which is a "higher emissions pathway" (RCP 8.5), commonly understood as a business-as-usual (BAU) scenario, and one that's a more "moderate emissions" pathway (RCP 4.5).

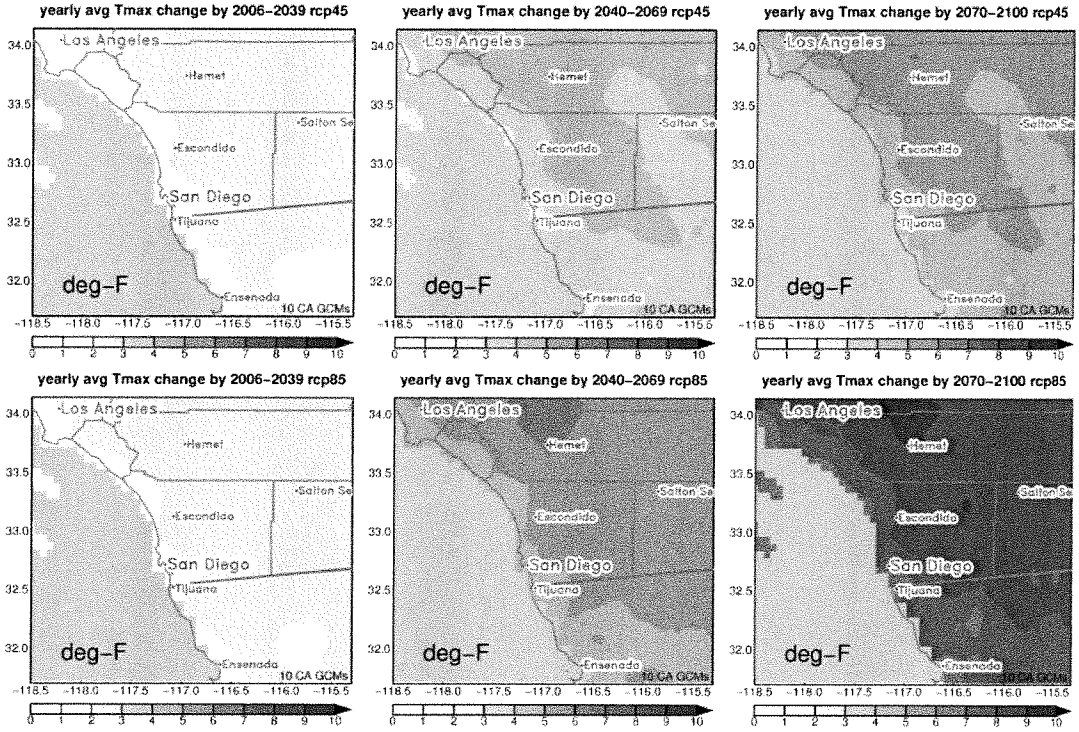
2018 CA 4th Climate Change Assessment: San Diego Regional Report
Climate Science Alliance: San Diego County Ecosystems: The Ecological Impacts of Climate Change on a Biodiversity Hotspot

Climate Science Alliance Report Highlights

- ➔ San Diego County is part of a biologically diverse and unique landscape that will be impacted in multifold ways due to current and future climatic variability.
- ➔ More frequent and more intense heat waves may disproportionately affect younger age classes and reduce reproductive and survival rates of species sensitive to temperature extremes.
- ➔ The region's precipitation regime is projected to become more variable with more dry days and more dry years. However, the few extremely heavy precipitation events, increased over historical levels, could result in increased flooding and occasional wet years.
- ➔ Drought may occur more frequently due to increased occurrence of dry days and could intensify because of warmer temperatures. Since drought disproportionately affects some species, these projected changes may cause structural changes to ecosystems.
- ➔ Annually, the occurrence of Santa Ana winds during increasingly dry fall months would create ideal fire conditions. Longer dry spells and decreased precipitation in fall may extend fire season into the winter, increasing the risk of Santa Ana wind-driven fires. Regardless of climatic shifts, people will remain the major driver of fires in San Diego
- ➔ Effective conservation actions will need landscape-scale planning rather than more traditional single-species approaches. To carry this out will require cross-jurisdictional, multidisciplinary efforts by scientists, policy makers, planners, land managers, and the broader conservation community.

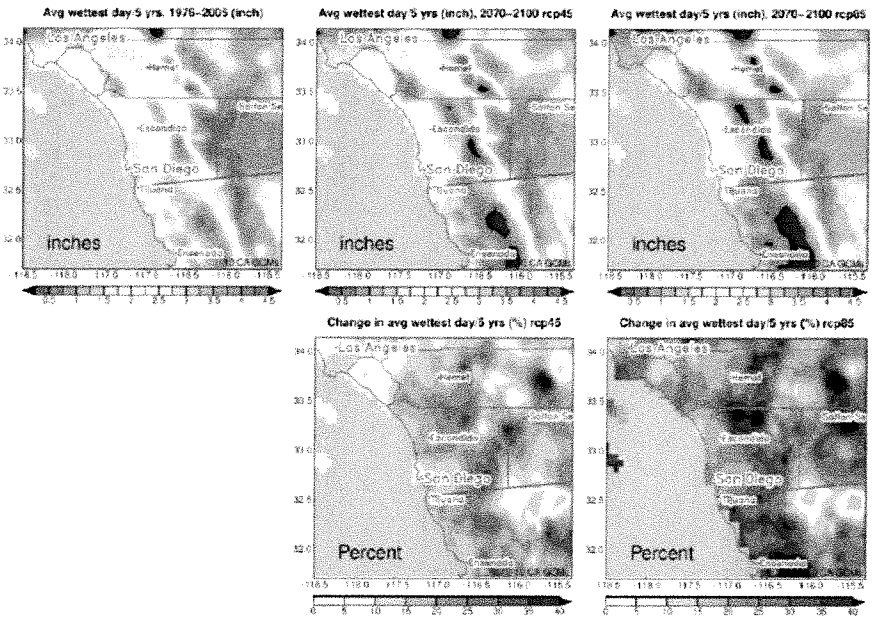
HEAT

Temperatures are projected to increase substantially, by 5˚F to 10 ˚F by the end of the 21st century. Heat wave events will increase, be hotter, and last longer. The map below is showing the average T-max increase at early, mid & end of century, relative to 1976-2005 climatology for RCP 4.5 (top) and RCP 8.5 (bottom). Historically, the average hottest day per year was in the range of 90-100 ºF at the coast and 105-115 ºF in the deserts. At the end of the century, under RCP 8.5 (ie "business as usual), the average hottest day per year is projected to increase to 100-110 for the coasts and 110-125 ºF in the desert respectively

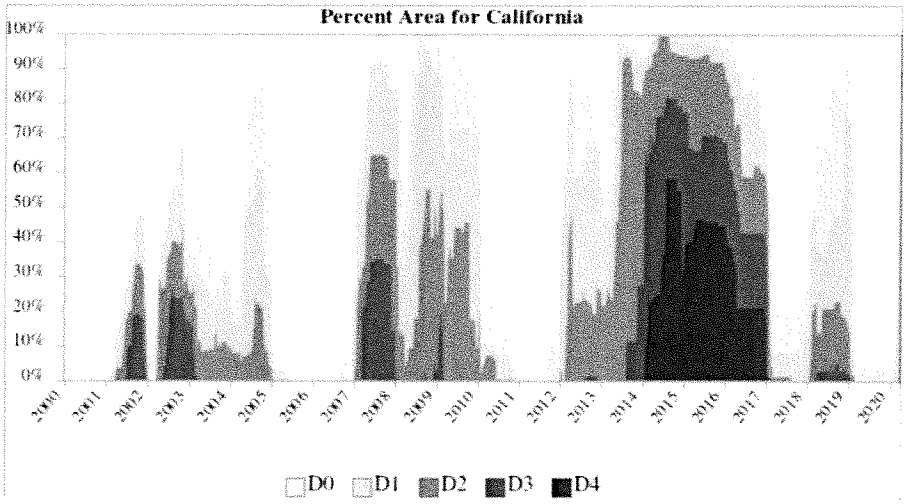


RAIN/DROUGHT

By mid-21st century, GCMs project that very wet days will become more intense, while the number of days with precipitation become fewer. The map below shows the change in average wettest days every five years for 1976-2005 climatology (left), & at the end of the century under RCP 4.5 (middle) and RCP 8.5 (right) in both inches (top) and percent change (bottom) relative to 1976-2005. Climate models indicate that precipitation volatility will intensify in the future as global climate continues to warm. While days with measurable precipitation become less frequent in Southern California, extreme precipitation events will intensify. Atmospheric rivers, which are transports of moisture from the tropics over the Pacific Ocean in long, thin ephemeral filaments responsible for most extremes, will carry more moisture. By the end of the century, the average wettest day every five years is projected to increase by 10-25% under RCP 4.5 and by 15-30% under the RCP 8.5 (ie business as usual)

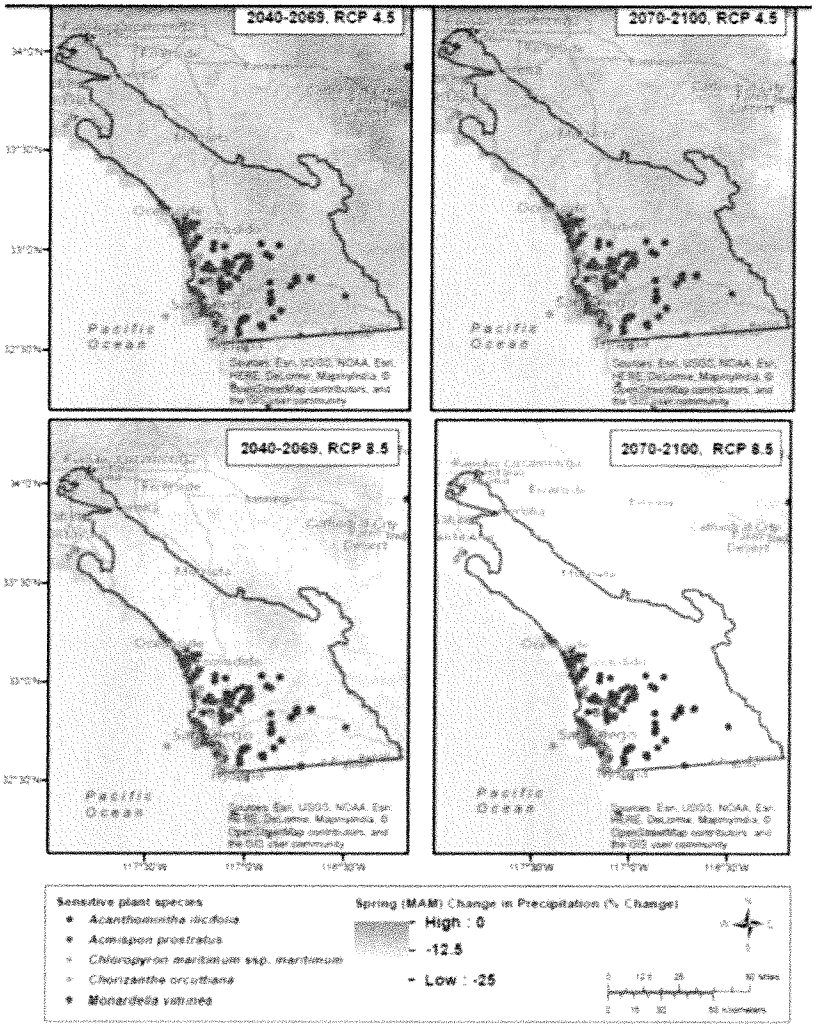


As indicated in the map below, increasing variability is precipitation patterns for the region show a trend of increasing severity (in terms of total % area) of CA droughts in this millennium.



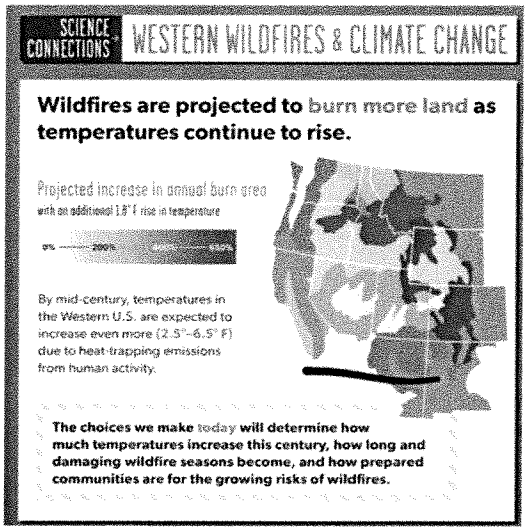
Another aspect of projected intensification of droughts is that GCMs indicate seasonal summer drought in Southern California may become more prolonged due to drying in the spring and fall shoulders of the traditional cool season rainy period. From the GCMs, spring precipitation decreases considerably, by approximately 20% during the mid-21st century and approximately 25% by the end of the century under RCP 8.5. Fall precipitation decreases by approximately 15% during mid-century and approximately 20% by the end of the century. Under RCP 8.5 the spring precipitation decline, combined with effects of warming, result in progressive declines in spring soil moisture, amounting to 10-15% decreases by late 21st century.

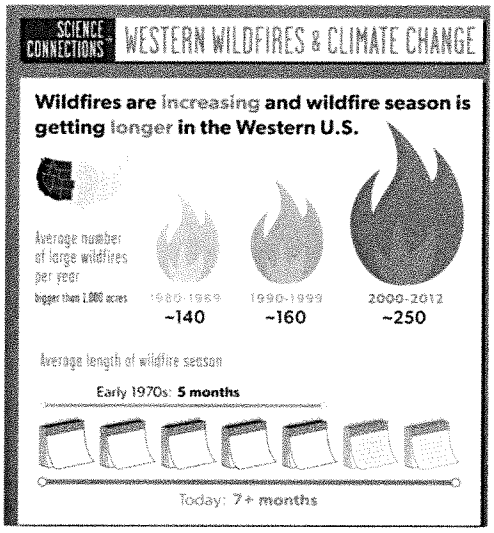
The map below shows the percent change in spring (March-May) precipitation relative to the historical global climate model runs from 1976-2005. The figures on the left are averaged during mid-century (2040- 2069) and the figures on the right are averaged at the end of the century (2070-2100). Top figures are under the RCP 4.5 scenario and bottom are the RCP 8.5 scenario. Overlaid are compiled species occurrence data of select rare, threatened, or endangered plants



WILDFIRE

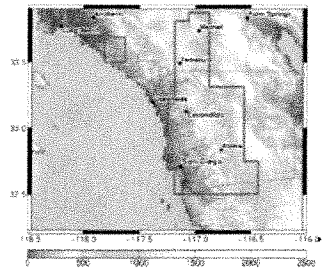
Wildfire is one of the most important yet complex drivers of ecological function and biodiversity in San Diego County. The economic and ecological costs of wildfire in the United States have risen substantially in recent decades. Although climate change has enabled a good portion of the increase in wildfire activity, the direct role of people in increasing wildfire activity has been largely overlooked. In San Diego County, more than **95% of the ignitions** are caused by **humans**. And because highly flammable shrublands and grasslands are closely juxtaposed with human habitations, fire regimes are and will continue to be most strongly controlled by anthropogenic impacts. Humans can affect wildfire patterns in a number of ways, from starting fires to managing fires (e.g., prescribed fire, fuel treatment, or fire suppression), and via changes in the abundance and continuity of fuel through land use decisions. With the enormous population growth and exurban expansion in San Diego County, increased fire ignitions and the changing spatial pattern of ignitions have had the strongest effect on the fire regime.

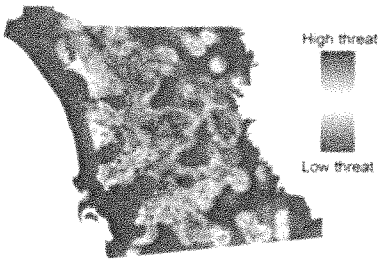




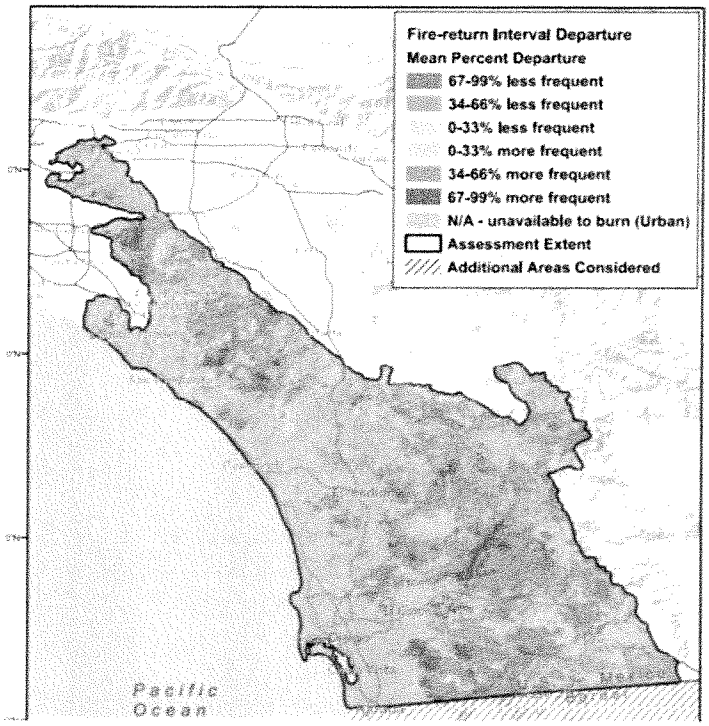
Santa Ana conditions account for the some of the hottest maximum temperatures along the San Diego County coastal zone. In October, Santa Ana events account for over 70% of hot days. Broadly, wildfire risk will likely increase in the future as climate warms. The risk for large catastrophic wildfires driven by Santa Ana wind events will likely increase as a result of a drier autumns leading to low antecedent precipitation before the height of the Santa Ana wind season (December and January).

San Diego Ana Wind & Fire Threat Map





In recent years, wildfires in much of San Diego have occurred significantly more frequently than historical fire return intervals, as highlighted in the map below. Since human ignitions sources are the primary cause of fires in the region, the shorter intervals between fires is attributed to development and population increases in the region.

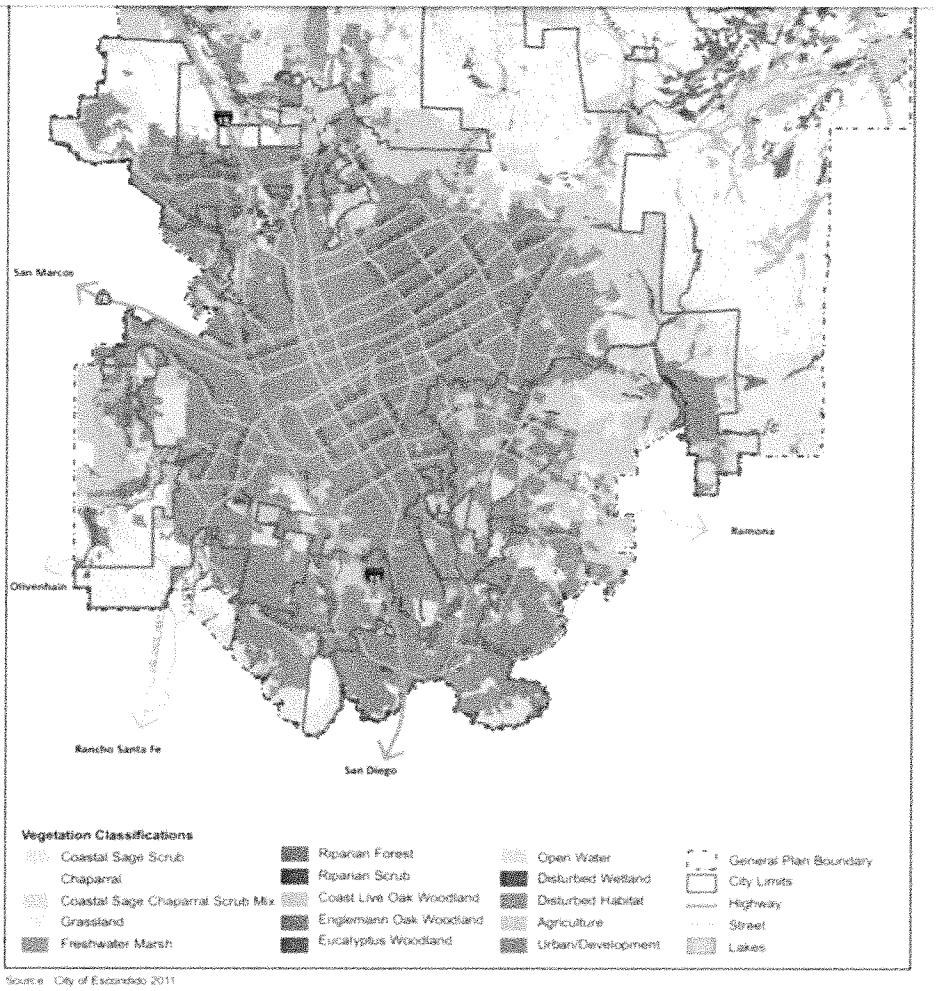


While fire weather conditions, such as Santa Ana winds, have flamed the most catastrophic wildfires in San Diego, other factors, such as development, are important in determining fire risk. Housing development patterns and proximity to human infrastructure like roads have significant correlation to fire frequency and % of area burned, with the highest levels of fire activity occurring at low-to-intermediate levels of development. At low- to intermediate- housing density, houses are generally more exposed to wildfire, and dispersed housing is more challenging for firefighters to defend. Dispersed housing is also contributing to escalating fire suppression expenses, and the role of housing pattern and location has been identified as the most important risk factor for structure loss to 58 wildfires across the continental U.S. In addition to increased fire frequency, exurban development provides conduits for invasive species to expand into wildland vegetation, either through soil disturbance, planting of grass in residential areas, or via mechanical fuel reduction activities that are, ironically, designed to control fires.

References - https://www.energy.ca.gov/sites/default/files/2019-07/Biodiversity_CCCA4-EXT-2018-010.pdf
https://www.climatesciencealliance.org/sde-ecosystems-assessment
2017_NAS_Study

ECOSYSTEM STRESS

The diverse ecosystems, habitats, plants, and animals in the San Diego County region will be impacted by climatic shifts in multifold ways due to current and future variability, along with other factors including habitat loss and fragmentation, land use shifts, and changing fire regimes. While home to a major metropolitan area, San Diego County still hosts expanses of native and preserved habitats where management and conservation action could be greatly enhanced through science-based assessments and planning for climate change and increased climate variability.

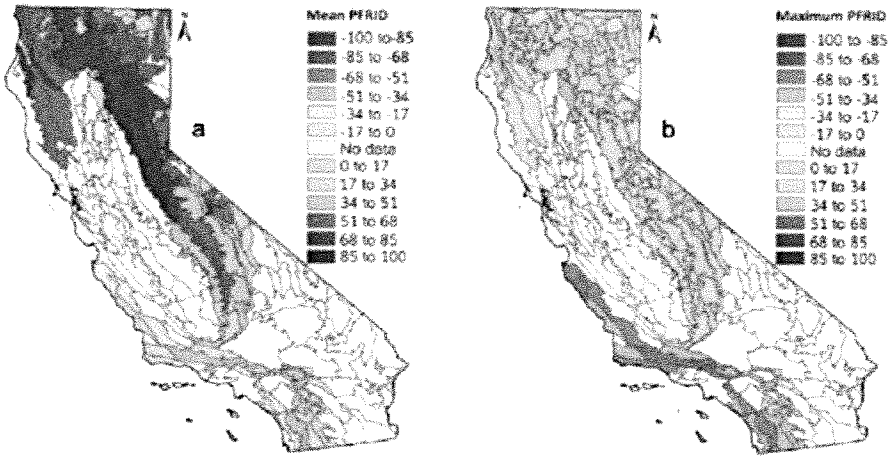


Source: City of Escondido 2011

There is a long and continuing history of land and natural resource conservation planning and action in San Diego County. Long-term monitoring and adaptive management will be critical to managing species and ecosystems into the future, and adaptation and scenario planning will also play a role. The table below highlights the nine major vegetation/land cover types in the San Diego, w/ protected area calculations based on compiled data from the San Diego Association of Governments. In light of projected growing impacts of climate change, it is likely that management goals may warrant re-evaluation, recognizing that managing for the near-term, particularly single-species management, may hamper abilities to build resilience into vulnerable ecosystems.

Vegetation Type	Area mi² (km²)	Percent area	Protected area mi² (km²)	Percent protected
Agriculture	156.1 (404.3)	4.1%	9.6 (24.9)	0.7%
Barren	20.7 (53.7)	0.5%	5.2 (13.5)	0.4%
Chaparral	1,498.3 (3,881.6)	39.2%	860.5 (2,229.4)	58.9%
Coastal scrub	546.8 (1,416.5)	14.3%	240.0 (621.8)	16.4%
Coniferous forest	47.6 (123.2)	1.2%	34.7 (89.9)	2.4%
Grassland/Meadow	413.4 (1,071.1)	10.8%	130.6 (338.4)	8.9%
Oak/Hardwood Forest	243.6 (631.1)	6.4%	88.9 (230.4)	6.1%
Riparian forest	71.2 (184.4)	1.9%	29.6 (76.6)	2.0%
Urban	783.0 (2,028.5)	20.5%	34.4 (89.2)	2.4%
Wetland	37.6 (97.5)	1.0%	27.6 (71.6)	1.9%
Total Area	3,818.3 (9,891.9)	100%	1,461.3 (3,785.7)	38.3%

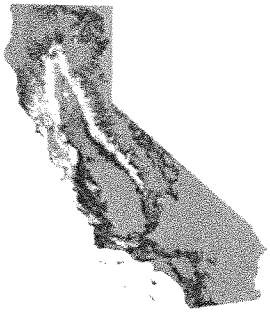
The preeminent threat that chaparral faces, that we all face, is human-caused climate disturbance caused by the unnatural release of carbon from the burning of fossil fuels - stored carbon that has been locked away for millions of years. The maps below indicate that our chaparral habitats are under threat. Hot colors show areas with fire frequencies in excess of natural levels, and cool colors represent areas that may have missed one or more natural fire return intervals. Fragmentation of chaparral habitat increases the likelihood of fires, which are one of the biggest naturally occurring carbon emitters. As mentioned above, land use planning needs to set aside continuous habitat instead of fragmented pieces.



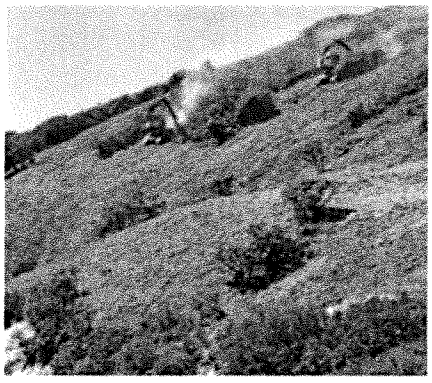
Fire Threat to Chaparral Habitat

The & riparian & chaparral areas in southern CA are among the most negatively departed in the state. In these areas, extensive landscapes characterized originally by dense native shrublands have been converted to degraded, open stands of native shrubs and exotic annual grasses and forbs, which are easily reignited. As shown in the CA map below, under a future high emissions/hot & dry climate scenario for the time period 2070-2099, much of the area (in red) currently occupied by chaparral will no longer be suitable for that plant community. The likely replacement will be highly flammable, non-native weeds.

To the right of the map is a picture of an area east of Alpine off Interstate 8 in SD County showing, and the top left background shows an old-growth chaparral stand last burned during the 1970 Laguna fire. The middle/left of the picture shows an area recovering from the Viejas fire in 2001. It is composed primarily of chamise, deerweed, and several other shrub species. To the right is a portion of the Viejas fire scar reburned in the Cedar fire in October, 2003. As you can see, the Cedar fire scar is now filled with non-native grasses because the interval between the two fires was too short, causing the elimination of the chaparral plant community. This negatively results in both a loss of carbon sequestration capability, while further increasing fire risk with more flammable invasive species.



Along with the threat that warming climate and fire pose to chaparral, the human threat is of high concern as well. The picture on the left below are of giant masticators clearing away natives in Los Padres National Forest. On the right is a photo from Ventura county showing how years of clear cutting, "fuel treatments" & abuse have led to the elimination of carbon sequestering chaparral in favor of flammable, invasive weeds.

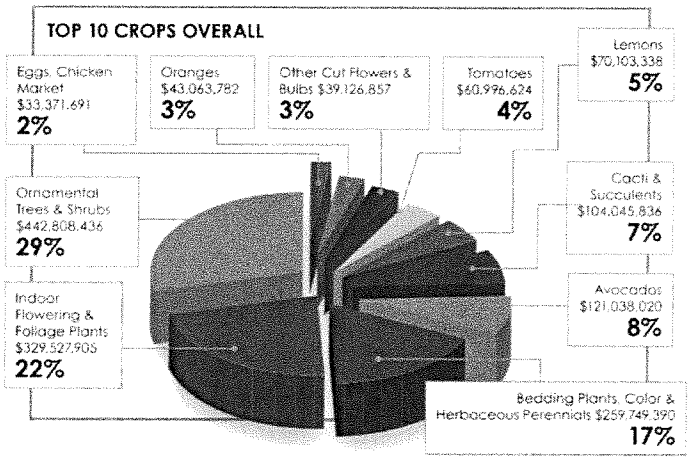


References:

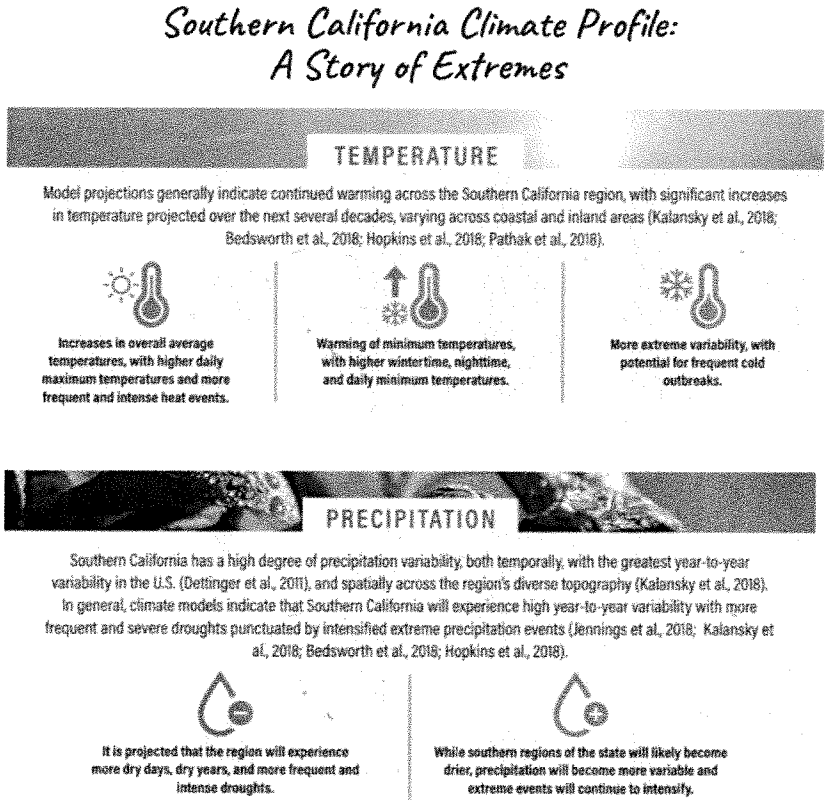
https://www.californiachaparral.org/
https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/GPUpdate/Vol1Biology.pdf
https://www.climatesciencealliance.org/sdc-ecosystems-assessment

Climate Change Impacts on Agriculture & Specialty Crops

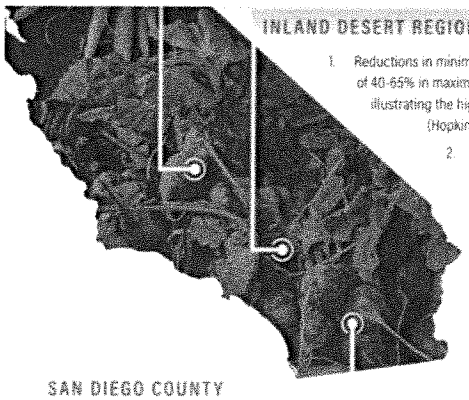
San Diego agriculture boasts a value of ~$1.8B, with a general breakdown show below:



Specific to Escondido & the surrounding area, avocados comprise 8% of total county agriculture output, making it the nation's leading producer and valued at $121M. Next are tomatoes valued at $61M, followed by lemons ($70M) and oranges ($43M). Southern California is already experiencing the impacts of a changing climate, which will have implications for the region's agriculture & economy. Despite these challenges, agricultural producers play a critical role in building on-the-ground resilience and are an important part of the region's climate change solutions.



In Southern California, the impacts of a changing climate will vary across the region's diverse topography and micro-climates. Major agricultural regions, including San Diego County and counties within the Inland Desert and South San Joaquin regions, will experience distinct climate impacts in the coming years, as listed below:



INLAND DESERT REGION / RIVERSIDE & IMPERIAL COUNTIES

1. Reductions in minimum annual precipitation of up to 50% and increases of 40-65% in maximum annual precipitation by the end of the century, illustrating the high degree of variability expected in the coming years (Hopkins et al., 2018)
2. Increase in the wettest day of the year by up to 30% by the end of the century, increasing the risk of flash flooding (Hopkins et al., 2018)
3. More intense heat extremes, increases in daily average maximum temperatures of up to 8-14°F and in daily minimum temperatures of up to 4-7°F, and warmer winters with the potential for fewer days of freezing temperatures in some areas (Hopkins et al., 2018)

SAN DIEGO COUNTY

1. Increases of 10-30% in the average wettest day every five years by the end of the century, meaning that extreme precipitation events will become more intense (Kalansky et al., 2018)
2. Overall, greater warming projected for inland areas compared to those near the coast, in part because of the CLCF and the marine layer that shield San Diego's coastal zones. The average hottest day per year is projected to reach 110-125°F in desert areas and 100-110°F in coastal areas by the end of the century under some greenhouse gas (GHG) emission scenarios (Kalansky et al., 2018)
3. Increases in minimum temperatures, with generally warmer winters, nighttime temperatures (Gershunov and Guiguis, 2012; Jennings et al., 2018; Kalansky et al., 2018) and higher average daily minimum temperatures (Kalansky et al., 2018). Additionally, there is potential for more frequent cold extremes, similar to past records (Favre and Gershunov, 2009)
4. Exacerbated moisture deficits across much of the region's landscapes, with intensified droughts, drier conditions and larger water deficits (Kalansky et al., 2018)

Climate change is expected to alter the quality, phenology, harvest yield, & producton of many crops. Here are some specific predictions/projections for Escondido's primary agricultural crops:

Avocados

- ➔ Projections show potential for up to a 45% reduction in avocado yields statewide by 2060
- ➔ Extreme heat/ heat waves could suppress persea mite populations that are key pests for California-grown avocados
- ➔ Challenges associated with limited water availability and drought, with specific sensitivities to increased salinity.

Oranges/Citrus

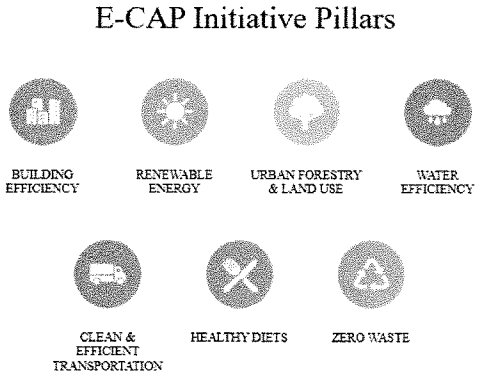
- ➔ High temperatures can cause "scorching" of the blossoms, & sudden cold snaps can cause frost damage. Temp variation could also negatively impact fruit color
- ➔ Extreme precipitation/flooding events can delay harvesting
- ➔ Moderate to substantial yield declines by the end of the century
- ➔ Projections show a substantial reduction in areas that exhibit high yields of oranges

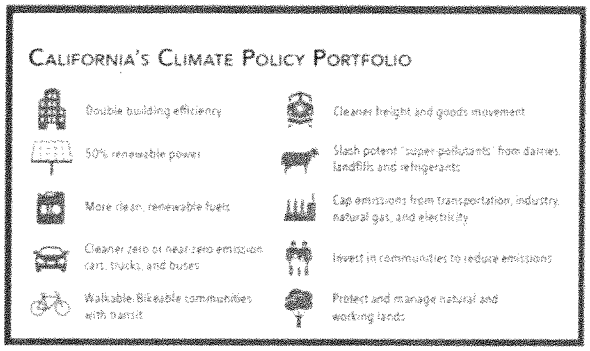
References

https://drive.google.com/file/d/1LtldEKFFBv5mYhljZKC8T7pZJTajslAQ/view
https://www.climatesciencealliance.org/
https://www.sandiegocounty.gov/content/dam/sdc/awm/docs/2018_Crop_Report_web.pdf

E-CAP Initiatives & GHG Reduction Strategies

Below is a snapshot of the major initiative pillars we will be focusing climate action planning proposals around, and which are in alignment with California Climate Action Plan framework.

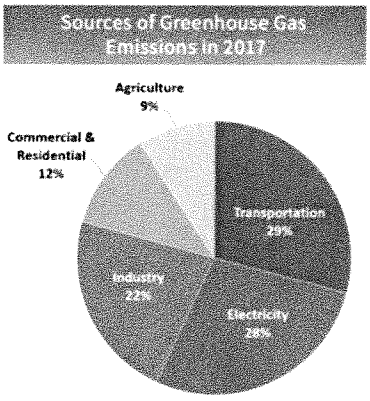


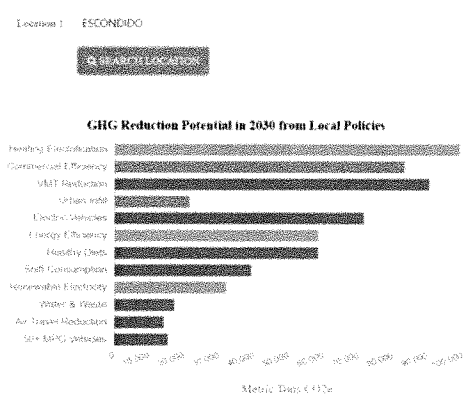


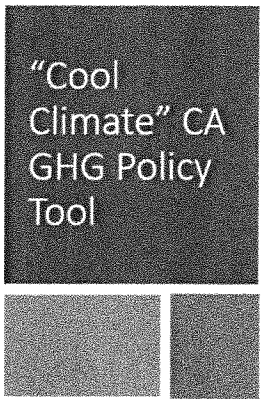
Additionally, here are some additional resources putting forth "best practice" and where we can look to adopt key aspects findings in the Escondido CAP:

- ➔ Colorado College 100% Carbon Neutrality Plan
  - CC Sustainability Landing Page 2019 State of Sustainability Report 2014 Sustainability Report/Priorities CC Carbon Action Report
- ➔ "Start Here, Start Now": An Environmental Justice Assessment of the City of SD CAP
- ➔ "Growing Cooler": The Evidence on Urban Development and Climate Change
- ➔ "Bending the Curve": Ten Scalable solutions for carbon neutrality & climate stability
- ➔ "Kansas City Climate Playbook"
  - https://www.marc.org/Environment/Climate-Action/pdf/Climate_Action_Playbook.aspx
- ➔ City of Lancaster "Going Green"
  - https://www.cityoflancasterca.org/about-us/sustainability/green-practices/alternative-fuel-vehicles

To visualize some of the most effective measures our city can adopt, here is a GHG reduction calculator tool that specifically highlights for a given locale the strategies that will lead to the biggest GHG reductions, with results populated for Escondido:







Strategy to Achieve Social Equity

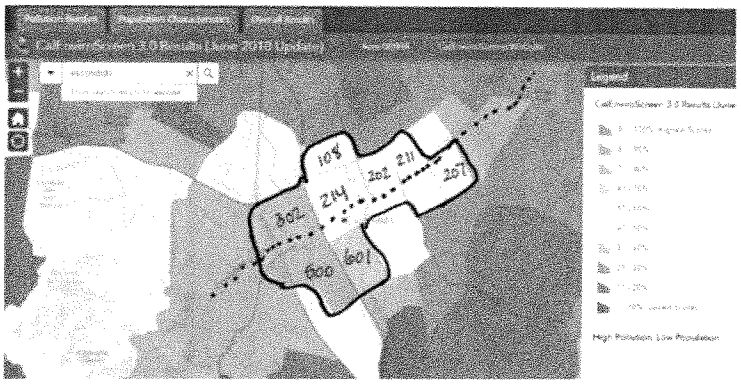
Environmental justice recognizes that certain communities - generally lower-income & communities of color - have historically borne the brunt of pollution exposure, have traditionally been left out of important decision-making processes, and ultimately will be impacted first (& worst) by climate change. **Equitable action** is an EFFECTIVE approach for meeting the needs of under-served communities and vulnerable residents through policies and programs that reduce disparities while fostering places that are healthy and vibrant. It's critical that our ECAP prioritizes investment towards the closing of racial and socioeconomic gaps:

- ➔ Identify Priority Investment Neighborhoods as areas where location, pollution, & climate change combine with inherent population characteristics to pose higher health risks to residents, & with fewer resources to address them.
- ➔ Focus on increased education and outreach in these areas.
- ➔ Receive highest priority for funding and action on key climate initiatives.
- ➔ Support partnerships that can fully capture the current state of inequity in various cross sections of our communities.
- ➔ That it ultimately develops programs and leverages funding for long term countermeasures that can mitigate future harm, while also garnering authentic community-based participation and power.
- ➔ Implement programs and initiatives for heat island reduction & urban forestry
- ➔ Provide an energy and water conservation retrofit program to upgrade housing stock, reduce costs to residents, and reduce carbon emissions.
- ➔ Implement programs and initiatives for more/better/cleaner public transit
- ➔ Initiate air quality requirements & pollution reduction
- ➔ Outreach & education programs
- ➔ Create affordable housing and initiatives for efficiency upgrades to existing stock.

Identifying Priority Investment Neighborhoods

Below is a snapshot of CAL EnviroScreen results from 2018. These effectively score and rank **cumulative pollution burden** (ie contaminants in air, water) on various communities, which have been segmented out by census track. EnviroScreen also compiles population characteristics such as underlying health conditions, education level, linguistics, isolation, etc., which all serve as conditions that ultimately determine **vulnerability to impact**.

Based on the results, we can effectively draw a line around specific census tracks to create priority investment neighborhoods for outreach, funding, and implementation of various CAP initiatives.



Priority Neighborhood Infrastructure Initiatives

With average temperatures in San Diego County projected to increase by 5 to 10 °F by the end of the 21st century, as an inland city Escondido is especially vulnerable. Along with this substantial mean average increase, the frequencies of 100 degree+ heat waves will also increase, they will hit with more intensity & with longer duration. Given these projections, housing and infrastructure planning is absolutely essential when developing an effective response to climate change, and with a high degree of focus on underserved communities that are most vulnerable.

These are recommended actions at a minimum:

- ➔ Adaptation measures for communities at higher risk for extreme weather events such as floods & drought.
- ➔ Improvements of walkways & public transportation routes, with increased tree shading.
- ➔ Identify at risk-areas that lack in-home cooling systems & help establish cooling centers within these neighborhoods.
- ➔ Focus solar & energy efficiency programs in neighborhoods that are traditionally left out of redevelopment & improvement.
- ➔ Restore natural areas to improve carbon sequestration & pollution reduction, to beautify & cool neighborhoods, & to create a welcoming natural space for its residents to enjoy.
- ➔ Measures that require development of affordable multi-family units near transit and employment centers, while also allowing for 50% fewer parking spaces than standard requirements to maximize density.
- ➔ Adopt an inclusionary housing ordinance that would require a portion of all multi-family housing to be set aside, for example, for families earning less than 80% of the Area Median Income.
- ➔ Direct new infrastructure - sidewalks, bike lanes, transit access improvements - to underserved areas
- ➔ Cease projects that increase fire risk and draw considerable community financial resources away from areas in need of investment, infrastructure
- ➔ Leverage funding for long-term community health & organizational capacity

Energy Use Reduction Program Opportunity:

Save money, improve health, and reduce GHG emissions by improving energy and water efficiency in older houses and rentals

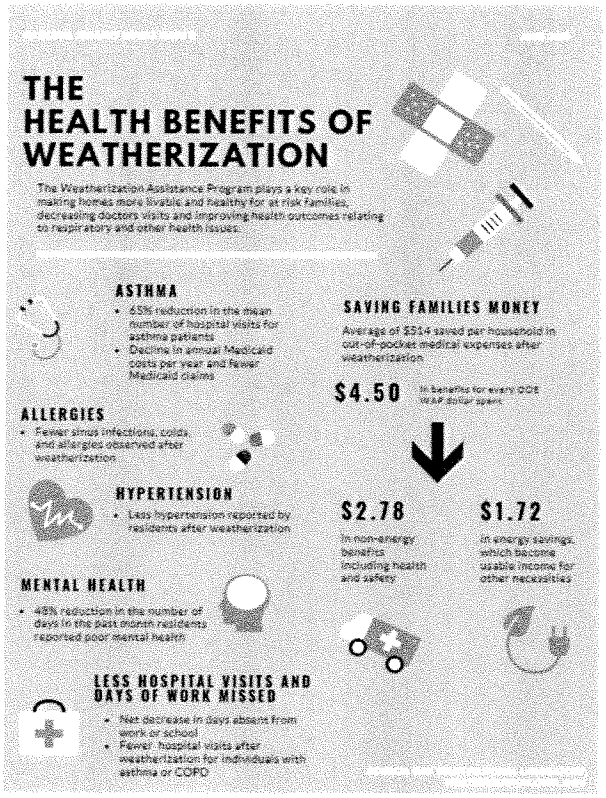
Overview and potential for action to reduce or avoid GHG emissions.

Half of Escondido residents are renters. One of our goals is to achieve high levels of energy-efficiency improvements and GHG reductions through rehabilitation and weatherization of older homes—especially rentals and especially in heat islands. We want to make sure we have a good program for landlords in Escondido to 'Weatherize' /improve energy efficiency in rental units as part of our Climate Plan.

Major GHG Reduction Potential

Energy efficiency should be a cornerstone of energy and/or climate policies at all levels of government, based on its proven status as a cost-effective option for reducing CO2 emissions and reducing the cost of climate policies. [i]

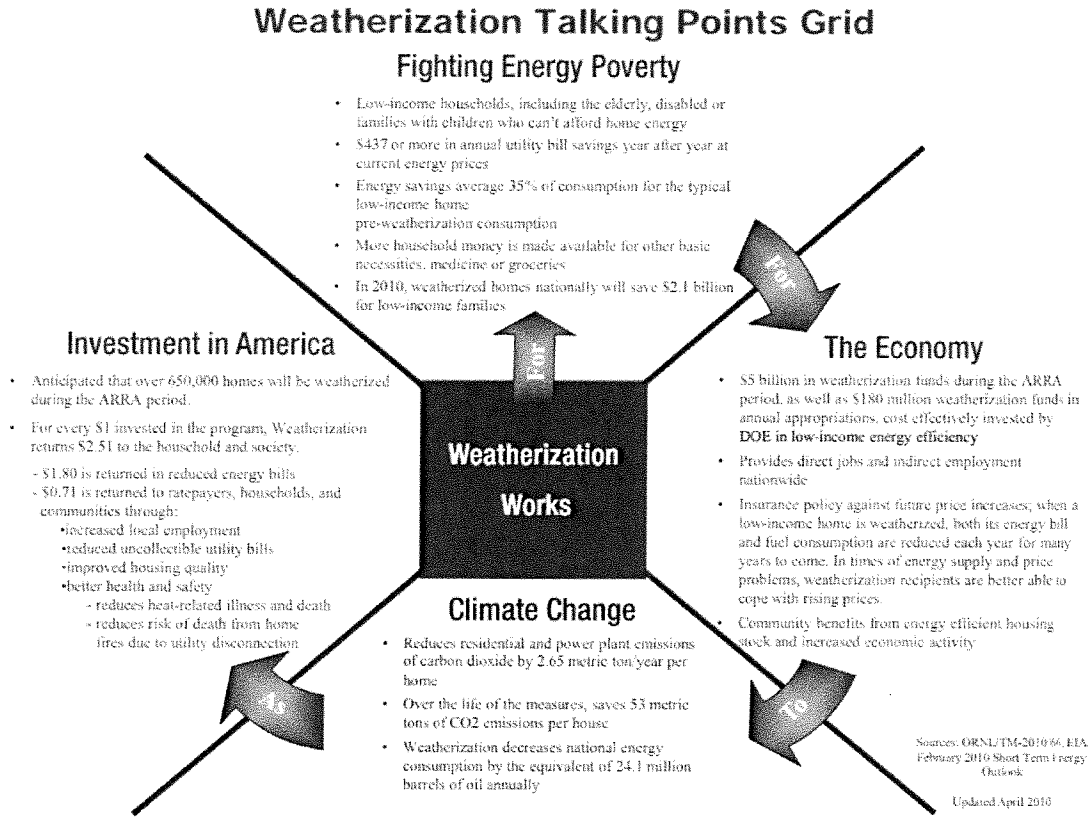
Efficiency measures reduces residential and power plant emissions of carbon dioxide by 2.65 metric ton/year per home. Over the life of the measures, saves 53 metric tons of CO2 emissions per house.[ii] If we could do efficiency measures on 100 homes a year, that would equal 265 metric tons a year of reductions. A single light changed to an energy efficient bulb reduces emission of 20 lbs per year.



Greenhouse gas (GHG) emissions attributable to buildings in California currently represent about a quarter (25%) of the state's total emissions. In order to achieve California's climate goal of an economywide 40% GHG reduction by 2030, greenhouse gas emissions from buildings will need to fall by 40% or more over the next decade.2 Furthermore, to reach California's carbon neutrality goal by 2045, high levels of building electrification are likely to be required.

Electrification is found to reduce total greenhouse gas emissions in single family homes by ~30% – 60% in 2020, relative to a natural gas-fueled home. As the carbon intensity of the grid decreases over time, these savings are estimated to increase to ~80% – 90% by 2050, including the impacts of upstream methane leakage and refrigerant gas leakage from air conditioners and heat pumps.[iii]

Of course, energy efficiency save money in energy costs. But, it is healthier too.[iv]



State provides assistance for weatherization energy conservation and improvements

The California Weatherization project provides free energy upgrades to low-income household. All improvements made are with energy conservation in mind, and the goal is to help people lower their monthly utility bills. The extra insulation and other improvements can keep the heat in a home, or ensure it stays cool during the hot summer months. Another side benefit of weatherization is that it will also improve the health and safety of the household's occupants. When someone enrolls, they will also be provided with energy budget counseling, education on the best conservation practices and they will also receive instruction on the proper use and maintenance of installed weatherization measures.

The program is often called WAP, and it will increase the energy efficiency of homes that are owned, rented or occupied by low-income persons. The upgrades made can cost the federal government as much as $6000. The state of California and the federal government pay for all costs, and **the service is free to the client.** The end result is it will reduce the homeowners total residential expenditures for expenses such as heating and cooling bills. **On average recipients will experience a 25% reduction in their annual energy costs, with noting up to a 35% reduction.**[v]

We asked, EHC's Healthy Kids Campaign Director at EHC, Leticia Ayala, how they went about their Healthy Homes program. Environmental Health Coalition approach to removing lead and other

health hazards and improving energy efficiency in older housing rental stock in San Diego. She made the following points:

- *We passed the lead ordinance with a clause that requires landlords to inspect and fix lead hazards at turnover. The incentive was the HUD Lead Hazard Control & Healthy Homes Grants available for landlords to make their homes lead-safe.*
- *Then, we would team up with the local Weatherization programs via MAAC Project, Campesinos Unidos, and the Energy Team to refer the HUD cases to get weatherized. At one point, we included energy efficiency home visits into our program.*
- *The first visit was a lead educational visit which included filling out the program application and deep lead education such as where to get your kids tested for lead etc.*
- *The second visit was about healthy homes including mold, pesticides, non-toxic cleaning products and we would give each family a healthy homes kit – including non-toxic cleaning and indoor pest control.*
- *Third visit was the energy efficiency visit which included deep energy efficiency education tied to polluting power plants, asthma, water conservation, a free home audit with a customized energy plan for the family, and a kit to jump start them to taking action – kit included a reusable bag, smart strip, LED light bulbs, thermostat for Refrigerator, tracking card to help them reduce their trash.*

Environmental Health Coalition may be a good resource to help us figure out how we can do this in Escondido.

Another model might be the Conservation Home Makeover Project in Chollas Creek. **($542,000 in grant funding – Groundwork San Diego)** – This project will engage low-income families in San Diego's Encanto neighborhood to mitigate drought impacts through water capture and greywater reuse for food production and landscaping.[vi]

Home Energy Score. Many cities have successfully implemented policies requiring that energy labels be provided as part of residential real estate transactions Portland[vii], Austin[viii], and Minneapolis[ix] are two examples. Cities should enact home energy labeling policies as a key method to increase residential energy efficiency. Fannie Mae and Freddie Mac are also actively engaged in understanding how this data can be translated into value for buyers and sellers in the mortgage process.[x],[xi]

PACE Program. Another means to fund efficiency improvement is through a Property Assessed Clean Energy (PACE) program which allows local government to help its residents overcome the high up-front cost on investing in clean energy and energy efficiency.[xii] PACE allows local and state governments to loan money to home and business owners for energy improvements, which owners repay over time through property taxes. Cities must authorize and provide support for a PACE program.

Measures to be included in the E-CAP

1. Create a Climate Impact fee on new development and include climate action in Community Services Facility Districts to fund, in part, retrofitting of older homes.
2. Develop a program with measurable goals specifically for landlords which requires energy efficiency measures when a property is turned-over and resources to help them achieve that.

3. Provide weatherization and other energy efficiency upgrades for low and moderate income households through Community Development Block Grant and Water Conservation funding programs.
4. Ensure low-income residents and landlords know and access the California Weatherization program above.
5. Support Property Assessed Clean Energy (PACE) financing to facilitate residential and commercial property upgrades
6. Develop, set goals, and fund a Residential Home Retrofit program in identified equity areas.[xiii]
7. Develop a Home Energy Disclosure ordinance requiring sellers of single-family homes and landlords of rental properties to obtain and disclose a Home Energy Report which will explain to buyers and renters how well the property performs relative to others and provides recommendations for improvement of efficiencies.

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Building Electrification

Greenhouse gas (GHG) emissions from buildings in California currently represent about a quarter (25%) of the state's total emissions. In order to achieve California's climate goal of an economy-wide 40% GHG reduction by 2030, greenhouse gas emissions from buildings will need to fall by 40% or more over the next decade. If California is going to reach it's carbon neutrality goal by 2045, high levels of building electrification are likely to be required

Electrification of buildings represents an important opportunity for Escondido to reduce greenhouse gas emissions while providing health, economic, climate, workforce, and safety benefits.

HEALTH BENEFITS

- Burning gas in homes releases dangerous toxins - leading to air pollution levels in many homes cooking with gas that would be illegal if measured outside. [1]

[1] Pollution in the Home: Kitchens Can Produce Hazardous Levels of Indoor Pollutants

- Children are particularly at risk. Kids living in a home with a gas stove are 42%[2] more likely to have asthma, a dangerous health condition that costs Californians more than $11 billion annually.[3]
- Moving to all-electric construction will give kids the chance at a healthier life and their parents a break from constant worry and medical bills.

ECONOMIC BENEFITS

- We can build more quickly and affordably with all-electric new construction. Installing gas lines and hookups adds anywhere from $3,000 up to $15,000 in unnecessary construction costs in new buildings.
- Research[4] shows the vast majority of homeowners and developers in California can expect financial savings - between $130 – $540 per year - from building and living in all-electric homes compared to homes that burn gas.
- Moving to all-electric homes & buildings will protect communities against the increasing cost of maintaining California's aging gas system - which will be spread among fewer customers as gas demand declines in line with our climate targets. A comprehensive statewide study[5] projects gas rates could increase from about $1.50 per therm today to as much as $19 per therm by 2050.
- The most fiscally responsible choice we can make is to stop expanding a gas system - by moving to all-electric new construction, while helping income-constrained residents transition to electric appliances.

CLIMATE BENEFITS

- California's homes and buildings are responsible for more than a quarter of the state's greenhouse gas emissions. The latest studies show that beneficial building electrification can reduce those emissions up to 90 percent by 2050.[6]
- This path of emissions reduction is also the most cost-effective - saving around $20 billion[7] every year by 2050 compared to other scenarios.
- Our gas infrastructure leaks methane - a powerful greenhouse gas that can warm the planet more than 80 times as much as carbon dioxide over a 20 year period - at every stage of its lifecycle.
- The increased production and use of gas has led to a massive spike in methane emissions in recent years. Gas is now the primary driver of emissions growth worldwide - and it has overtaken coal as the largest source of climate pollution in the U.S.[8] Continuing to burn gas in our buildings will prevent us from staving off the worst impacts of climate change,

WORKFORCE BENEFITS

- New research from the UCLA Luskin Center on Innovation[9] shows that beneficial building electrification can generate more than 100,000 construction and manufacturing jobs

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[2] Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children

[3] Asthma's Impact on California: Recent Data from the California Breathing Asthma Program

[4] Residential Building Electrification in California

[5] https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf

[6] Residential Building Electrification in California

[7] https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf

[8] Carbon Dioxide Emissions Hit a Record in 2019, Even as Coal Fades

[9] California Building Decarbonization Workforce Needs and Recommendations - UCLA

annually in California - even after accounting for modest declines in gas industry employment.

- Over the course of 25 years, electrification will create more than 8 times the number of jobs that will be lost in the gas system - and with a two-decade lead time, policymakers can work with unions and members to transition the small number of gas workers that will not retire on their own before 2045.
- The quality of the jobs, not only the quantity of jobs created is important - three out of every five jobs required to meet building electrification goals would be in "high-road" sectors - where firms compete on the basis of skill, experience and qualifications, and worker pay tends to be higher.

SAFETY & RESILIENCY

- As we've learned from the SoCalGas Aliso Canyon gas leak and the gas explosion in San Bruno, gas pipelines and storage facilities are a serious threat to the safety of Californians.
- In fact, over the past three years in the U.S., there was a gas pipeline incident that killed someone, sent someone to the hospital or caused a fire or an explosion every four days.
- Gas infrastructure is particularly dangerous in California's earthquakes and fire-prone areas. Gas is responsible for up to 50% of post-earthquake fire ignitions.
- We can't rely on gas during public power shut offs, since most new gas appliances have electric ignitions - which means they do not work when the electricity is off regardless of their primary fuel source. And when gas service is turned off due to fire risk or earthquakes, it can take weeks to restore - unlike electricity.
- All-electric appliances on the other hand can be set up to use a backup power source during disasters when the grid is down - and with appropriate solar inverters or battery backup power, heat pump water heaters can use electricity from rooftop solar to heat water and store it for up to 24 hours, so families will have hot water even if the grid is down.

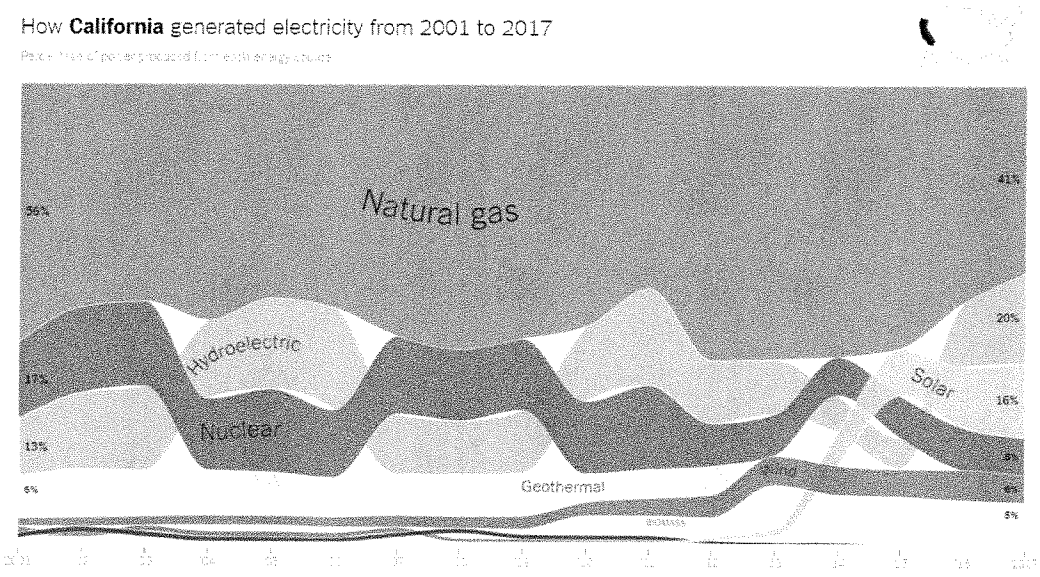
We strongly recommend the following:

1. Incentivize all-electric new construction and update the building code.
2. Incentivize high-efficiency heat pump HVAC, particularly as it pertains to air conditioning.
3. Align energy efficiency goals and savings with GHG savings opportunities.

E-CAP Renewable Energy Initiatives

Natural gas has been California's top electricity source since 2001. But half of the power produced in the state last year came from renewable sources, including solar, wind, geothermal, and hydroelectricity. Solar power has grown quickly over the past five years, largely because of state policies like an aggressive renewable energy standard. This year, California committed to get all of its electricity from zero-carbon sources by 2045.

Last year, about a fourth of the electricity consumed in the state, including some generated by coal power, came from outside of its borders. (Imports are not pictured in the graphic above.) But California plans to stop buying electricity from coal-burning plants in Utah and other states.



Natural gas has been California's top electricity source

Community Choice Energy (CCE)

We strongly recommend the city to create or become a part of an existing CCE program

What: Community Choice Energy is tried and true program that allows communities to take control of their clean energy future. CCEs are stand-alone government agencies tasked with purchasing energy contracts, and selling said energy to residents and businesses, as an alternative to the existing utility. They have existed in the state of California for nearly a decade, providing:

- Lower rates and more affordable clean energy for residents and businesses than the traditional monopoly Investor Owned Utilities (IOUs)
- More renewable energy compared to the IOU
- Reinvestment of local revenue for local green energy projects and jobs
- Focused attention to communities of concern, driving conversations about equity and inclusion in the renewable energy sector
- Local control over a community's energy mix, and a real say in how green energy is developed to meet local and state clean energy goals

How: The City of Escondido has partnered with the cities of San Marcos and Vista to complete a CCE feasibility study. The study will likely be completed within the next 6 months, after which:

- The City will vote on whether to accept the results of the study
- The City will vote to decide on whether and how to proceed with CCE
- If the City decides to move forward with CCE it may:
    - Create an independent standalone CCE program
    - Join an existing CCE program as part of a Joint Powers Authority (JPA)
    - **Note:** Today's CCE best practice is to join with other cities and counties in JPA, which offers a number of protections and opportunities over a standalone, one city only program

Next Steps for Advocates: Now that the City has signed off on the feasibility study with San Marcos and Vista, it would be helpful to encourage the city to:

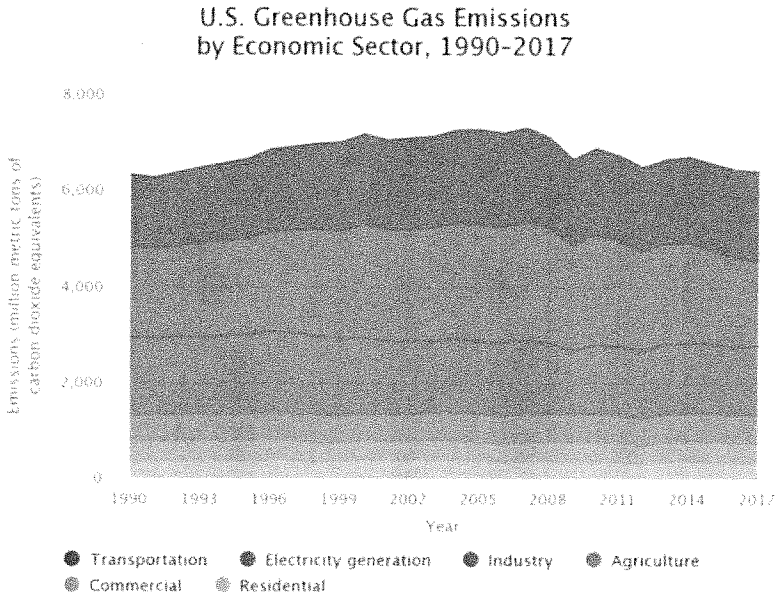
- Host CCE workshops after the feasibility study is drafted for the public to learn and participate in the conversation
- Comment to city council and staff that the study must include revenue projections for individual cities, and determine how feasible Escondido may be as a stand alone CCE program vs joining a JPA
- Engage with community members on the benefits of CCE (CAC CCE One Pager)
- Examine the two existing CCE JPA programs in the region, San Diego Community Power and Clean Energy Alliance; specifically their JPA agreements (SDCP linked here, CEA linked here), and ask:
    - Does the JPA identify specific clean energy targets that may help Escondido reach its CAP targets?
    - Does the JPA offer specific provisions for working families, communities of concern, and environmental goals to ensure equity and inclusion?
    - Do the values and mission of the JPA align with Escondido?
    - What cities are involved, and what kinds of programs and projects may be achievable?

Additional Supporting Initiatives for Renewable Energy:

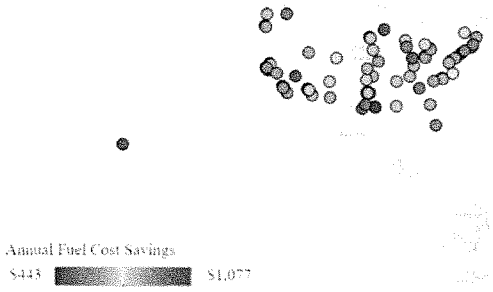
- ➔ Require ALL new single-family housing to be NetZero and all new multi-family to use solar/electric to the maximum extent possible.
- ➔ Develop energy retrofit program for local Escondido residents
- ➔ Provide resources/incentives for Priority Neighborhoods to implement energy conservation projects.
- ➔ Focus efficiency/solar programs in neighborhoods that are traditionally left out of redevelopment
- ➔ Pursue resources from the new CA's "Solar on Multifamily Affordable Housing" (SOMAH) for focus neighborhoods
- ➔ Create funding services for target areas residents for energy efficiency, clean renewables, composting, & zero-emission transportation projects.
- ➔ Adopt Community Choice Energy
- ➔ Establish a PV installation goal for non-city owned production

Clean & Efficient Transportation

Transportation is the biggest carbon-emitting sector in the U.S. at 29% of all emissions, & with light-duty vehicles accounting for 59 percent of those emissions within the sector. It's also a primary source of air pollutants that contribute to health problems such as heart and respiratory diseases and cancer. Due to disproportionate exposure, these health impacts are frequently more pronounced in low-income communities next to major transportation corridors. In addition, the extraction, production, and global distribution of fuels for transportation can damage environmentally and/or culturally significant ecosystems and may financially benefit hostile and/or oppressive governments.



As the window of time for substantial carbon reduction efforts change gets smaller, electric vehicles (EV's) are a primary solution to mitigate the massive amount of emissions coming from the world's transportation sector. According to the Union of Concerned Scientists, median cost savings per year for an EV owner would be $770, dependent on the electricity provider, the choice of electricity rate plan and the local cost of gasoline. Here is an Alternative Fuel Calculator that allows for comparison of fuel/maintenance costs of gas-powered vs. electric equivalent.



According to an interview by NPR, total emissions "has to do with the power mix in that individual state. A state like CA where utility companies are powered by good degree of renewable energy means that there are a lot less total emissions occurring through the overall life cycle. This is a critical area for systemic change, as we encourage our legislators to create a Renewable Portfolio Standard (RPS) that "establishes the percentage of electricity sold by an electric utility to retail customers that must come from renewable sources."
Overall, we do need a rapid transition to EVs both nationwide and globally. According to the Rocky Mountain Institute, "15–20 percent of global light-duty vehicles would need to be electrified by 2030 in order to limit global temperature rise to less than 2°C and avoid the most catastrophic effects of climate change," and since here in the U.S. only about two percent of new vehicles sold are EVs, we still have a ways to go.

In order to reach this goal, we need accessibility of EVs to increase, as most people don't have a wide array of choices. This problem was spearheaded in California, with their introduction of a Zero Emission Vehicle (ZEV) program, which requires car manufacturers to produce and make available a number of ZEVs and plug-in hybrids based on the total number of cars sold in CA by the manufacturer. Since CA launched its modern-day ZEV program in 2012, 10 states have implemented similar standards.

In terms of cost savings, while EVs may be more expensive up front (for now, and there tax credits and other financial incentives to encourage purchase), electricity is cheaper than gas, AEVs are more efficient and have less maintenance costs than traditional vehicles and with improvement in range and increased prevalence of rapid charging stations, EVs are becoming a competitive option for those in the market for a new car.

Recommendations for ECAP

The city of Escondido primarily employs fossil fueled vehicles in both the city fleet and that of its private residents, and thus can reap benefits from modeling sustainable transportation systems. In addition to the major carbon emission reduction potential of this clean transition, co-benefits include reduced operating/maintenance expenses, improved air quality, reduced noise pollution, and enhanced revenue streams via addition of public charging stations. The picture below shows real life examples of electric options: Tesla Model X Police Vehicle, a Tesla Cybertruck vehicle, Parking enforcement vehicle, municipal bus, school bus, electric city shuttle, gas station converted to EV charging station, solar charging canopies over parking lots.

Priority Measures to be included in the ECAP

- ➔ Replace city fleet vehicles with electrics as soon as possible.
- ➔ Develop and conduct surveys to assess transportation modes of city residents for future reporting and to develop incentive programs for more sustainable modes of transportation.
- ➔ Incorporate measurable, verifiable, & enforceable annual reductions in regional vehicle miles traveled (VMT) per capita
- ➔ Require reports on VMT per capita every 2 years
- ➔ Avoid expansion of arterial roads

- ➔ Increased solar canopy arrays on parking lots & city property.
- ➔ Increase city-wide EV solar-powered charging infrastructure & adopt measures to promote use
- ➔ Direct clean energy surplus to fund additional electrification projects
- ➔ Electrify long haul vehicles and prioritize **zero-emission vehicle** infrastructure for transit

Supporting Initiatives:

- ➔ Incentivize local businesses to add charging stations
- ➔ Creation of shared bicycle/pedestrian paths and provide bicycle racks in
- ➔ Provides a free shuttle service for getting around Escondido. Offer real-time GPS tracking and text message notification to provide riders with accurate wait time estimates at shuttle stops.
- ➔ Offer shuttle services to San Diego Lindbergh Field on major travel days for reduced prices.
- ➔ Create a community Facebook page for a Ride Share, which will help community members seeking rides with those seeking traveling companions and/or gas money.
- ➔ Adopt ordinance to limit/excessive car/truck idling.
- ➔ Investigate the possibility of offering a condensed workweek options for employees as a matter of policy or standard practice to reduce the need to commute daily.
- ➔ Initiate "Hertz on Demand", an hourly car-sharing program, to provide an adequate number of hybrid/EV's as an alternative for residents who do not own (or wish to own) vehicles.

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Climate Protection through Land Use Measures: Permanent Conservation of Natural, Working Lands (Ag) & Open Space

Climate Resilient Connectivity: Summary below of SDSU Climate Resilient Connectivity Report

Maintaining regional biodiversity and ecological function in the face of the direct and indirect impacts of climate change is one of the central and burgeoning issues facing land managers. Rapid land use development has been observed and is expected in southern California, where high population density and growth is correlated with increasing numbers of rare and threatened California plants and animals and increased fire frequency. Without strategic, science-based mitigation and management, climate and land use change are expected to cause unprecedented species extinctions at the local and global-scales. Habitat connectivity is the most frequently recommended strategy to support adaptation to climate change & habitat fragmentation.

In southern California, the California Natural Community Conservation Planning (NCCP) program and Habitat Conservation Plans (HCPs) have resulted in protected area networks to address widespread habitat fragmentation across the region. Connectivity is essential if these networks are to support the long-term goals of protecting biodiversity, particularly as species' ranges are likely to

shift in response to climate change. Landscape connectivity allows for movement among patches of suitable habitat, reduces the chance of extinction for small populations, and maintains gene flow in patchy landscapes. Over longer time scales, and in the face of changing environmental conditions, connectivity will prove critical for facilitating range shifts in response to landscape changes caused by changing climate and altered disturbance regimes.

Efforts to develop proactive, adaptive planning for linked and connected landscapes under climate and land-use change have been increasingly employed in other regions of the western U.S. However, they have yet to be applied to coastal southern California (Figure 1 below), despite the region's long history of actions to preserve biodiversity. To accomplish this task, SDSU built on this history of conservation planning and reserve design to identify a linkage network that addresses landscape dynamics for regional connectivity planning. This linkage network was designed to allow for local movements among individual preserves while supporting landscape-scale regional connectivity.

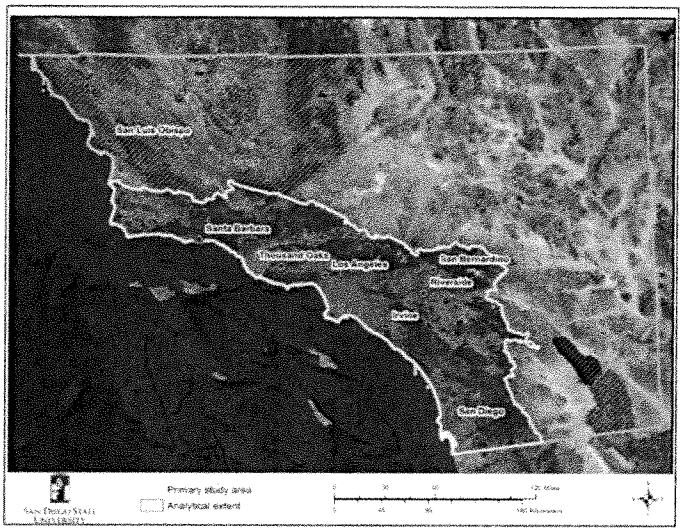


Figure 1. Map depicting the primary study area within the South Coast Ecoregion of California and the expanded analytical extent.

Area 4 (below) is located in the coastal area of central San Diego County and encompasses Lake Hodges and several riparian corridors (i.e., Escondido, Lusardi, and Penasquitos Creeks) managed by the City of San Diego and County of San Diego that are part of the San Diego Multiple Species Conservation Plan preserve network. This zone is bordered by Interstate 15 to the east, Interstate 5 to the west, the cities of San Marcos and Escondido to the north and the Mira Mesa neighborhood of San Diego to the south. The area serves as an important north-south connection among the conserved lands in the highly fragmented coastal plain. Connectivity among these riparian preserves may also support movement between constrained lands to the west to larger blocks of contiguous open space to the east. This zone is threatened by expanding development along the SR-56 corridor, Carmel Valley, and in the City of San Marcos. SR-56 to the south, SR-78 to the north, and I-15 to the east, as well as numerous secondary roads (e.g., Carmel Valley Road, Black Mountain Road) pose constraints to wildlife connectivity in and out of the area and should be considered for wildlife road crossing improvements.

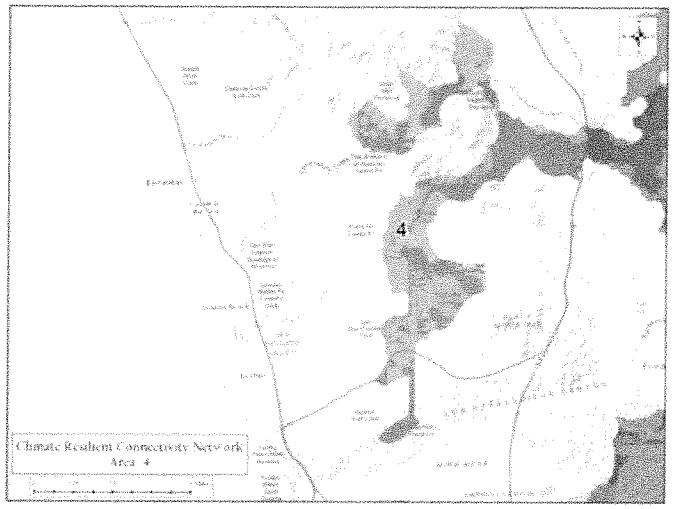
Area: 4

North Western San Diego County

Acres: 15,497

43.0% **Conserved**

(Conserved areas shown in darker color on map)



Land Cover	Vegetation Composition	
23.4% Urban	65.9% Vegetation	
1.9% Agriculture	*20.4% Chaparral*	*21.5% Coastal Sage Scrub*
5.8% Water or Wetlands	*0.0% Conifers*	*18.0% Grasslands*
2.9% Barren	*6.0% Hardwood*	*0.0% Desert Sage Scrub*

4 **Focal Species**: Big-eared woodrat, Bobcat, Western toad, Wrentit
Majority Land Owners: City of San Diego, County of San Diego, Escondido Creek Conservancy

Area 5 (below) is located in northern San Diego and southern Riverside Counties and encompasses the inland valleys east of Interstate 15 up to Palomar Mountain in the Peninsular Range, including lands in the managed by the U.S. Forest Service, County of San Diego, Vista Irrigation District, and Cities of San Diego and Escondido. This zone is bordered by Interstate 15 to the west, the desert in the east, SR-78 to the south, and SR-79 to the north. Conserved lands in this zone are primarily in the east whereas the western half includes agricultural lands, rural communities, and lands proposed for conservation under the Draft North County Multiple Species Conservation Plan. Tribal lands for the Pechanga, Pala, La Jolla, San Pasqual, and Mesa Grande tribes are also located in this zone. The northern segment of this linkage includes the eastern half of the critically important linkage between Palomar Mountain and the Santa Ana Mountains, which has been previously identified in the CEHC and SCML modeling efforts. This area is at risk from expanding low- and medium-density developments and the increased fire frequency. Numerous rural roadways constrain wildlife connectivity within this area, and Interstate 15 at the San Diego-Riverside County boundary is a major barrier to wildlife movement that should be considered for wildlife crossing improvements.

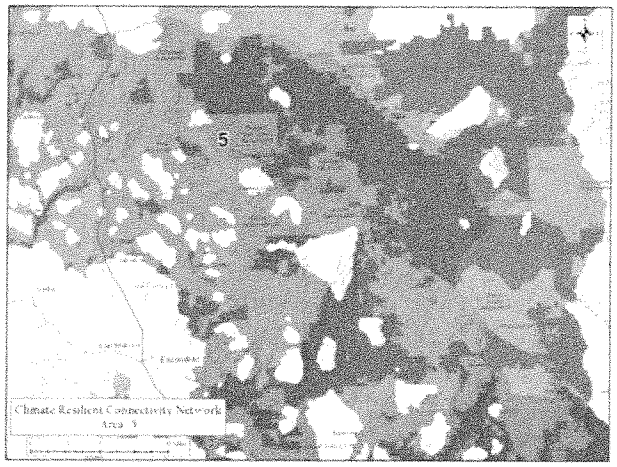
Area: 5

Palomar/Agua Tibia Mountains

Acres: 341,038

38.6% **Conserved**

(Conserved areas shown in darker color on map)



Land Cover		Vegetation Composition	
4.5% Urban		82.8% Vegetation	
10.7% Agriculture	*43.6% Chaparral*		*9.3% Coastal Sage Scrub*
1.6% Water or Wetlands	*2.8% Conifers*		*11.4% Grasslands*
0.4% Barren	*15.5% Hardwood*		*0.1% Desert Sage Scrub*

5 Focal Species: California spotted owl, Big-eared woodrat, Bobcat, Western toad, Wrentit
Majority Land Owners: Cleveland National Forest, Vista Irrigation District, County of San Diego

Overview and potential for action to reduce or avoid GHG emissions.

Land use has a very significant impact on climate change. In the face of the climate crisis, it makes sense to ensure that we are building in areas that are already part of the urban footprint, avoiding conversion of natural areas, and restore those critical areas that can be restored. Each metric ton of GHG avoided is also the path to climate stability. **Leaving native habitats can sequester 0.2 tons/acre/year. 1,100 acres will sequester 220 metric tons a year.** Luo et al Chaparral as Carbon Sink In recognition of this, the state has a priority to restore natural lands, protect agriculture lands, and reforest riparian areas and has many funding opportunities for this. It is one of the major categories of California's Climate Policy. Ca Natural and Working Lands Climate Change Implementation Plan.

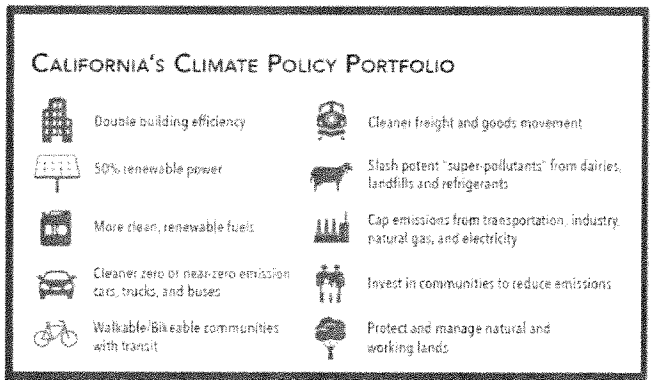


Figure 2. Protecting and managing natural and working lands is a key strategy within California's broader climate change policy portfolio.

Agricultural lands are also important areas to ensure we avoid conversion to other, more impactful, types of land uses. The Strategic Growth Initiative has also stated this as a priority and links land preservation to landform e.g. compact, transit-oriented communities.

The Sustainable Agricultural Lands Conservation Program (SALC) utilizes Cap-and-Trade proceeds to protect agricultural lands that are at risk of conversion to other uses. Studies show that farmland produces 70 times less greenhouse gas emissions than urbanized land, and protecting farmland provides an opportunity to capture carbon in the land base. SALC's mission is to support California's need for agricultural conservation, economic growth, and sustainable development.

"SALC fights climate change by protecting our productive farm-lands and encouraging compact transit-oriented communities."

Multiple benefits of carbon farming

Carbon farming or regenerative agriculture can reverse climate change within our lifetime. The data show that if implemented on a larger scale than currently practiced, regenerative agriculture — from tropical home gardens to temperate permaculture — could draw down more than 100 billion tons of carbon into the soil. This equal to 367 billion tons of carbon dioxide (CO_2). Climate scientists report that to reverse the disastrous course we're now on, we need to draw down an estimated 200 billion metric tons of CO_2.

Not only can carbon farming sequester great quantities of carbon currently in the atmosphere, it also offers resilience in the face of drought and flooding. Bringing carbon into soil builds soil organic matter, which improves the soil's ability to capture water. This can help prevent runoff during floods and increase water retention during times of drought. For every 21 tons of carbon sequestered per hectare (2.5 acres), soil organic matter goes up about one percent, which in turn increases the soil's ability to hold water by 25,000 gallons.

Because it involves high levels of on-farm biodiversity, regenerative carbon farming produces lucrative combinations of food, fiber, building materials and biofuel. It also protects water resources, pollinators and wildlife habitat, and improves soil quality and productivity.

Removal of invasive grasses

Further, allowing invasive, fire-prone grasses to invade a natural habitat increases fire risks and reduces carbon sequestration success. Invasive grasses reduce carbon storage
Depending on the type land conserved or restored, there are many potential co-benefits. More habitat, cleaner water, more food, more parks, more opportunities for residents to be in nature.

Identifying open spaces, natural and working lands for protection near highly impacted. Underserved neighborhoods is also a priority for the state and funding is provided for such projects.

The University of South California has urged actions around Natural and Managed Ecosystem Solutions including regeneration of damaged natural ecosystem and restoration of soil organic carbon to improve natural sinks for carbon. (p 20)

Riparian restoration can also sequester carbon.

One study demonstrates that per km of restoration over 4,000 tons of carbon is sequestered. This is equivalent to emissions from 3,400 cars or 1,400 homes.

Chaparral restoration is a significant option for sequestering carbon.

- Riparian/chaparral ecosystems absorb large amounts of atmospheric CO2 & store the carbon in their biomass.
- Chaparral habitat has the largest biomass per acre in Southern California, making it our largest natural carbon sink.
- Riparian Habitat improves water quality by filtering nutrients and nitrogen fixation.
- Chaparral habitat can adjust to high levels of air pollution and planting chaparral plants in urban environments could significantly lessen the impact of air pollution.
- Chaparral habitats are one of the most resilient & sturdy in Southern California, but also one of the least restored.
- With climate change converting many of our currently forested areas, the role our chaparral habitat plays will be more important than ever.

Proposed Sustainable Land Use Measures for the E-CAP

- ➔ Define/execute a comprehensive policy to conserve key natural habitat areas & agricultural lands by increasing goals and metrics for 'avoided conversion' through preservation and restoration for habitat and agricultural lands.
- ➔ With VMT's a primary GHG contributor in our region, we need measures that halt annexation of lands that are primarily served by individual cars
- ➔ Restore Escondido creeks and waterways for carbon sequestration, cooling, and habitat/community enhancement.
- ➔ Add a measure to remove 500 units of development from natural habitat from projects included in the General Plan.
- ➔ Add a measure to prohibit annexations and development in fire-prone areas and focus infill within current urban footprint.
- ➔ Update, adopt, and implement the city's Sub-Area Plan under the MHCP.
- ➔ Adopt a Sustainable Development Codes for Vegetation Protection Areas https://sustainablecitycode.org/brief/vegetation-protection-areas-8/
- ➔ Assess the E-CAP actions and apply for state funding support for applicable actions.
- ➔ Include program to increased "carbon farming" to protect a $1.7B agricultural industry in SD County.
- ➔ Regarding carbon offsets, if unable to be fully mitigated on site, purchase of subsequent carbon offset credits must occur within the city limits
- ➔ Divert city compost to regenerate damaged natural ecosystems where appropriate & restore natural carbon sinks

Regional and Local Support Roles:

- Work with the County, Natural Resource Agencies, and landowner to ensure the purchase for critical habitat and restoration of the Safari Highlands Ranch Critical habitat, such as Safari Highlands Ranch, would be a prime candidate for Federal and State Land and Water Conservation Funds.
- Through support at SANDAG of a Regional Conservation Funding Source, the city could receive funds for acquisition, management, and monitoring

- City could take a support role in the region by supporting and advocating for full implementation of the Natural Communities Conservation Plans in our region.

References

Bending the Curve: Ten Scalable solutions for carbon neutrality and climate stability, University of California Climate Action Playbook KC, pp 30-31

Land-use considerations for wildfire prevention

The 2017 National Academy of Sciences Study, **Human-started wildfires expand the fire niche across the United States** outlines the economic and ecological costs of wildfire in the United States have risen substantially in recent decades. Public dialog and ongoing research have focused on increasing wildfire risk because of climate warming, overlooking the direct role that people play in igniting wildfires and increasing fire activity. Human-started wildfires accounted for 84% of all wildfires, tripled the length of the fire season, dominated an area seven times greater than that affected by lightning fires, and were responsible for nearly half of all area burned. Research indicates that strategies focused on prescription burning in San Diego's shrubland systems would only worsen the ecological impact of fire. Other research suggests that mechanical fuel reduction has limited effectiveness and that fuel breaks and mechanical treatments such as mastication pose serious ecological consequences, such as furthering the spread of invasive grasses. National and regional policy efforts to mitigate wildfire-related hazards would benefit from focusing on reducing the human expansion of the fire niche

Fire Prevention Measures to include in ECAP

- ➔ We need to adapt state-of-the-art wildfire behavior modeling that can factor in future climate conditions.
    - These are needed to identify future fire threat/risk
    - Improve understanding of where and when to conduct fire management strategies in order to reduce fire risk and protect biodiversity
    - Integration of fire hazard maps for future development accordingly.

- ➔ Land-use planning efforts that focus on infill development rather than expanding development into wildlands not only reduces fire risk to humans but can protect critical wildlife and uphold sequestration. We need to STOP building in fire prone areas

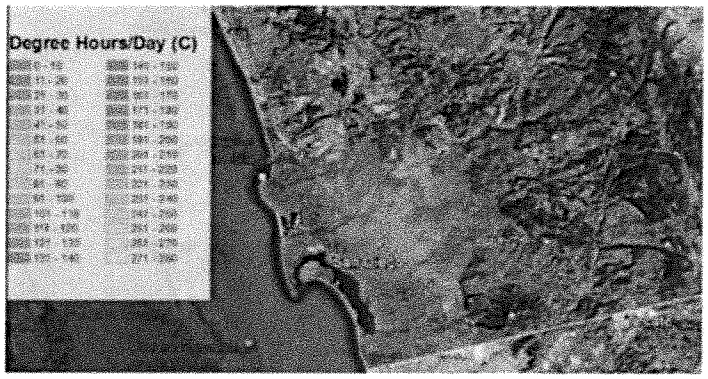
- ➔ Replace roadside vegetation clearings or otherwise with natural habitat to mitigate an increase in invasive/flammable species.

LAND USE OPPORTUNITY: Protect & Increase Urban Tree Canopy

TREES mitigate climate change in two ways: By reducing emissions related to air conditioning & heating with their shade, and by sequestering carbon and other greenhouse gas emissions. Therefore, in urban areas trees are especially valuable as they provide for pollution reduction & improved pulmonary health for residents. Additionally:

- ➔ A single mature tree sequesters 50lbs of carbon per year
- ➔ Increased real estate values & neighborhood beautification
- ➔ Topsoil & stormwater retention (1000g/y per mature tree)
- ➔ Critical for wildlife habitat.
- ➔ Shade and "Evapo-transpiration"

Figure 10. Urban Heat Island Index for San Diego County (CalEPA 2015)



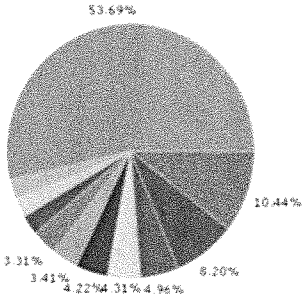
It is estimated that trees can reduce urban heat island effects by as much as 10-20 degrees F! Most notably, with more than 1/3 of all carbon emissions in the US being created by electricity production, minimizing heating/cooling in buildings via shade trees significantly lowers carbon footprint. Accounting for all benefits, it's estimated that urban trees return $3+ for every $1 invested in their planting & care over their lifetime. Heat Island Basics Trees/Vegetation How Trees Combat Urban Heat

ECAP Primary Initiative Focus: Protect and Increase Urban & Suburban Forests.

It's estimated that tree canopy for the San Diego region as a whole is **60-70% below** what it should be for the health of both humans and the environment (note that 15% total canopy coverage is optimal for a semi-arid city like Escondido). The most concerning aspect is that San Diego's tree canopy is likely further decreasing via drought, disease, & human indifference. That said, the City of Escondido's ~50,000 trees still potentially mitigate **8-10+ tons** of air pollution per year and remove an additional **400-700+ tons** of carbon per year. It's estimated that Escondido's current tree population (see figure/charts below) provides annual ecosystem benefits valued at **~$100-150M,** be it pollution control, carbon & water sequestration, cooling and shade, etc.

Escondido should develop and implement a management plan along with best practices to both increase total canopy coverage as well as assure the long-term vitality of its urban/suburban forests.

Top 10 Species / Estimated Value



	Botanical	Common	Total	Pct.	Estimated Value
	Syagrus romanzoffianum	QUEEN PALM	5,177	10.44%	$8,698,620.00
	Quercus agrifolia	COAST LIVE OAK	4,064	8.20%	$24,210,650.00
	Washingtonia robusta	MEXICAN FAN PALM	2,461	4.96%	$9,533,400.00
	Platanus X hispanica	LONDON PLANE	2,137	4.31%	$4,218,040.00
	Liquidambar styraciflua	AMERICAN SWEETGUM	2,092	4.22%	$5,205,460.00
	Lagerstroemia indica	CRAPE MYRTLE	1,689	3.41%	$1,303,060.00
	Eucalyptus camaldulensis	RED GUM	1,640	3.31%	$9,743,170.00
	Jacaranda mimosifolia	JACARANDA	1,246	2.51%	$1,940,970.00
	Cupaniopsis anacardioides	CARROTWOOD	1,228	2.48%	$2,464,520.00
	Lophostemon confertus	BRISBANE BOX	1,226	2.47%	$2,758,000.00
	Other	OTHER	26,623	53.69%	$79,929,420.00
	Total Trees		**49,583**	**100%**	**$150,005,310.00**

Step 1: *Assess the current state of its urban forest*

- ➔ The Assess current total canopy coverage % for the city, evaluate species, location, and potential for shade coverage and carbon sequestration.
- ➔ Continue monitoring diseased/declining trees, remove dead ones.
- ➔ Identify areas of deficiency in business and residential sectors & assess feasibility to increase coverage.

Step 2: *Develop a master plan to fund, maintain, and improve urban forest.* Target to plant enough trees – public & private – by end of 2023 to reach 15% canopy coverage in 10 years.

- ➔ Create a City Forester position and assign a certified horticulturist/arborist
- ➔ Initiate capital improvement programs, public works & parks budgets. Consider ballot measure to fund?
- ➔ Adopt ordinances to require tree preservation, private owners included.
- ➔ Replacement and planting for private development.
- ➔ Enhanced inspection and enforcement capabilities.

Step 3: *Plant & Protect Street & Shade Trees*

Street trees provide special benefits in that they protect sidewalks and asphalt, reduce automobile accidents by slowing traffic, absorb UV rays and pollution, improve retail viability, reduce energy use and even reduce crime, which increases with heat. Their cool greenery also provides a more appealing atmosphere that encourages walking and biking. Carefully situated shade trees can play a powerful role in reducing air condition burdens and utility bills. A deciduous shade tree placed on the southwest corner of any building can reduce air conditioning bills by at least 25 percent, and these benefits begin to accrue within just a few years of planting. In winter, evergreen trees are effective when placed on the northeast corners of buildings, serving as wind breaks and reducing heating bills.

- ➔ Ensure city planning master plan incorporates increased street tree plantings, and that tree planting is funded.
  - o Assign highest priority to low equity residential neighborhoods
  - o Plant trees along streets and in medians.
  - o Plant shade trees around municipal buildings as warranted by assessment.

- ➔ Require street trees (of appropriate species for location) to be planted in new commercial developments. City of Vancouver Tree Requirements

- ➔ Akin to Free Tree SD, Escondido should fund a community tree program that provides residents with free street trees and horticulture information about their planting and care.

- ➔ Consider replacing invasive & Mexican palm species with more favorable shade tree species.

- ➔ Pursue funding a tree planting project via The Escondido Community Foundation

- ➔ Utilize **Community Group Development Grants** (up to $5k per group) for street planting in needy areas. (discuss details with Consuelo Martinez)

- ➔ Create a community-led Go Fund Me to solicit donations for specific tree planting projects in underserved areas.

    - Or it can be a something like "Escondido Team Tree's", where we create a website like this one, partner with Arbor Day to assist with planting, get it out on social media to solicit funds, and then carry out planting in underserved areas in Escondido.

- ➔ Continued participation in Cool Parks, where recently volunteers planted 300 trees in Grape Day Park, Kit Carson Park, Mountain View Park, Washington Park, Jesmond Dene Park and South Center City Parkway.

- ➔ Find a local partnership akin Tree People and their collaboration with the Leonardo DiCaprio Foundation LA Urban Forestry Initiative

- ➔ Provide cost-sharing for planting of shade trees. Encourage incentive programs with local utilities/SDG&E. Riverside Shade Tree Incentives San Antonio Green Shade Program

- ➔ Increased City of Escondido & Community collaboration w/ Arbor Day Foundation

    - Host an annual Arbor Day Event where volunteers work to plant trees!
    - Become an Energy Saving Trees Partner (SDG&E is a Arbor Day Partner!)
    - Become a Community Canopy Partner
    - Tree Certification to ensure tree care and health is standardized and trees will henceforth be cared for by certified arborists and supported by the tree advisory committee made up of professionals & community partners.
    - Earn Recognition for Urban Forest Stewardship with a Tree City Arbor Day Award Example: Boulder, CO

Water Conservation Measures to include in the ECAP

In the coming years and decades, precipitation will remain highly variable but will change in character, with wetter winters, drier springs, and more frequent and severe droughts punctuated by more intense individual precipitation events. In the regional impact report it was noted that the San Diego County Water Authority continues to diversify its supply by developing more local sources, developing more recycled water, & encouraging greater water conservation. Along these lines, we should highlight some initiatives in our cities CAP plan:

- ➔ Expanded conservation and recycling efforts by the San Diego County Water Authority
- ➔ Mandate all newly constructed homes be equipped with gray water irrigation systems, drought tolerant landscaping, & water efficient fixtures
- ➔ Programs and incentives to offset the cost of conversion to drought tolerant landscaping.
- ➔ Free rain barrel program for lower income households
- ➔ Cost-free city sponsored water efficiency inspections for home plumbing & irrigation.
- ➔ Programs & funding for increasing water efficiency – both plumbing fixtures and landscaping – for commercial entities.

Agriculture: Impacts on Climate Change & ECAP Measures for cultivating Urban Agriculture

Animal Agriculture Contributes to Climate Change

Along with concerns of long-term climate change impacts on our crops and food supply, agriculture – specifically the farming of animals – is a major source of emissions and a contributor to climate change. It's clear that the world cannot meet global greenhouse gas reduction targets without curbing consumption of animal products. High-meat eating nations like the United States, which consume 2.6 times more meat than the global per capita average, must help shoulder this responsibility.

Feeding massive amounts of grain and water to farmed animals and then killing them, processing, transporting, and storing the produce (refrigeration required) is extremely energy intensive. Carbon dioxide, methane, and nitrous oxide are all powerful greenhouse gases, and together, they cause the vast majority of climate change. Together, the world's top five meat and dairy corporations are now responsible for more annual greenhouse gas emissions than Exxon, Shell or BP.

- ➔ CO2: Burning fossil fuels releases carbon dioxide. On average it requires 11 times as much fossil fuel to produce a calorie of animal protein as it does to produce a calorie of grain protein, & thus considerably more carbon dioxide is released.

- ➔ Methane: Chickens, turkeys, pigs, and cows who are kept in factory farms each year produce enormous amounts of methane, both while they digest their food and from the acres of waste pools. The U.S. Environmental Protection Agency has shown that animal agriculture is globally the single largest source of methane emissions and that, pound for pound, methane is more than 25 times as effective as carbon dioxide at trapping heat in our atmosphere.

In order to fully account for their climate impacts, municipalities should consider upstream emissions — that is, the embedded emissions associated with the production of food purchased and served by the city or county. Co-negatives of the livestock industry are rampant land degradation, water waste and pollution, air pollution, and loss of biodiversity. For human health risks of disease and death are lower in plant-based diets as well as are health care costs.

Reduced Emissions and Resource Use with Plant-Based Diets
Numerous studies document the beneficial role of plant-based diets in reducing greenhouse gas emissions, resource consumption, and environmental degradation. While this area of research is evolving, studies generally find that plant-based foods (with some exceptions) require less energy to produce and generate fewer greenhouse gas emissions than animal foods. Plant-based diets result in 0.8 ton/year annual emissions reduction compared to those who frequently eat a meat in their diet. Using this number, even a modest goal of 50,000 Escondido residents reducing their meat consumption by 50% could achieve a 20,000 ton reduction annually.
Supporting local commercial agriculture is important and is a stated priority for the City. In addition, there are many things the city can do to increase local food security on a residential and 'uber' local level.

Create a Network of Climate Victory Gardens in Escondido
As part of the WWI and WWII war efforts, the nation rallied to feed their communities at home and support troops overseas by planting Victory Gardens. To many this might seem a trivial effort. How much can a few gardeners grow? By 1944 nearly 20 million victory gardens produced 8 million tons of food, equaling about 40% of the fresh fruits and vegetables consumed in the US at the time.

We are once again in the position where we, as everyday residents, have the opportunity to use our gardens as a force for change. Instead of gardening in support of war efforts, we are gardening to fight climate change. Shifting garden practices towards principles of regenerative agriculture can be a meaningful part of reversing climate change and sequestering carbon out of the atmosphere and back into the soil.

An effort like Green America's Climate Victory Garden Campaign is one we could amplify in Escondido neighborhoods and under-used urban lots. Food2Soil, a successful local composting collaborative could be replicated in Escondido to improve soil quality, and carbon sequestration, in resident gardens.

Enhance support for Farmer's Markets and Community-Supported Agriculture (CSA) programs
Escondido is so fortunately to have several local farmer's markets. Some of our local farmers also have CSAs. However, they could serve many more people than access these great programs. Modeled on "Birding Trail" or "Wine Tour" maps, the city could develop a Local Food Map or other communication material to continually reinforce the availability and healthfulness and climate sense of eating locally and supporting our local farmers.

Get serious and creative about "Urban Ag" programs.
A movement to bring agriculture into the cities and already developed neighborhoods is also an action that could be promoted in the city. A great organization working on this issue is the San Diego Food System Alliance. The value of urban agriculture is not just about the food. In reality, few, if any, urban agriculture projects are intended to replace traditional food retail or would claim to lead to food self-sufficiency for individuals or for cities.

However, urban farms and community gardens *do* supplement household, community and municipal food security with seasonal and culturally-appropriate foods. They also build social capital, gather communities, catalyze civic engagement, and perform ecosystem services. Another important initiative of the SDFSA is the preparation of a San Diego County Food Vision 2030. This would be a fruitful effort for our community to be involved in.

Measures to be added to the ECAP:

1. Develop a Climate Victory Garden program for Escondido.
2. Develop a model for a Food2Soil community composting program that builds off or expands current local composting offerings.
3. Develop a Local Food map or other communications program for city residents.
4. Set a goal and metric for urban agriculture activities.
5. Adopt and "Urban Agriculture Incentive Zone (UAIZ) program to offer a property tax incentive to encourage urban Ag in Escondido.
6. Engagement in the Food Security 2030 Vision could also help focus on resiliency and future stability of our community.

ECAP Support Initiatives

- ➔ We request that the draft of the Climate Plan include an assessment of actions related to reducing emissions by promotion of a plant-based diet.
- ➔ E- CAP should include goals for residential tree planting, home gardening, and incentives to use rain barrels.
- ➔ E-CAP could include information on 'climate-friendly diets' for residents and the city can determine its own behavior and purchasing actions in what could be measurable and enforceable actions.
- ➔ We strongly urge the climate planners pursue the recommendations contained in the report ***MEAT OF THE MATTER: A Municipal Guide to Climate-Friendly Food Purchasing***, adapted for Escondido.
- ➔ ECAP should create a staffed working group to evaluate resources and develop a plan to increase food security, reduce climate emissions, and improve health for the city and environs.
- ➔ The City should provide pathways for institutional procurement of local produce that would facilitate investment in local plant-based farms and offer farm microloans, tax-incentives, and grants.
- ➔ The CAP should include requirements or incentives for institutional adoption of a minimum number of fully plant-based meals at government meetings, hospitals, schools, universities
- ➔ Begin a community campaign to educate the public about food choice as part of a climate-friendly lifestyle.
- ➔ Implement a "Buy climate-friendly first" food purchasing policy for public institutions including city and county governments, schools, and hospitals
- ➔ Develop an updated regional emergency food distribution plan that accounts for climate- and energy-based disruptions. The level of need for such a plan will be made clear by conducting a vulnerability assessment...
- ➔ Expand community gardens on public and private lands including school campuses, City lands, and church properties.

- ➔ Support urban tree food programs of such advocates as Tree by Tree, and the Eugene Tree Foundation (now Friends of Trees).
- ➔ The City should encourage and fully support the local Farmer's Markets in the region to promote more consumption of locally grown foods which have the lowest carbon footprint.
- ➔ The City should support a climate and public health campaign to encourage more plant-based, whole foods eating in the region. The CAP should include commitment to educational materials, workshops on plant based eating, and promotional events to encourage more plant-based eating.
- ➔ Climate-friendly menus (locally-sourced, plant-based) should be served at all City and city sponsored events with educational materials to accompany them.
- ➔ The CAP should include measures to create an *Eat a Climate-Friendly Diet* working group and partner with local vegan and plant-based groups, farmers, & businesses have expertise to share.
- ➔ The CAP should include measures to offer tax-incentives to restaurants where 50% or more of the menu offerings are plant based.
- ➔ The CAP should include measures to increase suitable agriculture reserve lands suitable for produce farming and create urban agricultural zones to put vacant parcels into produce food production in urban areas.
- ➔ The City should partner with organizations that support produce farmers and help them sell locally. Groups like San Diego Food System Alliance, California Food Link, and the San Diego New Farmers Guild would be good partners.
- ➔ The CAP could investigate programs to incentivize food technology industry to develop plant-based and cellular agriculture alternatives to animal products.

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E-CAP Implementation, Administration, & Community Support Activities

As great as it is to have a solid plan framework for CAP initiatives, it's critical that we have all the right tools, resources, & expertise in place at the onset to get set the wheels in motion, to continue to build out and integrate CAP measures into city planning, funding, monitor adoption success, failures, and ultimately to sustain. The following are recommended:

- ➔ Ensure CAP is legally binding with CA requirements & preserve/improve elements that align with best practice.
- ➔ Set Zero Carbon target goal in alignment with Executive Order B-55-18 of carbon neutrality by 2045.
- ➔ Include DETAILED timeline of strategies along with cost analysis & expected GHG reduction results for each.
- ➔ Produce a GHG inventory every 3 years, & annually monitor each initiative implemented
- ➔ Establish/fill a Climate Coordinator position accountable directly to City Manager or Mayor
- ➔ Climate Coordinator to create a Climate Task Force, open to the public, to implement ECAP & to maximize grants/funding.
- ➔ Create a Resident Advisory Sustainability Commission to advise the city on implementing the CAP and other environmental, & quality of life issues.
- ➔ Create a Climate Justice Ambassadors program to assist with outreach in Equity Priority neighborhoods.
- ➔ Hold an annual Escondido Climate Event (or week!) to focus education & attention around carbon emission reduction.
- ➔ While measures/metrics are critical aspects to a CAP, we must ensure that a comprehensive & detailed "Plan" is put forth.

Escondido Community Advisory Group on Environmental Impacts and Climate Action: Solid Waste Management Recommendations

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July 8, 2020

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City of Escondido Zero Waste Recommendations

The global population is expected to reach 8.5 billion by 2030, 9.7 billion by 2050, and 11.2 billion by the end of the century.[1] North America is home to 5% of the world's population and it consumes 30% of the world's resources.[2] Cities only take up 2% of the world's land area but are responsible for 60%-80% of the world's energy consumption and 75% of global CO2 emissions; roughly the same amount of raw materials are consumed.[3] Cities are focused areas of production, consumption, and waste.[4] In addition, these characteristics put a lot of pressure on city infrastructure, such as water supply, solid waste recycling, and environmental pollution. Cities are increasingly becoming reliant on urban areas to supply management of waste and related substances.[5] Solid waste disposal sites, including landfills are responsible for 5%-20% of global methane emissions, and up to 4% of total anthropogenic (human caused) greenhouse gas emissions.[6] In 2009, 32% of all food produced globally was lost or wasted.[7]

From extraction of raw materials, to the disposal of the goods they are used to create, the creation of stuff requires energy mostly from fossil fuels.[8] In the past 3 decades, to support this consumer lifestyle, ⅓ of natural resources have been used, less than 4% of original forests in

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[1] Koop, S.H.A., van Leeuwen, C.J. "The challenges of water, waste and climate change in cities" *Environ Dev Sustain* 19, 385–418 https://doi.org/10.1007/s10668-016-9760-4, 2017.
[2] *The Story of Stuff. The Story of Stuff Project*, 2009. https://youtu.be/9GorqroigqM.
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[8] "Climate Change and Waste." EPA. Environmental Protection Agency, September 29, 2016. https://19january2017snapshot.epa.gov/climatechange/climate-change-and-waste_.html.

America are left, and a stunning 40% of waterways in the U.S. are not safe for consumption.[9] In the U.S, energy used to produce, process, transport, and dispose of products account for 42% of greenhouse gas emissions; traditional waste management methods produce 1%-5% of emissions.[10]

Linear System

There is no "throw away, " waste does not just disappear. Waste goes to a landfill or an incinerator and then to a landfill. In an incinerator waste is burned, releasing toxic chemicals into the air as well as greenhouse gases; landfills also release greenhouse gases. Society has become disposable and has been designed around a framework of convenience. Using single-use plastic bags, take-out containers, cutlery, coffee cups, napkins, has become the norm in the past 50 years. The general public's conception of waste ends with taking the trash out to the curb or tossing it in a dumpster. There is no thought about where waste goes or the impacts it has on the environment and human-beings. Moreover, food waste is also seen as trash, simply tossed in with everything else in the garbage bin; as the population increases, it is natural that waste will increase as well. Waste is intricately woven with the converging threats of climate change, overpopulation, and environmental degradation. There is only a small window of opportunity left to mitigate climate change away from existential consequences, and it will require society to transition away from norms and values that are associated with a necessity around exponential consumerism. **It starts with developing a conscience around the system of how stuff is extracted, produced, consumed, and disposed of, and most importantly developing the infrastructure that allows for sustainable management and production of it. The most**

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[9] The Story of Stuff. "*The Story of*"
[10] "Climate Change and Waste." EPA

important management strategy for waste is simply to make a huge reduction of the amount of materials that are consumed.

To understand how society traded thrift for convenience and attached value to consumerism, it is necessary to understand the system in which humankind lives. The system in which stuff moves through is known as the materials economy. The model is based on a linear understanding of the process and through this lens it recognizes five main components: **extraction, production, distribution, consumption, and disposal.** This model makes it seem like stuff moves through it easily, it does not account for the constraints that are faced in reality. Every step of the way there are consequences of living the consumer lifestyle, lives and the environment interact with the system every day in different ways, and this conception does not account for those impacts[11]. Put simply, this conventional way of looking at the system has created a huge problem, a "Linear system on a finite planet cannot be run indefinitely".[12]

Consumption is what the success of this system depends on. Value is assigned to individuals' consumption habits; 99% of stuff bought by consumers is disposed of 6 months after they were bought.[13] Consumerism became a foundational aspect of American society after World War 2. At the time, people wanted to continue the war-time economic boom. That is when consumerism and the American economy became interwoven. The economy became dependent on an ever accelerating rate of consumption. The key to its success is creating products to become useless as quickly as possible, leading the consumer to dispose of it, and then replace it with another of the same.[14] Disposable coffee cups are a great example. They have a lifespan of

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[11] *The Story of Stuff.* "*The Story of*"
[12] *The Story of Stuff.* "*The Story of*"
[13] *The Story of Stuff.* "*The Story of*"
[14] *The Story of Stuff.* "*The Story of*"

one-time use. A consumer buys their latte, they drink it, and then they throw it away. The next day, the process repeats again. This is the norm for American society, with almost every product and associated experience. Technology is rapidly improving, but most of the structural components are the same, in computers for example, only the chip is what changes. In each new model, the shape of the chip changes, and that chip is a different shape, which results in it not being able to fit in older models. The consumer is forced to dispose of the old computer and buy a new one. This is called **planned obsolescence**; it has not always been the way of living, and because of that it can be changed. Companies intentionally design their products to last long enough that it is "worth it" for the consumer to invest in, and to ensure they will continue to buy more. **Perceived obsolescence** refers to the consumer disposing of items that are still in perfectly good working condition because they look outdated and perceive an outside pressure to fit-in.[15] The goal of all these strategies is to keep consumers buying new things.

Zero Waste

According to the Zero Waste International Alliance, Zero waste is, "**The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.**" This focuses on reducing and refusing as the primary steps; if those are not applicable, then turn to recycling and composting the remaining material. [16] Waste prevention is the best management option.[17] Most municipalities in the state with Zero Waste Plans are aiming for 70-75% diversion in a 5 year period.[18] In

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[15] *The Story of Stuff*. "*The Story of*"
[16] City of Oceanside. Climate Action Plan. The City of Oceanside & Partners. January 2019.
[17] "Climate Change and Waste." EPA
[18] City of Oceanside. Climate Action Plan.

addition, many plans have set goals for 90% zero waste by 2020-2025. [19]

Calculate emissions reduction for Zero Waste (WARM)- EPA

Calculates total greenhouse gas emissions of baseline and alternative waste management practices- source reduction, recycling, combustion, composting, landfilling. Measured in MTCE, MTC02E, & million BTU across types of waste materials.

EPA WARM most recent version

Equations for Life-cycle food waste

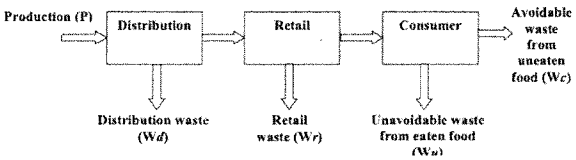

Figure 1. Life cycle model of material flow from production to disposal

Equation 1 below defines the basic mass balance in the life cycle of a food commodity. The difference between production (P) and consumption (C) is the total gross waste made up of waste at the distribution (Wd), retail (Wr) and consumer (Wcg) levels. All quantities are product weights.

$$P - C = Wd + Wr + Wcg \quad (1)$$

The food availability data series provides values for each of the terms in Equation 1 for all commodities on an annual basis from 1970 through 2009. This is described further in the Food Waste Data section below. Wcg is the gross consumer waste, the sum of avoidable and unavoidable consumer waste:

$$Wcg = Wc + Wu \quad (2)$$

The avoidable consumer waste (Wc) – also referred to as "consumer waste" in this paper – represents uneaten food that is wasted at the consumer level and is defined in Equation 3. Wc excludes the unavoidable waste in consumed foods due to non-edible parts (such as skins and shells) as well as fat or moisture losses in cooking. N is the fraction of a food commodity that is non-edible, and L is the fraction that is lost as fat or moisture during cooking.

$$Wc = Wcg - \left\{\frac{1}{(1-N)(1-L)} - 1\right\}C \quad (3)$$

The non-edible fraction N for each commodity is obtained directly from the food availability data. The fat or moisture lost in typical cooking is estimated from USDA ERS (1998) based on certain cooking assumptions as shown below. These estimates apply only to meats, fish, eggs and oils, all of which lose fat and possibly moisture during cooking. Vegetables may lose moisture in cooking, but we assume that this is

Circular Economy

"A circular economy is an economic system aimed at minimizing waste and making the most of resources. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, recycling, and upcycling."[20] This type of economy is structured around services instead of goods; the foundational difference is that in this system resources cycle. Imagine, renting out jeans from a retailer, once worn out, you return them they get broken

[19] City of Oceanside. Climate Action Plan.
[20] Lenier, Sage. "The Circular Economy" Lecture 5, Stanley Hall, 2020.https://sites.google.com/berkeley.edu/zerowastedecal/lectures/5-the-circular-economy?authuser=0

down and remanufactured into a new pair that will then get rented out again. Patagonia takes back its products and repairs worn out clothes. FairPhone is a company that is revolutionizing how phones are made, if something breaks down, you can take apart the phone and replace only the broken part. Iphones on the other hand usually entail a total phone replacement when one component is broken.[21]

California Legislation

Implemented Legislation

- ➔ SB 1383 (Lara, Chapter 395, Statutes of 2016) is the most significant waste reduction mandate to be adopted in California in the last 30 years
- ➔ AB 341: 75% Initiative: recycling, composting or source reduction of solid waste by 2020
- ➔ SB 32 & AB 32: reduce to 1990 levels by 2020 ad 40% by 2030
- ➔ 2030 Climate Strategy, CalRecycle: Increase edible food recovery by 20%, reduce total organic waste disposal by 75% by 2025
- ➔ AB 1826: AB 1826: Mandatory Commercial Organics Recycling,

On the legislative agenda:

- ➔ SB 54 & AB 1080: reduce single-use waste, truly recyclable & compostable packaging
- ➔ AB 2002: California Deforestation free procurement Act
- ➔ AB 1163: Right to Repair
- ➔ AB 619: Bring your own food & reusable containers
- ➔ AB 1162: Prevents distribution of SUP toiletries in hotels

[21] Lenier, Sage. "The Circular Economy"

SB 1383

SB1383 is one of the most important waste reduction mandates to be passed in the last 30 years, in California's legislatures. It requires that the state of California reduce organic waste by (food waste, green waste, paper products) disposal by 75% by 2025. Failure to follow this state policy will have some legal implications for local governments. SB1383 requires that local governments provide organic waste collection to all residents and businesses, establish an edible food recovery program, design an outreach program to educate communities and businesses (including haulers, facilities, edible food recovery organizations, and city departments). Planning, inspecting, enforcing, and maintaining records of compliance are other responsibilities expected from each jurisdiction. About 27 million tons of organic waste was disposed of in California in 2017; when this organic waste breaks down in the landfill it creates methane (one of the most potent greenhouse gases, 72 times more potent than C02 over 20 years). In addition, 21% of methane emissions come from organic waste in the landfill. The release of methane to our environment pollutes the air, causing respiratory illnesses in nearby communities. Methane gas has contributed greatly to climate change; diverting organic waste away from the landfill, will reduce the impact of climate change.[22]

Escondido Current Programs

- → **Xeriscaping & Grasscycling:** Quarterly workshops, displays, contest
- → Backyard/ on-site compost/mulching

[22] "SB 1383: Reducing Short-Lived Climate Pollutants in California," CalRecycle. 2020.https://www.calrecycle.ca.gov/organics/slcp/education#:~:text=General%20Information,and%20other%20food%20recovery%20organizations.

- **Business waste reduction:** Partner w/EDI local business waste audits
- **School Source Reduction & Recycling**: assemblies to school population, 4th & 5th grade recycling camp, share resources from pilot programs with interested teachers
- **Government:** source reduction, Government Recycling Programs, Government Composting Program, alkaline battery collection, Dixon Lake Clean-ups, free e-waste & on-site shredding, city christmas tree recycling, We Clean Escondido, Creek to Bay, California Coastal Clean-up
- **Residential:** Curbside, Drop-Off, Buy-Back, Curbside Greenwaste Collection, Self-Haul Greenwaste (free coupon program)
- **Commercial:** On-SIte Pick Up, Self-Haul, on-site green waste pick-up, Self-haul Green Waste, Organics Recycling
- **Material Exchange/ Thrift Shop Promotion:** Goodwill Storefront, Habitat for Humanity Restore
- **Food Waste Compost:** Goals continued to be assessed?
- **Sludge:** Tule Ranch Farmland
- **Tires:** encouraged to take to local tire facilities
- **White Goods:** Retailers like Home Depot collect old appliances
- **Scrap Metal**: Some recycling centers still accept
- **Wood Waste:** chipper ground cover & free for residents
- **Concrete/Asphalt/Rubble**
- **Electronic & Print Promotion of programs:** Brochures, EDI newsletter, flyers, news articles

- ➔ **Outreach/Education:** Earth Day Poster Contest, HHW collection event at EDI, HHW brochure & magnets @ community events, city e-newsletter, HHW video at DMV, FB & IG promotion, EDI tours

Product & Landfill Bans: Collect sharps & prescription drugs, reusable bags are sold, reusable bag distribution by the city recycling staff.

Economic Incentives: recycling tipping fees lower than SW fees, lower overall monthly rate, compost reduced/subsidized rate, extra recycling and green bin free of charge

Ordinances: C&D ordinance,commercial organics/recycling, multi-family recycling, residential recycling, waste collection, content procurement, residential green waste, anti-scavenging, green-building

Economic Incentives: recycling tipping fees lower than SW fees, lower overall monthly rate, compost reduced/subsidized rate, extra recycling and green bin free of charge

Escondido State of Waste Management

Escondido produces 50% more waste per capita than the United States overall (which is already the 3rd largest producer of waste per capita.[23] Escondido consistently rises in waste production every year by about 5000 tons, resulting in 1.2 tons per person per year being produced in Escondido as opposed to 0.8 tons for the US and 1 ton for California and San Diego. Some legislation in the past has attempted to address this, however it not only does not go far enough, but the businesses and multifamily residencies that it applies to largely do not comply with the regulations. For example, AB 1826 requires businesses to appropriately dispose of green

[23] Byrnes, Hristina, and Thomas C. Frohlich. "Canada Produces the Most Waste in the World. The US Ranks Third," July 12, 2019. https://www.usatoday.com/story/money/2019/07/12/canada-united-states-worlds-biggest-producers-of-waste/39534923/

waste and food waste, and a 2019 study found that only 13% of businesses comply with the green waste portion and only 1% of businesses comply with the food waste portion. The waste that Escondido produces is hauled by SANCO (whose parent company is EDCO) and Escondido Disposal to landfills in poor communities of color in the Los Angeles area. Since 2014, Escondido has transported waste to one of three landfills: Commerce Refuse-To-Energy Facility (CREF), Covanta Stanislaus, Inc., and Southeast Resource Recovery Facility (SRRF). CREF is located in the Laguna/Rio Hondo neighborhood in Commerce, CA which has a population that is 72.5% Mexican and 3.1% Native American. Covanta Stanislaus inc. and SRRF are located on Terminal Island in Long Beach which does not have as much of a defined residential area as Laguna/Rio Hondo, but of those that do reside on Terminal Island, 25% are black and 30% are hispanic. Escondido produces a disproportionately large amount of waste, and that waste directly negatively impacts communities of color in addition to Escondido residents and the environment.

Environmental Justice Impact of Waste

Human Health Impact from Petrochemicals

Communities of color and low-income communities often live and work near oil refineries and factories that produce petroleum and associated byproducts thus, they are disproportionately impacted by health issues associated with these industries. These industries often release particulates into the air that can be toxic within the factories and also in the neighborhoods around them. Moreover, petroleum is often turned into plastic, which is harmful throughout its entire life cycle.

Members of these communities work very hard under dangerous or hazardous conditions; for their hard labor workers are paid below minimum wage, that is they are paid below a **living**

wage .[24] Furthermore, "...Poverty, pollution, and environmental degradation," are some of the consequences that frontline communities are dealing with in our country, and across the world.[25] In addition, the number of and amount of chemicals that are released into the environment, have resulted in a growing list of associated health issues. One of those chemicals is Bisphenol (BPA); the U.S, produces over 6 billion pounds of BPA annually. BPA is a hormone disrupting chemical, used to form polycarbonate plastic, it is used in the linkage between cans and other containers . Evidence has shown that this chemical causes adverse reproductive outcomes like infertility, cancers, and malformations.[26] The communities most affected by these issues are the Latinx and African-American communities. Due to higher rates of exposure to chemicals like BPA, these communities are experiencing earlier signs of puberty. A few years ago, BPA was replaced by Bisphenol S (BPS) , an alternative just as dangerous as its predecessor. [27]

Chemicals associated with plastic polymers are now found in human blood, urine, and tissue.[28] One recent estimate of the average exposure in Americans from all of the potential sources of plastic exposure clocked in at 70,000 particles per year.[29] Chemicals in plastics have been linked to cancer[4], high cholesterol, reproductive problems, hormone and endocrine disruption, neurological disorders, and immune suppression.[30]

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[24] Lenier, Sage."Environmental Justice."
[25] Lenier , Sage. "Environmental Justice." Sustainable Future DeCal, 2020. https://sites.google.com/berkeley.edu/zerowastedecal/environmental-justice?authuser=0.
[26] Morello-Frosch, Rachel. "Environmental Chemicals and Public Health." Lecture, Hearst Field Annex, 2020.
[27] Morello-Frosch, Rachel. "Environmental Chemicals and Public"
[28] Wright SL and Kelly FJ (2017) Plastic and Human Health: A Micro Issue? *Environmental Science & Technology* 51: 6634–6647. doi: 10.1021/acs.est.7b00423
[29] Cox KD, Covernton GA, Davies HL, *et al.* (2019) Human Consumption of Microplastics. *Environmental Science & Technology* 53: 7068–7074. doi: 10.1021/acs.est.9b01517
[30] (2015) Vinyl Chloride. *National Cancer Institute*. Available: https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/vinyl-chloride. Accessed May 24, 2019; Trasande L, Shaffer RM, Sathyanarayana S and Council on Environmental Health (2018) Food Additives and Child Health. *American Academy of Pediatrics* 142. doi: 10.1542/peds.2018-1410; Nicole W (2013) PFOA and Cancer in a Highly Exposed Community: New Findings from the C8 Science Panel. *Environmental Health Perspectives* 121 doi: 10.1289/ehp.121-A340; Stapleton HM, Klosterhaus S, Keller A, *et al.* (2011) Identification of Flame Retardants

Operation National Sword

China received most of the world's plastic up until 2018, when the government implemented Operation National Sword. Across China, environmental degradation was widespread and Chinese citizens were developing major health problems as a result of handling most of the world's waste.The government was forced to take action and set-up stricter contamination policies, and significantly reduced the amount of material they were accepting. This had huge ramifications globally, and the recycling industry was and is still reeling from its impacts. The truth is, that most of the material that ends up in MRRF's (Multi Resource Recycling Facilities) is contaminated, difficult to recycle, and sometimes not recyclable at all. Wealthy nations collect their recyclables at these facilities, and then ship them overseas where they are bought by waste sorters. As previously stated, most of what is sent over is trash; it has no value and cannot be recycled. Thus, America is sending their immense amount of waste to be essentially landfilled in other countries. Countries like Malaysia do not have the system to deal with the copious amounts of waste western countries are sending over. "Recyclables" are left in trash heaps that release toxins into the environment via soil or water, creating pollution. On many occasions, people live right next to these ever-growing waste heaps. Recycling in reality was a way for the fossil fuel industry to continue to meet their bottom line when pressured with the reality of the climate crisis in the 20th century. In sum, plastics recycling is not the answer and has simply reduced the amount of time left to mitigate its repercussions.

Food Justice

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in Polyurethane Foam Collected from Baby Products. *Environmental Science & Technology* 45: 5323–5331. doi: 10.1021/es2007462

Definition & History

According to the LA Garden Council Food Justice is, " Access to fresh, locally grown, and culturally appropriate food, living wages and fair working conditions for all food system workers, community control over food systems, through community-based agriculture, co-ops, faith-based initiatives, etc."[31] Food justice is integral to the fight for social justice, thus integral to the fight for climate justice, and justice is a pillar that every American strives to uphold. Food Justice is the acknowledgement that food is a right.[32] Patricia Allen the Director of the Center for Agroecology and Sustainable Food Systems at the University of California at Santa Cruz stated, "It is clear that our food system does not meet the fundamental criteria of social justice such as freedom from want, freedom from oppression, and access to equal opportunity."[33] Moreover, "The production of food in the United States includes a history of oppression, dating from the plantation economy of the South to the expansion and settlement of the West reliant on subsequent waves of Chinese, Japanese, and Latinx immigrant agricultural labor". [34] Over the past few decades, the food system has become increasingly globalized and unequal, it has come to be controlled by a few corporations.[35] Agriculture and food corporations are dependent on exploited labor and environmental degradation for their profits.[36] This current system is completely unsustainable, exploitative, and it has a tremendous CO2 footprint, intensifying

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[31] Campos, Diana. "Food Justice: What It Means and Why It Matters." Los Angeles Community Garden Council, November 21, 2019. http://lagardencouncil.org/food-justice-what-it-means-and-why-it-matters/.
[32] Alkon, Alison Hope, and Julian Agyeman. *Cultivating Food Justice: Race, Class, and Sustainability*. Cambridge, MA: MIT Press, 2011.
[33] Sbicca, Joshua. *Food Justice Now!: Deepening the Roots of Social Struggle*. Minneapolis, MN: University of Minnesota Press, 2018.
[34] Sbicca, *Food Justice Now!*
[35] Barhoum, Nadia. "Food Justice and Community Health in Richmond: Campus-Community Partnerships to Create a More Healthy and Equitable Food System" Berkeley, CA: Haas Institute for a Fair and Inclusive Society, University of California, Berkeley, 2016
[36] Sbicca, *Food Justice Now!*

climate change.[37]

Food Insecurity & Waste

Currently, 815 million people are hungry; the world grows enough food to feed 10 billion people. There is not a problem of food scarcity, cycles of poverty and inequality are the root cause. In addition, ⅓ of all food produced globally is wasted; in the U.S. 52% of food is wasted. Large amounts of food are lost due to the overemphasizing of appearance; 40% of loss happens at retail and consumer levels.[38] Furthermore, Americans waste so much food, a 90,000 seat football stadium could be packed to the top. [39] This is untouched food that goes to the landfill. In 2016, ⅛ of Americans were food insecure.[40] The communities hardest hit by food insecurities are communities of color; communities of color are disproportionately affected, in 2016, 26.1% of black households and 22.4% of latinx households were food insecure.[41]

A food desert is a phenomena that occurs in low-income households where there is difficulty obtaining nutritious foods because of limited or non-existent local supplies of such food. [42] For example, in lower income communities there might be two liquor stores on the same block, but the nearest Trader Joe's is a 30 minute drive. This is an injustice. Black and Latinx communities are more likely to suffer from diet-related diseases. [43] Furthermore, "...access to the highest-quality food remains stratified along class, gender, and racial lines."[44] Native food systems have been decimated; the loss of cultural cuisines have stemmed from the displacement

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[37] Barhoum,"Food Justice and Community Health"
[38] Lenier, Sage. "Food Justice" Lecture 7, Stanley Hall, 2020.https://sites.google.com/berkeley.edu/zerowastedecal/lectures/7-food-politics?authuser=0
[39] "Hunger Is the Worlds Dumbest Problem ." Copia, n.d. https://www.gocopia.com/problem.
[40] Lenier, Sage. "Food Justice"
[41] Barhoum. "Food Justice and Community Health"
[42] Mercier, Stephanie. "What Are Food Deserts, and Why Do They Matter?" AG Web , May 14, 2020. https://www.agweb.com/blog/what-are-food-deserts-and-why-do-they-matter.
[43] Barhoum, "Food Justice and Community Health"
[44] Sbicca, *Food Justice Now!*

they have endured. It must be acknowledged that food is also about culture.[45]

Emissions

Emissions from food mainly occur in the transportation of and the decomposition when it ends up in the landfill. Food waste contributes to greenhouse gas emissions through its decomposition process in the landfill and through its production, processing, transport, and retailing. Most emissions are due to the latter. In the United States, food waste accounts for 113 million metric tonnes of CO2e annually.[46] The industrialized food system in the U.S. has had dire consequences on the environment it, "perpetrated peak oil, peak phosphorus, virtual water, pesticide toxicity, dead zones, genetically modified organisms, biofuels, and global warming." [47] For example, "Pesticide dependency leads to the contamination of fresh water supplies, the death of domestic animals, degradation of fisheries, and collapse of vital bee colonies, which grows worse as pests become more resistant and necessitate greater pesticide application."[48] According to a United Nations Report, the global food system accounts for 37% of all greenhouse gas emissions. Furthermore in that same report land-use practices like agriculture account for 23% of human greenhouse gas emissions.[49] If food waste was reduced to zero, 11% of greenhouse gas emissions could be eliminated.[50] Food waste is a substantial contributor to food-related greenhouse gas emissions. Serving more plant-based foods and smaller portions of meat and

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[45] Alkon, Hope, and Agyeman. *Cultivating Food Justice*

[46] Venkat, Kumar. "The Climate Change and Economic Impacts of Food Waste in the United States." *Journal on Food System Dynamics*, April 2012, 431–46. http://centmapress.ilb.uni-bonn.de/ojs/index.php/fsd/article/view/247/182.

[47] Sbicca, *Food Justice Now!*

[48] Sbicca, *Food Justice Now!*

[49] McFall-Johnsen, Morgan. "Our Food System Accounts for a Whopping 37% of Greenhouse-Gas Emissions, a UN Report Found. But It Could Also Offer a Solution to the Climate Crisis." Business Insider. Business Insider, August 8, 2019. https://www.businessinsider.com/food-system-role-in-climate-crisis-possible-solutions-2019-8.

[50] Spiegel, Jan Ellen. "Food Waste Has Crucial Climate Impacts " Yale Climate Connections." Yale Climate Connections, October 8, 2019. https://www.yaleclimateconnections.org/2019/05/food-waste-has-crucial-climate-impacts/.

dairy will help cut waste from animal products, which account for an outsized portion of total emissions associated with food waste.

Meat consumption has been increasing over the past decades; the U.S. is notorious for its meat consumption.[51] The amount of meat consumed per person has doubled over the past 50 years.[52] While the links between diet and GHG emissions are not yet widely acknowledged, the issue is well-known and the science is clear—**the climate impact of animal agriculture is a significant generator of carbon emissions.** The production of meat and dairy generally has much higher greenhouse gas emissions than plant-based foods. The deforestation associated with opening up more space to raise livestock results in emissions. Natural biological processes like belching and flatulence result in the emission of methane from cows. Methane is one of the most potent greenhouse gases, it is 25 times-100 times more destructive than CO2 over a 20 year period. Cows alone are responsible for 150 billion gallons of methane per day. Moreover the transportation of the product also produces additional emissions. In total, Animal agriculture is responsible for 18% of greenhouse gas emissions. What is even more troubling is the amounts of emissions from this industry are projected to increase by 80% by 2050.[53] Water resources are at risk in our warming world hit by increasingly frequent and catastrophic natural disasters. Meat and dairy production has a harmful impact on water quality and uses substantially more water resources than plant-based foods.

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[51] Ritchie, Hannah. "Which Countries Eat the Most Meat?" BBC News. BBC, February 4, 2019. https://www.bbc.com/news/health-47057341.

[52] Devlin, Hannah. "Rising Global Meat Consumption 'Will Devastate Environment'." The Guardian. Guardian News and Media, July 19, 2018. https://www.theguardian.com/environment/2018/jul/19/rising-global-meat-consumption-will-devastate-environment

[53] "The Sustainability Secret." COWSPIRACY. Accessed June 27, 2020. https://www.cowspiracy.com/infographic.

Food Hub

A food hub is a "business or organization that actively manages the aggregation, distribution, and marketing of course-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand." Food hubs help create new jobs and also address food insecurity by focusing on expanding food reach into underserved communities. They work towards creating new markets for regional and local producers. They help build community through actively taking steps to partner with food banks, increasing awareness around buying local, offering farm tours and apprenticeship opportunities, helping feed underserved communities, and redeeming SNAP benefits. In addition, food hubs also reduce energy and waste in the distribution area. There are many funding opportunities that are available for different stages of implementation from federal and non-federal sources. This system always has sustainability at heart, many food hubs highly encourage or require that the growers and ranchers they partner with, employ sustainable agricultural practices and, work on implementing sustainable production practices. A survey in 2011 conducted by The NFHC showed that " Half the food hubs have recycling programs, 44 percent have composting programs, and 22 percent have energy-saving programs."[54]

Food Cooperative

A food cooperative is a business that is owned by workers or customers, members have the ability to choose what food and products are available. They provide high-quality foods at

[54] Barham, James, Debra Tropp, Kathleen Enterline, Jeff Farbman, John Fisk, and Stacia Kiraly. Regional Food Hub Resource Guide. U.S. Dept. of Agriculture, Agricultural Marketing Service. Washington, DC. April 2012.

fair prices, support local growers, help create jobs, and offer bulk sections. [55] Bulk sections are especially important to reducing the amount of single use plastic waste in circulation.

Food Justice Measures & Actions

1. Create locally grounded food cooperative
2. Create a food hub
3. Relocalize Escondido Food System
4. We strongly urge the climate planners to review and pursue the recommendations contained in the report ***MEAT OF THE MATTER: A Municipal Guide to Climate-Friendly Food Purchasing***, adapted for Escondido.
5. CAP should create a staffed working group to evaluate resources and develop a plan to increase food security, reduce climate emissions, and improve health for the city and environment.
6. The City should provide pathways for institutional procurement of local produce that would facilitate investment in local farms and offer farm microloans, tax-incentives, and grants. These should be restricted to produce farming since animal agriculture does not support emissions reductions.
7. The CAP should include requirements or incentives for institutional adoption of a minimum number of fully plant-based meals at government meetings, hospitals, schools, universities etc.. The city could build upon Palomar Hospital's commitment to Meatless Mondays and vegetarian options in its cafeteria.

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[55] Sutter, Kristin. "Are You Missing Out on Your Local Food Co-Op?" Taste of Home, August 14, 2018. https://www.tasteofhome.com/article/food-co-ops/.

8. The City should encourage and fully support the local Farmer's Markets in the region to promote more consumption of locally grown foods which have the lowest carbon footprint.
9. The City should support or jointly initiate a climate and public health campaign to encourage more plant-based, whole foods eating in the region. This type of public health campaign has already been demonstrated to work through anti-smoking campaigns, and may result in savings based solely on the public health burden reduction.
10. The CAP should include commitment to educational materials, workshops on plant based eating, and promotional events to encourage more plant-based eating.
11. The city should develop an education program for 'climate-friendly living' to encourage and educate residents about all the ways to reduce personal and family level GHG emissions and include promotion of plant-based diets including a widespread commitment to Meatless Monday.
12. The CAP should include a sector analysis and measures to promote plant-based diets. Just like establishing goals for bike and transit commuting, it should quantify goals for the population to eat a plant-based diet. Even a reduction of 50% meat consumption by a portion of the population would yield significant results.
13. Climate-friendly menus (plant-based) should be served at all City and city sponsored events with educational materials to accompany them.
14. The City should partner with groups like Physicians for Responsible Medicine and evaluate and share materials such as Every Meal Power Plate. [56]

[56] http://www.pcrm.org/sites/default/files/images/health/pplate/EveryMealPowerPlate.pdf

15. The CAP should include measures to create an *Eat a Climate-Friendly Diet* working group and partner with local vegan and plant-based groups, farmers, business and spiritual traditions that already eat a plant-based diet and have expertise to share.
16. The CAP should include measures to offer tax-incentives to restaurants where 50% or more of the menu offerings are plant based.
17. The CAP should include measures to fully preserve and increase suitable agriculture reserve lands suitable for produce farming and create urban agricultural zones to put vacant parcels into produce food production in urban areas.
18. The City should partner with organizations that support produce farmers and help them sell locally. Groups like San Diego Food System Alliance, California Food Link, and the San Diego New Farmers Guild would be good partners.
19. The CAP could investigate programs to incentivize the food technology industry to develop plant-based and cellular agriculture alternatives to animal products.

Conclusion

It is imperative that the E-CAP recommendations partner with community organizations that work towards food justice and create programs that champion food justice. Individuals in Escondido lack access to healthy food, and it is important that these policies are initiatives that benefit communities of color and low-income communities directly. As part of the legislation, there should be a commitment to defending the food practices (local, slow, and deep) of marginalized communities in Escondido, and a recognition of the history of the land upon which this jurisdiction sits upon, benefits from, and should strive to partner with the The Rincon Band

of Luseño Indians & The San Pasqual Band of Mission Indians. The city must help lead a paradigm shift in the community from viewing food as a nutritional commodity to ".... that which encompasses a set of deep social and cultural relationships that foster community, cultural, and place-based identities."[57] Escondido should lead in creating programs and spaces in the community like locally grounded food cooperative unions, creation of a food hub, increasing accessibility to food by acknowledging food is a right (direct partnership with food banks and other food justice organizations), relocalizing food systems through increased partnership with local farmers and, creating more opportunities for education around food and food waste. This must be done to center climate justice in the E-CAP.

Plastic

The Problem

Plastic is a growing threat to our future, and it is tied intimately with fossil fuel extraction at the beginning of its life cycle, and with overwhelming impact on the world ocean at the end of its life cycle. Before 2018, much of the recycling from the U.S., EU and elsewhere was being shipped to Asia.[58] In 2018, China implemented a new policy called "National Sword" that banned the import of plastic waste. Many countries responded by sending waste to other Asian nations, like the Philippines, Thailand and Malaysia. Now, some of those countries are shutting their ports to it, and even sending some of it back.

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[57] Alkon, Hope, and Agyeman. *Cultivating Food Justice*

[58] *Brooks AL, Wang S and Jambeck JR (2018) The Chinese import ban and its impact on global plastic waste trade. Science Advances. 4. doi: 10.1126/sciadv.aat0131*

The importance of reducing plastic waste has become imperative as we do not have the infrastructure in the United States to deal with plastic waste. Deforestation for petrochemical extraction and infrastructure, the process of natural gas fracking, transportation in plastic production and supply, refining and manufacturing, landfill decomposition, incineration, and even recycling have associated emissions that cause a significant contribution to climate change.

At the end of the life cycle of plastic described above, plastics are impacting the marine environment, which is not only a source of food, recreation, and tourism for our coastal economy, but also a biological buffer for carbon dioxide. According to NASA, approximately one quarter of all carbon dioxide is absorbed by the world's oceans, sequestered into primary producers like algae, and incorporated into the ocean's web of life.

The ability of the ocean to absorb carbon dioxide depends on balanced ecosystems, all of which are now impacted by plastic pollution. **An estimated 17.6 billion pounds of plastic enters the marine environment every year — roughly equivalent to dumping a garbage truck full of plastic into the oceans every minute.** Models for making estimates of impacts to the ability of the ocean to sequester carbon are still being formulated and tested by several scholarly institutions. In 2017, the most recent year recorded by the University of San Diego, Escondido ranked 4th highest in San Diego County for waste per capita at 6.2 lbs per capita per day.

Opportunity/ Solution

In addition to GHG savings, Escondido can save taxpayers money and eliminate an annual drain on city finances that are usually spent on waste mitigation measures.[59] Eliminating non- recyclable plastic waste from the waste stream will also allow for more efficient sorting of recyclable materials, in turn assisting with waste diversion and decreasing operating costs for waste management.

Eliminating unnecessary single use plastic products such as plastic and styrofoam plates, bowls and cups, and plastic utensils and stirrers, can also save businesses money. The same is true for implementing a straws on request policy. A fraction of the money spent on buying these materials can be spent on implementing dishwashing systems and creating more jobs for Escondido.

[59] Monroe, leila. "Waste in Our Waterways: Unveiling the Hidden Costs to Californians of Litter Clean-Up." NRDC, August 2013. https://www.nrdc.org/sites/default/files/ca-pollution-in-waterways-IB.pdf.

Lastly, in order to supplement food waste in an effective composting system, materials rich in carbon are needed. Replacement of plastic take- out containers with truly compostable material means more carbon for soil replenishment and compost. In other words, a system of food waste diversion will work more effectively when combined with compostable carbon-based materials such as those used in many compostable take- out containers

Greenhouse Gas Savings Estimates

Estimates of GHG savings from plastic waste reduction are very difficult to quantify and have a range of estimates from scholarly sources. The climate impact of plastics is undoubtedly significant, especially considering the full life cycle of plastics from extraction to the landfill or ocean. An attempt is made below to provide a framework for a formula to quantify GHG savings from reducing plastics.

$G_T = R((G_P \times E_P) + (G_O \times (\frac{1}{2} E_W / 7.98 \text{ Million MT}))$

Key

G_T - Annual GHG Savings measured in MTCO2eq by eliminating X% of plastic waste

R = Percentage reduction from 2019 plastic waste

G_P – Factor of atmospheric carbon emissions per MT of plastic used (including extraction, deforestation, transportation, processing, incineration, and landfill and ocean surface emissions)

E_P = Total metric tons of plastic recycled in Escondido/ year = Information needed from EDCO

G_O - (Impact on the ocean's ability to absorb CO2 per MT of plastic waste)

E_W = Total metric tons of plastic not recycled directly in Escondido, with an estimated 50% of plastic making it to the ocean eventually

T_W - Total waste entering the ocean from land- based sources annually = 7.98 Million Metric Tons

- The ocean's ability to absorb plastic = (⅓ of all CO2)
    - Assuming: plastic waste at the current rate will completely remove the ocean's ability to absorb CO2
    - Assuming ⅓ of all CO2 is absorbed by the ocean
    - Escondido's impact on this = (⅓ of all CO2) x (½ E_W/T_W)

Examples of other municipalities

The City of Oceanside's Climate Action Plan contains an initiative for Extended Producer Responsibility and a recyclable or reusable percentage mandate. A piece of proposed national policy that sets the framework for meaningful plastics reduction is The Break Free From Plastic Pollution Act of 2020. Any local ordinance based on this standard would accomplish meaningful plastics reduction. Escondido could become a leader in incorporating a plastic reduction policy recommendation into the Climate Action Plan, and as such, would reap additional benefits in GHG savings, taking into account the total percentage reduction in plastic waste generation and the full life cycle emissions of plastic waste.

Case Studies

Oceanside

Overview

- → Set goal for 75% landfill diversion by this year (2020)
- → Organics were about half of the material landfilled in 2010
- → Zero waste plan focuses heavily on community outreach and education
  - ◆ Calculate that 4,000 tonnes of diversion can be accomplished by improvements in these areas
- → Expanded residential and composting program could capture another 13,000 tonnes annually
- → Created an opportunity to increase jobs
- → Food donations and home composting expansion would reduce the cost of implementing composting programs

Timeline

Year 1:

- → Support and expand school composting, commercial on site composting, and home composting programs
- → Support and expand reuse opportunities
- → Waste generation characterization study to provide a solid baseline for measuring progress on ZW goals

Years 2-5:

- → Adopt plastic bag reduction ordinance
- → develop program for business and institution waste reduction services
- → recycling containers where every trash receptacle is
- → environmentally preferable purchasing program

Phase 2:

- → Take back policies
- → Evaluate progress towards ZW goals

Encinitas

Solid Waste accounted for 5% of total GHG emissions in 2012

- → City has jurisdiction over handling of solid waste generated by the community
- → Reduction in city emissions by 2,830 MTCO2e by 2020
- → Reduction in city emissions by 11, 921 MTCO2e by 2030
- → Divert 65% by 2020
- → Divert 80% by 2030
- → Divert 90% of waste from landfills by 2035 & capture 85% of GHG emissions
- → Implement organic waste recycling program
  - ◆ Support regional efforts to develop residential and commercial food scrap composting programs

- Community appropriate compost facilities in the city
- Support at home-management of food waste: workshops, susbsidies, and worm bins
- Continue Zero Waste Schools program
- Free waste audits to restaurants and grocery stores
- City hall waste audit
- Education program for textile recycling
- Support stewardship and producer responsibility initiatives

Alameda County

Policy and Programs: Alameda City

- → Social Marketing campaign
- → advocate for producer responsibility
- → Increase commercial technical assistance
- → Support product bans
- → Support disposal bans
- → Consider mandatory source separation requirements
- → City Government green team
- → Work with school district to implement zero waste initiatives
  - Alameda green schools challenge
  - school education and outreach

Ordinances Policies & Fees

- → Measure D
  - Reduce waste by 75% by 2010
- → Reusable Bag Ordinance
- → Mandatory Recycling Ordinance
- → Plant Debris Landfill Ban
- → Facility Fee
- → Household Hazardous waste fee
- → Benchmark Service

Recommendations for Escondido E-CAP Solid Waste Management

City Staff Proposed Timeline

Target Year	Performance Metric	GHG Reduction Potential ($MTCO_2e$)
2021	Adopt and implement an organic waste recycling program	-
2023	Adopt a composting and waste diversion ordinance	-
2030	Achieve 80 percent citywide waste diversion in 2030.	23,588
2035	Achieve 85 percent citywide waste diversion in 2035.	25,535

Recommended Timeline

Summer 2020	**Establish a Zero Waste Work Group** as part of the Climate Commission.
Summer 2020	**Prioritize Education and Outreach** as implementation measures for binding city ordinances.
Fall 2020	**Pass a Zero Waste Resolution** with articulated goals for 75% diversion by 2022 and 90% diversion by 2027. (Increase diversion by 15% annually.)
Winter/Spring 2020-21	**Pass single-use plastics reduction ordinance** and polystyrene ban with phased implementation beginning in 2021
January 2021	**Develop a Zero Waste Plan** that prioritizes eliminating food waste and includes a phased approach to reducing single-use plastics.
January 2021	**Begin phased implementation of single-use plastics reduction ordinance** and polystyrene ban
January 2022	**Zero Waste Schools** partnership with district begins
January 2022	**Full implementation of SB 1383:** Universal Composting and Green Waste
January 2022	**Provide infrastructure** to support curbside composting for all households and businesses & build compost infrastructure to process anaerobic digester waste.

Initiative Support Programs

Conduct a waste generation/characterization study immediately

- Identify the amount of materials wasted, reused, recycled, and composted annually
- Identify where wasting occurs
- Commodities analysis

City Hall

- ➔ **Adopt a zero waste business model for city offices & Prioritize zero waste goals**
  - Institute a green purchasing policy
  - Eliminate SUP Water bottles, switch to reusable service-ware, & install water refill stations
  - Adopt a minimum number of fully plant-based meals
  - Climate-friendly menus (plant-based) served at all city and city sponsored events accompanied by educational materials
- ➔ **Establish City department Green Teams**
  - Offer training and support for all staff
- ➔ **Conduct pre/post waste audits at all City facilities**
- ➔ **Set up waste reduction infrastructure & signage**
- ➔ **Create a staffed working group to evaluate the resources and develop a plan to:**
  - increase food security
  - reduce climate emissions
  - improve health for the city and environment.
- ➔ **Provide Pathways for institutional procurement of local produce (restricted to produce farming)**
  - Investment in local farms
  - Offer farm microloans
  - Tax-incentives & grants
  - Encourage and fully support the local Farmers Market
- ➔ **Support or jointly initiate public health campaign to encourage more plant-based whole foods eating**
- ➔ **Create education program for "Climate-Friendly Living"**
  - Encourage and educate residents on ways to reduce personal and family level GHG emissions
  - Host workshops and promotional events on plant-based eating
- ➔ **CAP should include:**
  - Sector analysis and measures to promote plant-based diets
  - Measures to create an "Eat a Climate-Friendly Diet" working group
  - Measures to offer tax incentives to restaurants where 50% or more of menu

offerings are plant-based
- Measures to fully preserve and increase suitable agricultural reserve lands for produce farming
- Create urban agricultural zones to put vacant parcels to into produce food production in urban areas
- Investigate programs to incentivize food technology industry to develop plant-based and cellular alternatives to animal products

Community Programs

- **Partner with community organizations to develop workshops on topics, including:**
  - Environmental impacts of single-use plastics and food waste
  - plant-based diet
  - How to switch to reusables, Use Leftovers, Waste Sorting education
- **Utilize Escondido's community gardens for education outreach on topics, including:**
  - Composting , organic gardening, soil enrichment,
  - Decentralized composting options: backyard and community-scale composting
- **Create a Sustainability Community Resource Center & Creation of a Reuse Warehouse/collaborative**
- **City-wide community engagement campaign: Website, Social Media, & Community outreach**
- **Localize food system & Shorten Supply Chain**
  - Food hub
  - Accepting EBT/SNAP at Farmers Markets
  - Locally grounded food cooperative
  - Partner with food justice community orgs, The Rincon Band of Luseño Indians, & The San Pasqual Band of Mission Indians
- **Develop educational effort around eating a plant-based diet once a week or more and tracking carbon emissions avoided**

Businesses

- **Establish a Green Business program & Develop Guide**
  - pre/post waste audits- allows for better right-sizing
  - Phased, finish up current supplies
  - Offer training and support for both management and staff
  - develop a green purchasing policy
  - reduction procedures/protocols- switch to reusables, disposals only on request
  - EDCO recycle at work program
- **Provide resources/materials, such as**
    - waste/recycling bins
    - signage
    - educational materials
    - composting infrastructure

- incentives/awards/recognition
- waivers & grants
- pop-up events

➔ **Support the switch to reusable/recyclable service-ware**

Schools

➔ **Establish Zero Waste Schools Program**

- Dedicate resources (time and people) to program
- Coordinate Green Team Youth Programs, allocate Funds to support activities, and incentivize participation
- Adopt a minimum number of fully plant-based meals
- Switch to reusable service-ware
- Conduct pre/post waste audits
- Offer training and support for staff, students, and families
- Responsibility and stewardship towards the environment, Environmental Justic
- Diploma seal or Awards
- School gardens

➔ **Provide resources/materials, such as...**

- sorting equipment, waste/recycling bins & signage
- share tables
- educational materials

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