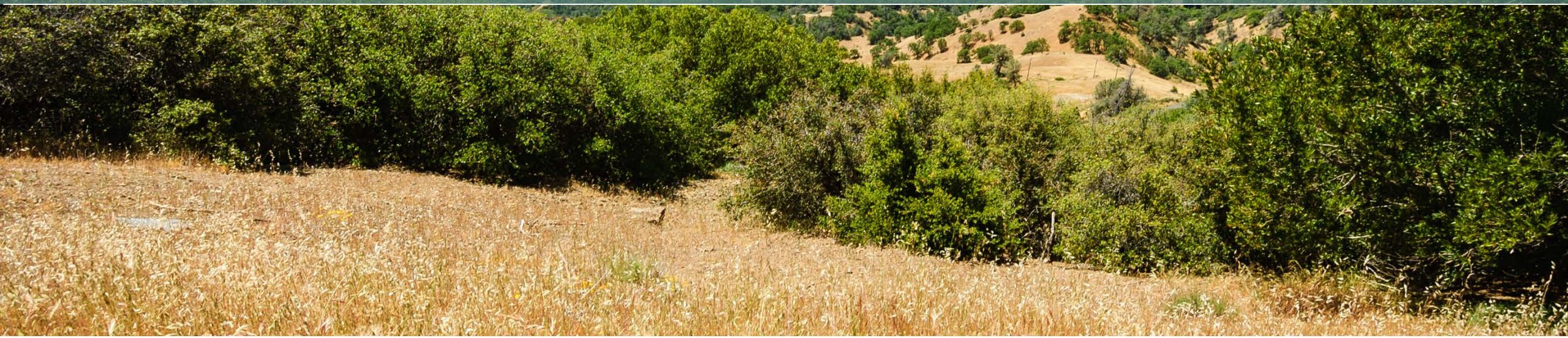
CONTRA COSTA COUNTY SUSTAINABILITY COMMISSION | RENEWABLE ENERGY RESOURCES PROJECT UPDATE



Philip Kreycik
June 25, 2018

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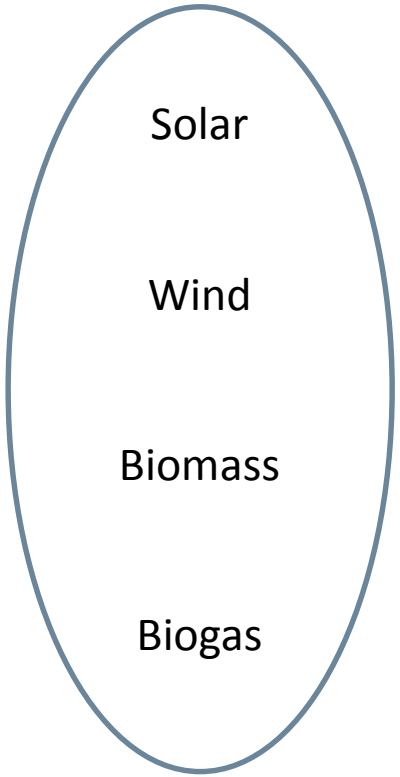
Purposes

- Assessing the degree to which renewables in Contra Costa County can contribute to **state**, **County**, and **city** sustainability goals
- Assessing priority locations/regions for renewable development
- Assessing tradeoffs and long-term planning considerations
- Uncovering options for participation in MCE's feed in tariff

Underlying question: What barriers preclude scaling up resource development (e.g. zoning, transmission and distribution limitations)?

Scope

Technologies:



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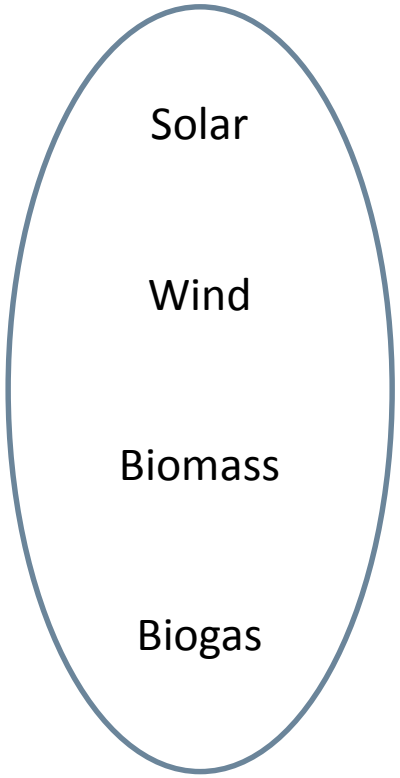

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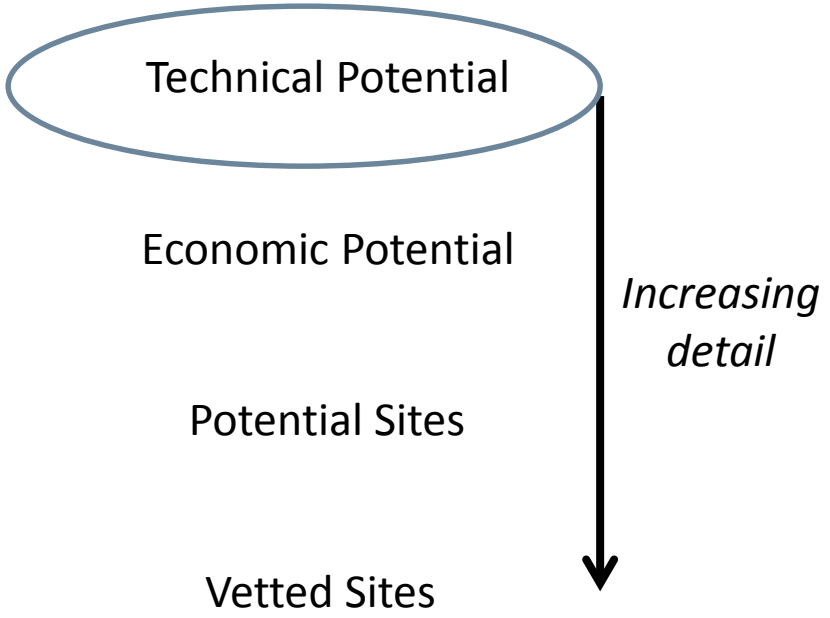

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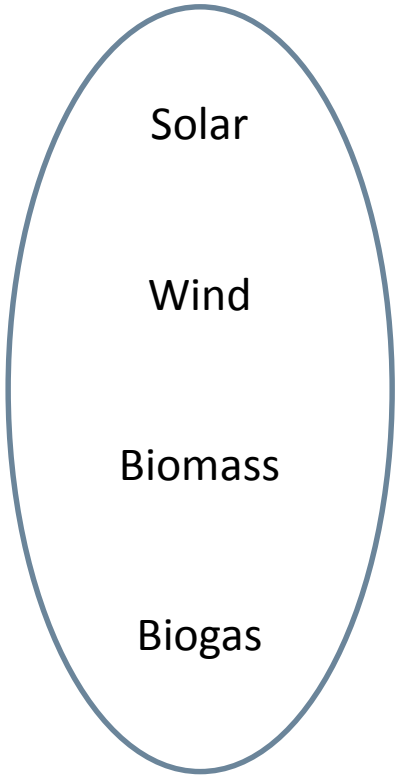

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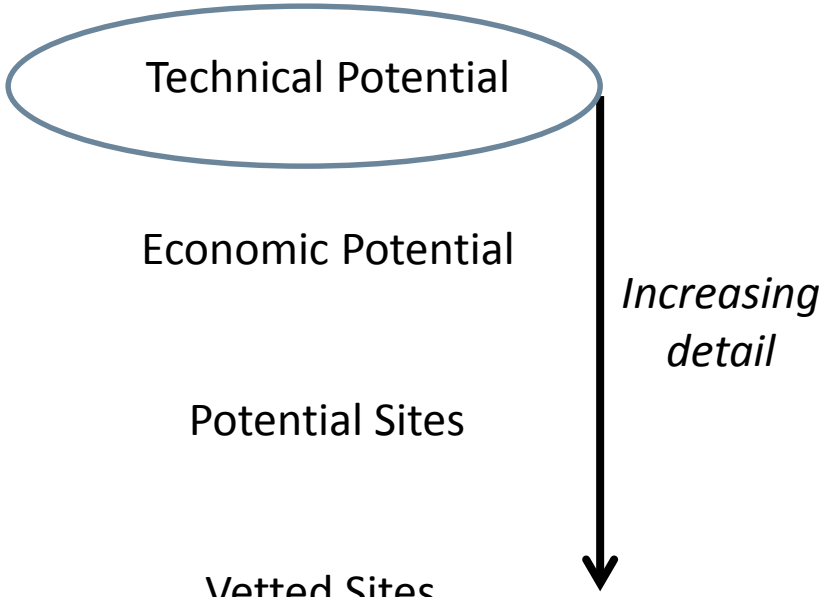
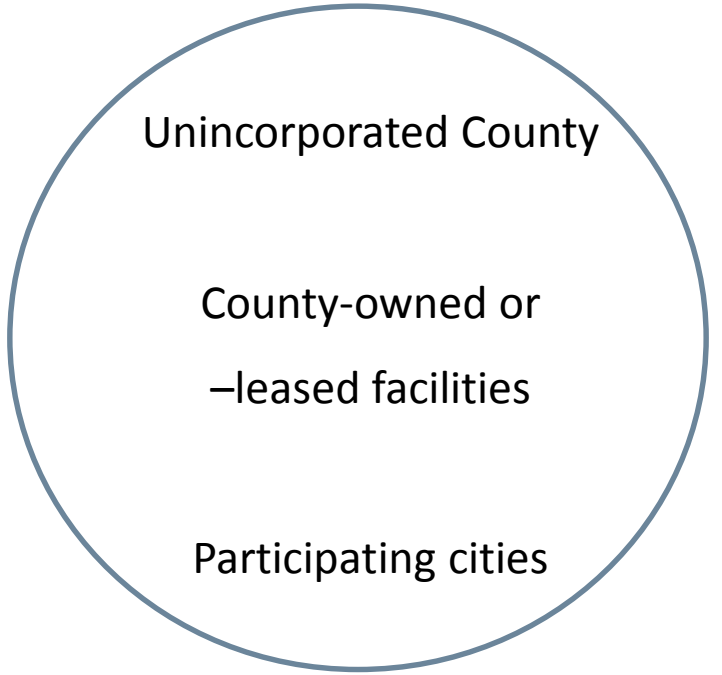


Geographies:



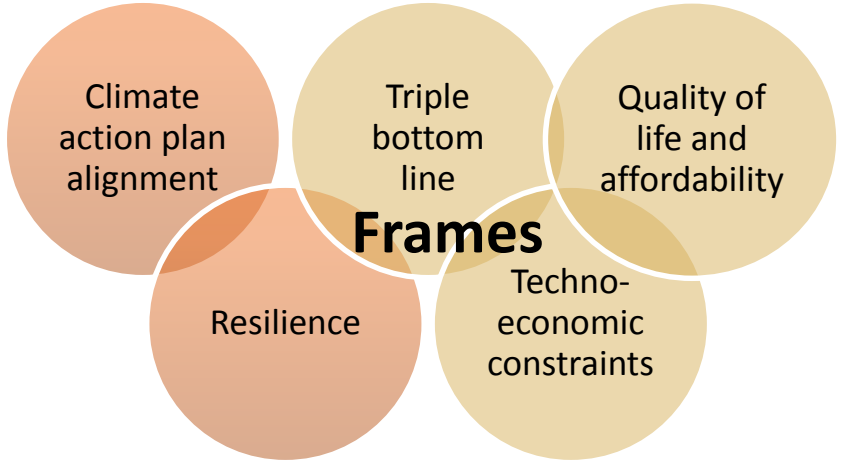
Stakeholders and frames

Industry – Renewable, Agricultural…

Government / County

Economic development community

Future generations



Ecological resources

Energy consumers

Climate-impacted populations

Low-to-Moderate Income (LMI)

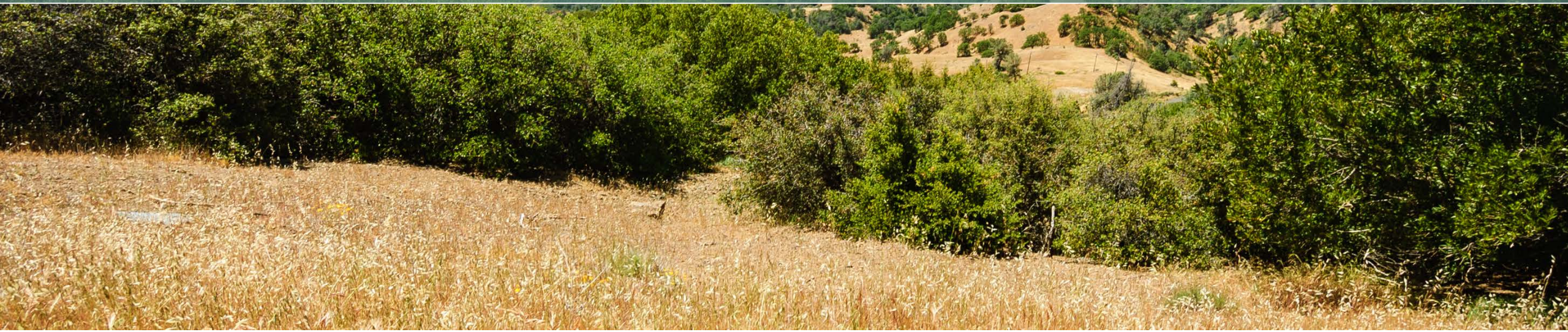
Academics/ Research

Environmentalists

PG&E

MCE

QUANTIFICATION APPROACH



Presentation by the
MCG Project Team

May 24, 2018

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Methodological Challenges and Solutions

Challenge	Planned solution
Lack of key data (e.g. parking lot locations and sizes, transmission and distribution system data)	Collaboration with student group and County staff to create data resources; Simplifying assumptions on interconnection

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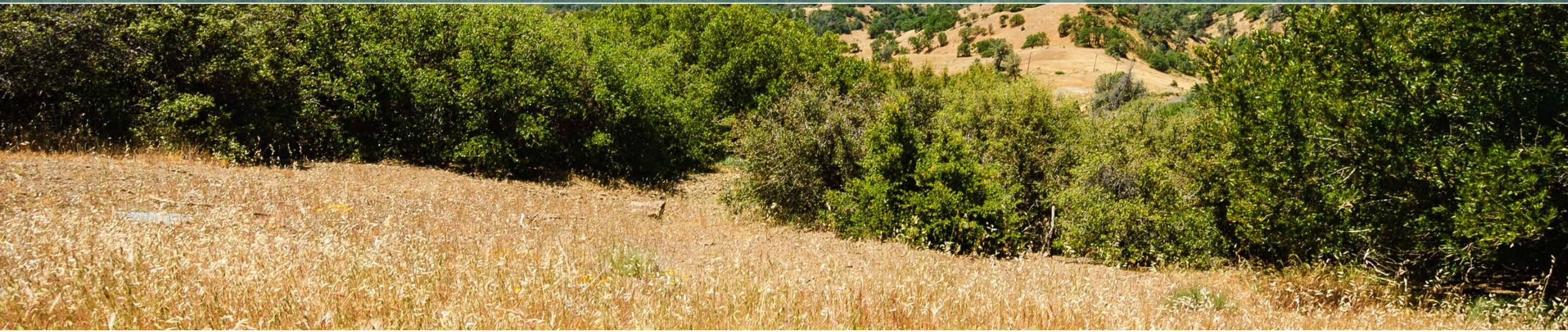
Large number of parcels, large geography, and many jurisdictions	Focus on areas of particular interest; utilize existing analyses where possible

Filter for areas that meet certain requirements. Avoid parcel-level granularity.

- Only in unincorporated County, County-owned or leased facilities, or participating cities
- No public safety issues
- No major land use tradeoffs
- No major environmental concerns
- No major aesthetic limitations

SOLAR METHODOLOGY



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Ground-mounted Solar

- Parking lot
  - Data creation effort
  - Biggest parking lots first (e.g. shopping centers, employment centers, schools)
- Undevelopable
  - Northern Waterfront Industrial Atlas
    - Industrially-related
    - Brownfields
  - Highway medians & cloverleafs
- Greenfield
  - Certain categorical exclusions
  - "Strikes" against certain sites (e.g. prime farmland, fire hazard zones, flood zones)

Outside scope: small ground-mounted solar

Rooftop Solar: Leverage Google Sunroof

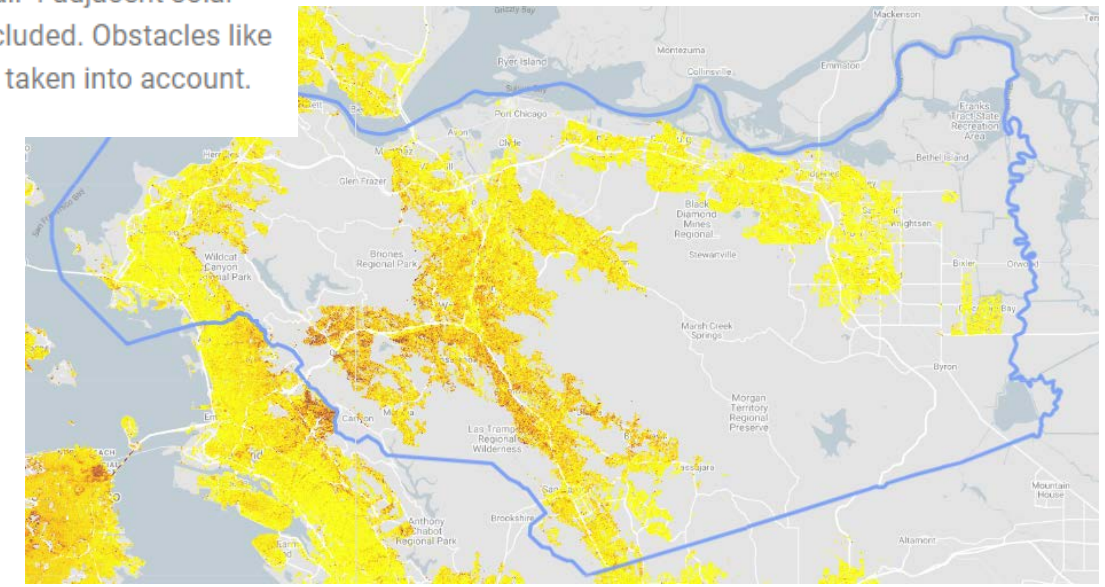
Sunlight
Every included panel receives at least 75% of the maximum annual sun in the county. For Walnut Creek, the threshold is 1,233 kWh/kW.

Installation size
Every included roof has a total potential installation size of at least 2kW.

Space & obstacles
Only areas of the roof with enough space to install 4 adjacent solar panels are included. Obstacles like chimneys are taken into account.

Project Sunroof's model makes the following assumptions:

- Each panel is assumed to be 250W with an efficiency of 15.3%, a DC to AC derate factor of 85%, and industry-standard assumptions about other factors.
- Panels are assumed to be mounted flush with the roof, including on flat surfaces.
- Arrays are between 2kW and 1000 kW.
- Only arrays on buildings are considered, not other spaces such as parking lots or fields.
- In cases where a building is not in a county, the maximum sun is determined by the max sun received in the city.

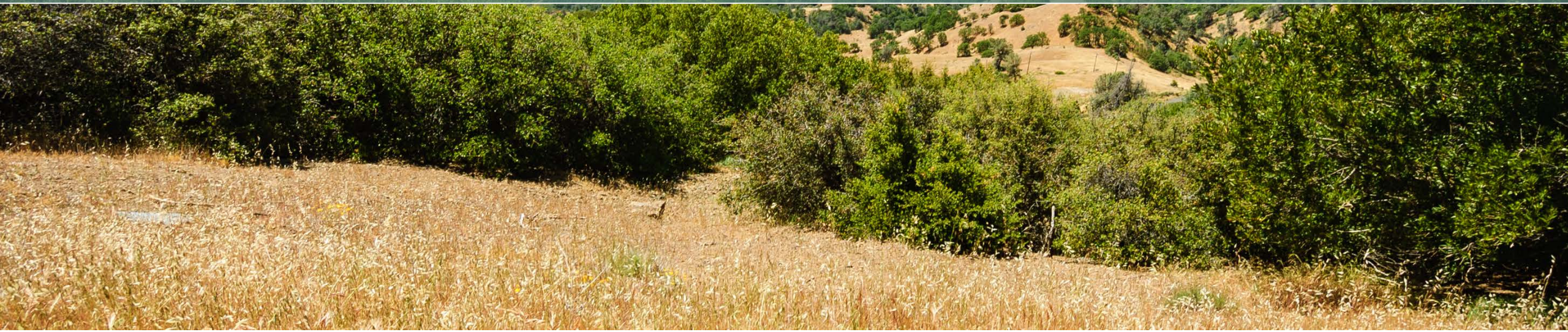


Source: www.google.com/get/sunroof

Considerations for each solar resource

- Solar insolation (National Solar Radiation Database)
- Scale (estimated kW accounting for shading)
- Net metering considerations
- Transmission and distribution cost considerations

WIND METHODOLOGY



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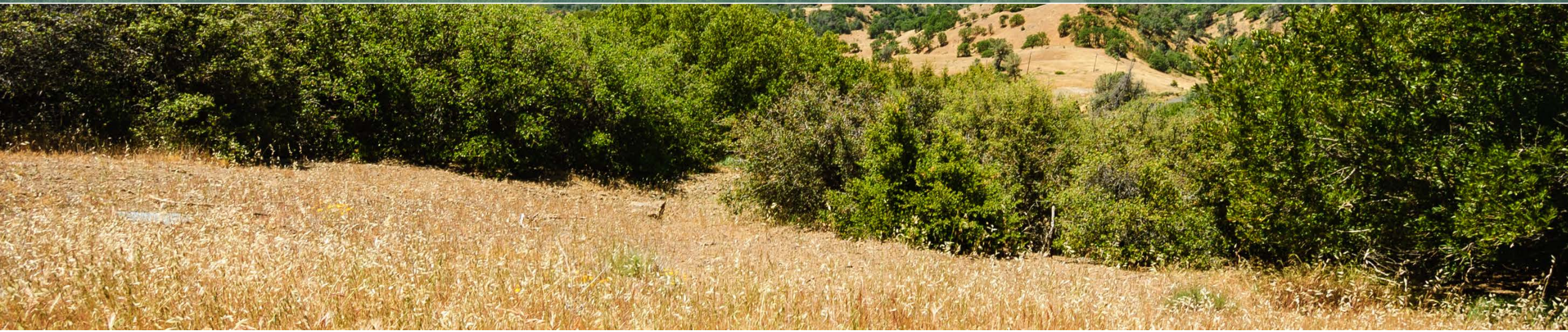
Wind

- Qualitative assessment of both large and small wind
- Where are the locations in the county that have:
  - Sufficient wind speed
  - Large enough area
  - Sufficient nearby transmission capacity
- Which of these areas are not subject to major siting barriers?

BIOMASS METHODOLOGY



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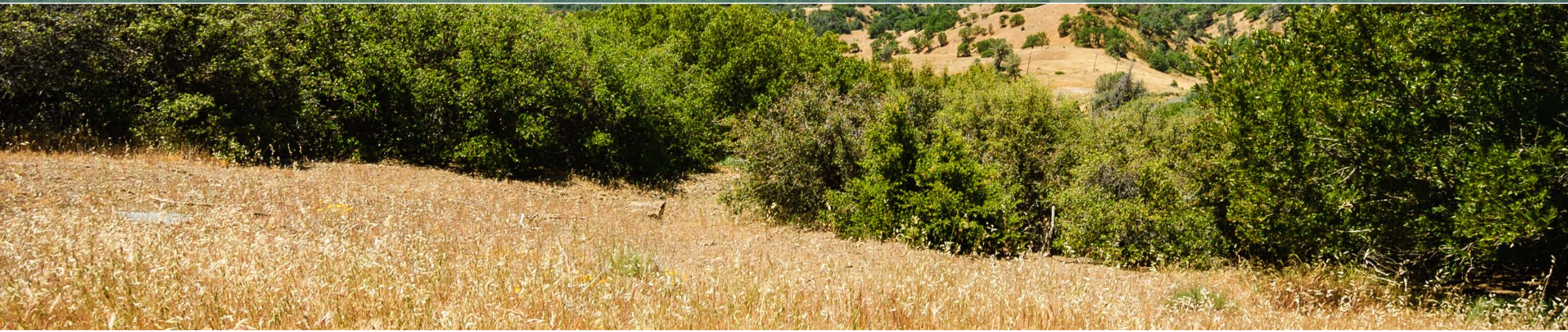
Biomass

- Accounting for biomass from the **feedstock perspective**, not the facility siting perspective
  - Biomass generators exist near the County and are under-utilized/closing
- Focus will be to quantify the amount of feedstock that could be sent to these facilities
- Data to be used
  - Pesticide usage to determine agricultural acreage and feedstocks
  - Chipping and urban wood waste
  - Interviews with chipping facilities, landfills, and composting facilities

BIOGAS METHODOLOGY



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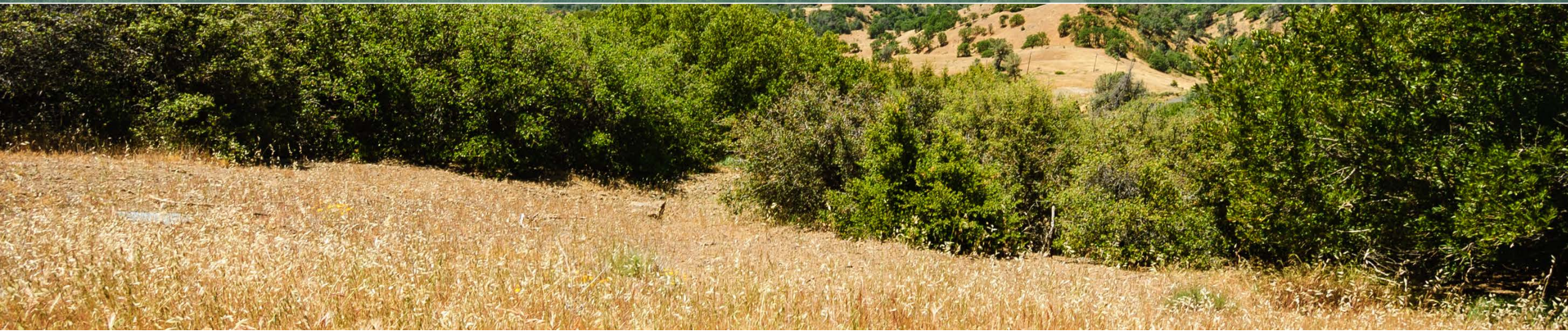
Biogas

- Studying biogas at specific sites – landfills, wastewater treatment, and composting sites
- Interviews to…
  - Determine where gas is already collected or flared
  - Find out about any gas collection feasibility studies
  - Assess likely volume of gas available
  - Discover any fatal flaws for specific sites
- Proximity to substations
- Net metering potential

Note: Landfills will also be considered for solar potential.

PLANNING AND ZONING CONSIDERATIONS



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Zoning: What modifications would be required to enable development of these resources?

- Opportunities and constraints
  - How much resource can be developed at reasonable cost with minimal land use tradeoffs?
    - E.g. Co-located with other economic uses; brownfields; buffer lands
  - Will more renewables be needed than can be developed with minimal tradeoffs?

- What rubrics should be used to determine desirability of each site and each resource?

- What impacts can be expected for existing and planned land uses?

Zoning recommendations

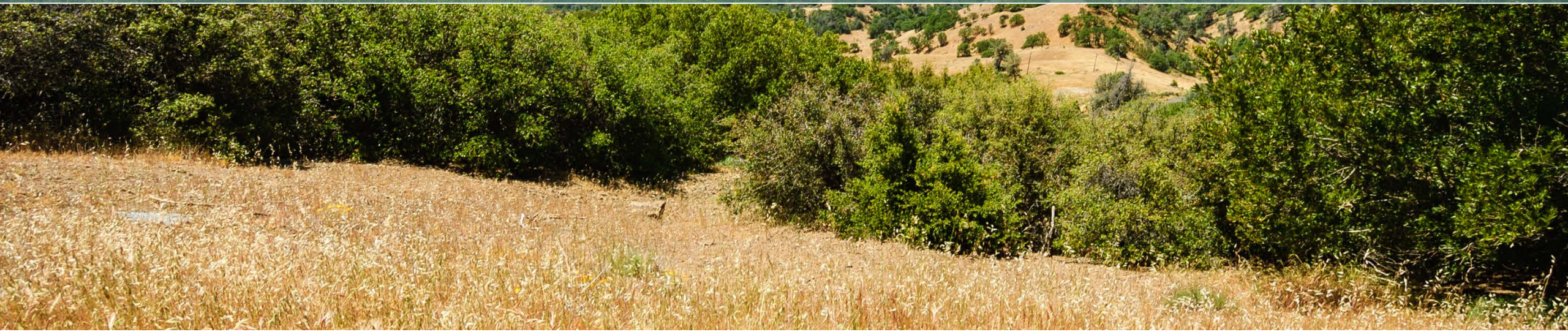
- Focus on counties with similar contexts and outlooks to Contra Costa County
  - Development pressure, many competing uses
  - Motivated to develop renewable resources
  - Cautious of unanticipated effects on the County's significant habitat, farmland, and open space resources

- Initial list of similar counties:
  - Alameda
  - Marin
  - San Joaquin
  - Solano
  - Sonoma
  - Yuba
  - Madera
  - Kings
  - Tulare

Timeline

	April ’18	May ’18	June ’18	July ‘18	Aug ’18	Sept ’18	Oct ‘18
Quantification							
Planning & Zoning							
Reporting							

DISCUSSION



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Questions

- How does this study contribute to and interact with Sustainability Commission goals and planning?
- Are there additional data sources we should be considering?
- What has been your experience with renewables in the County thusfar? E.g. PG&E receptiveness, cost considerations, other challenges
- Would you recommend factoring any additional considerations into our assessment?