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Making Clean Local Energy Accessible Now

East Bay Community Energy

Local Development Business Plan
Locational Value Factors

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Locational Values & Factors

- Electric locational value factors
  - Local Reliability Areas
  - Existing generation facilities
  - Avoided costs
    - By climate zone
      - Planned avoided cost valuation updates and refinements
      - Transmission & distribution line loss savings
      - Transmission Access Charges
  - Local grid needs & planned projects
- Non-electric locational value factors
  - Emission reduction
  - Impacted & sensitive populations
  - Land impact
  - Co-location
  - Critical facilities

Bay Area Local Reliability Areas

- Oakland Sub-Area
- Pittsburg & Oakland Sub-Area
- Contra Costa Sub-Area (including Eastern Alameda County)
- Ames Sub-Area
- San Jose Sub-Area

Regional Generation Facilities

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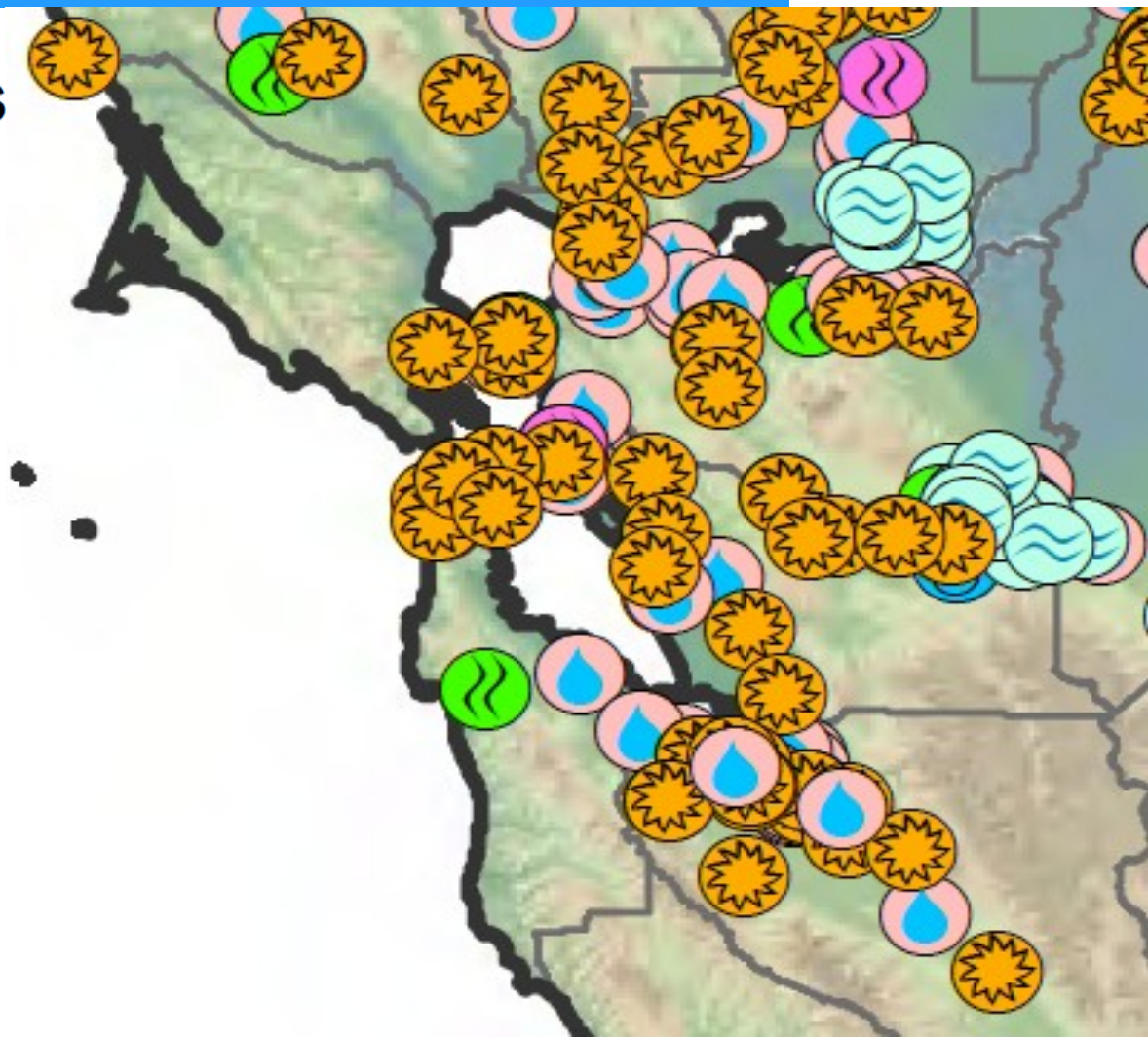
Operational Power Plants
January - 2017

- Biomass
- Coal
- Digester Gas
- Natural Gas
- Geothermal
- Hydro
- Landfill Gas
- MSW
- Nuclear
- Solar PV
- Solar Thermal
- Wind

Note: Power plants shown have a generation capacity greater than 1 MW
Source: California Energy Commission Cartography Unit



Regional Conventional Generation

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Generation Facilities: Alameda County	Location	MW
Russell City Energy Center	Hayward	691
Dynergy Oakland Power Plant (Peaker)	Oakland	225
Bordering Alameda County:		
Los Esteros Critical Energy Facility (Peaker)	Milpitas - San Jose	309
Mariposa Energy Project (Peaker)	Byron	200
Gianera Power Plant (Peaker)	Milpitas - San Jose	64
Donald Von Raesfeld Power Plant	Santa Clara	147
Tracy Power Plant	Tracy	341
Marsh Landing Power Plant	Antioch	720
Gateway Generating Station	Antioch	581
Delta Energy Center	Pittsburg	860
Los Medanos Energy Center	Pittsburg	594
Pittsburg Power Gas Power Plant	Pittsburg	1,029

Avoided Costs

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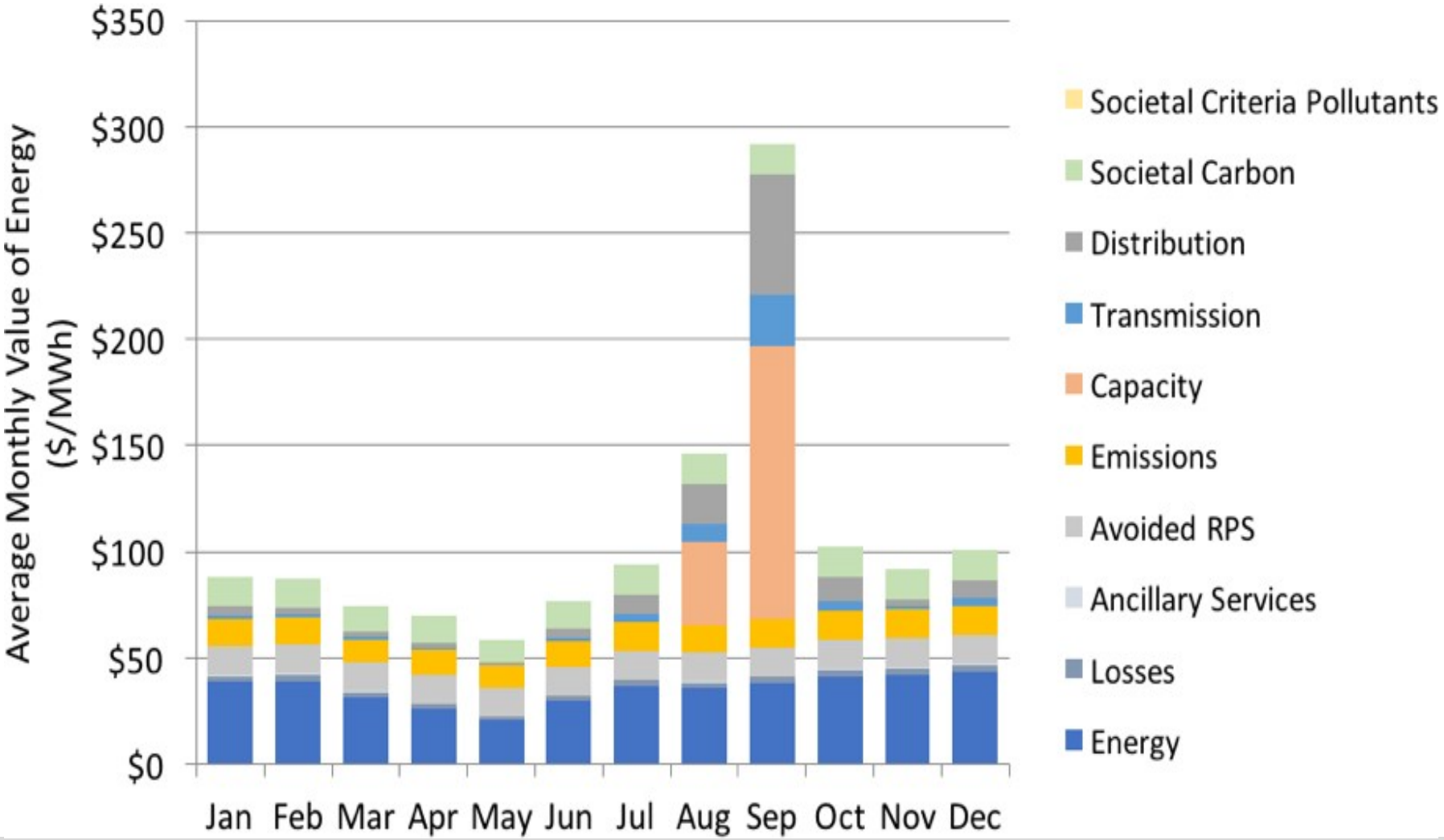
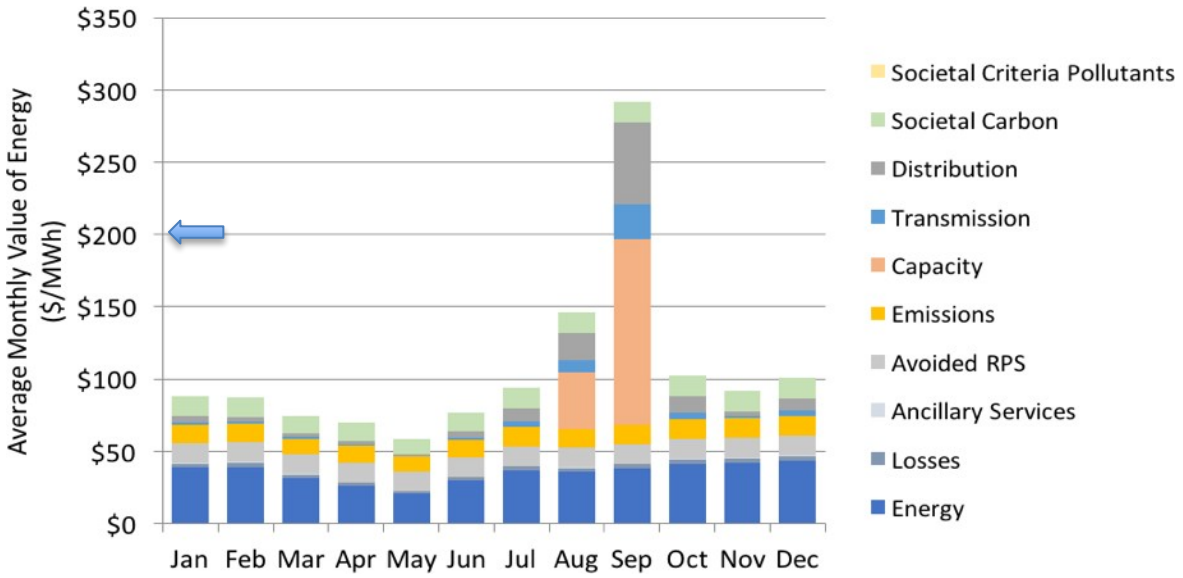
East Bay region, Climate Zone (CZ) 3A, Western Alameda County



Avoided Costs by Climate Zone

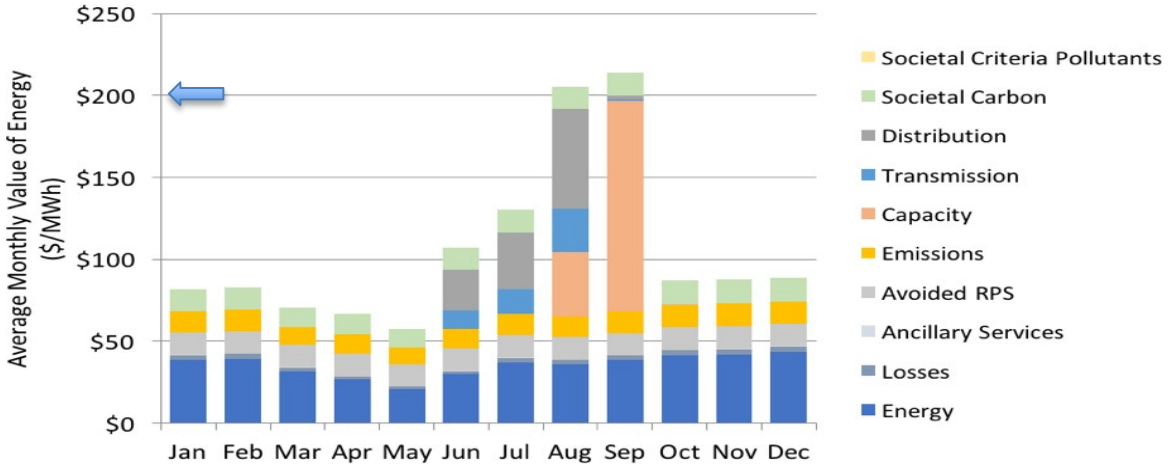
Climate Zone (CZ) 3A

- **Western Alameda County, East Bay region**



Climate Zone (CZ) 12

- **Eastern Alameda County**



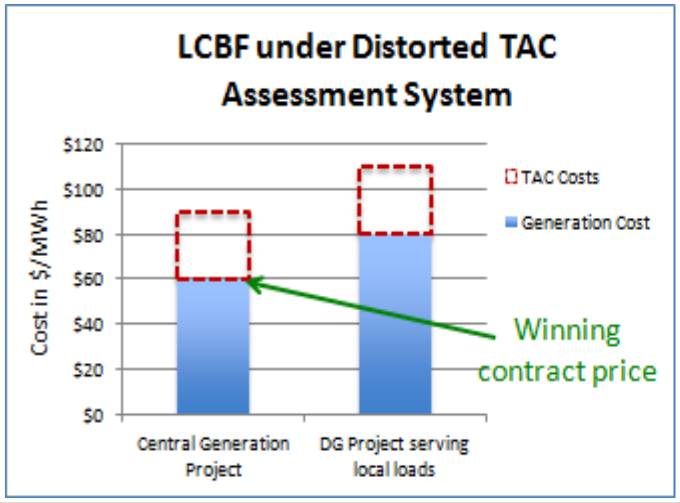
T&D Line Loss Savings, TAC

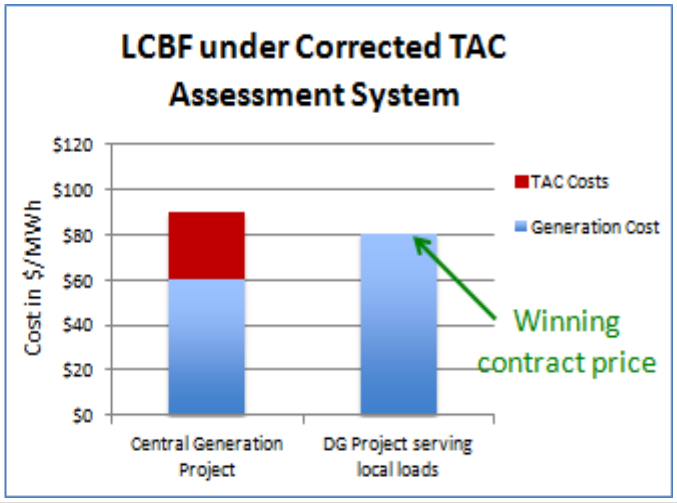
Transmission & distribution line loss savings

- Avoided losses from DG average 5%, or 789 MWh per year for each 10 MW of PV DG, totaling $2,367,000 over 20 years.
- Avoided losses are greater on longer circuits.

Transmission Access Charges (TAC)

- Add nearly 3¢/kWh to the levelized cost of energy over a typical 20-year renewable energy contract.
- CAISO reviewing assessment of these charges.
- Outcome may effect the cost of delivery for local energy.





Local Grid Needs & Planned Projects

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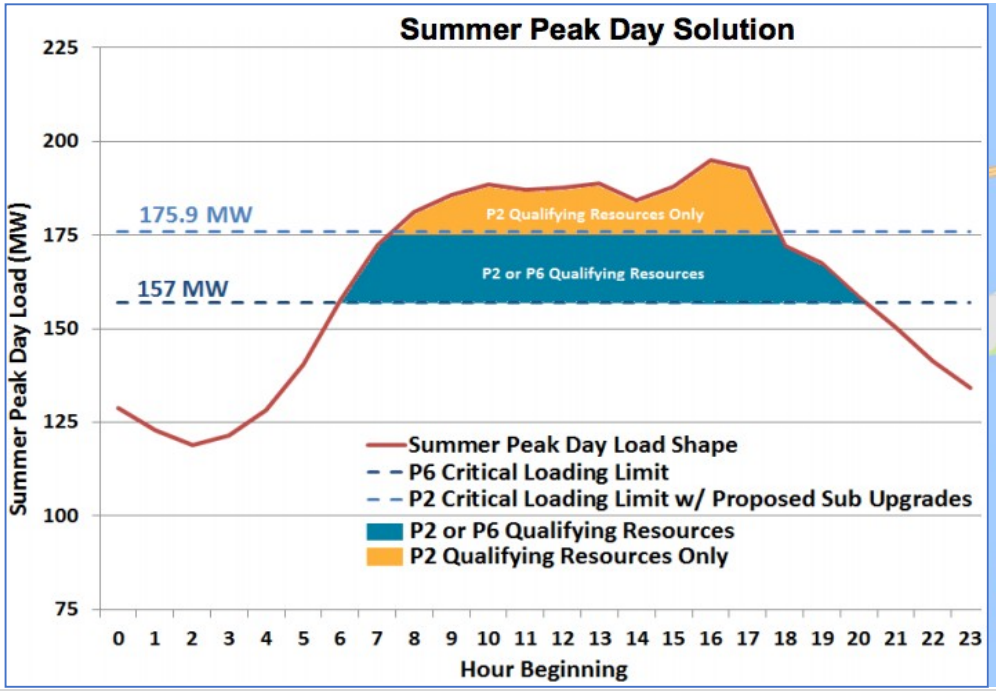
Transmission Planning Process (TPP) Report

- CAISO shows risk of thermal overloads on the Grant-Oakland 115 kV line, mitigated by the old Dynergy turbine generator facility.
- PG&E's Oakland Reliability Proposal includes 20-40 MW of distributed resources plus substation upgrades as a cost-effective alternative.

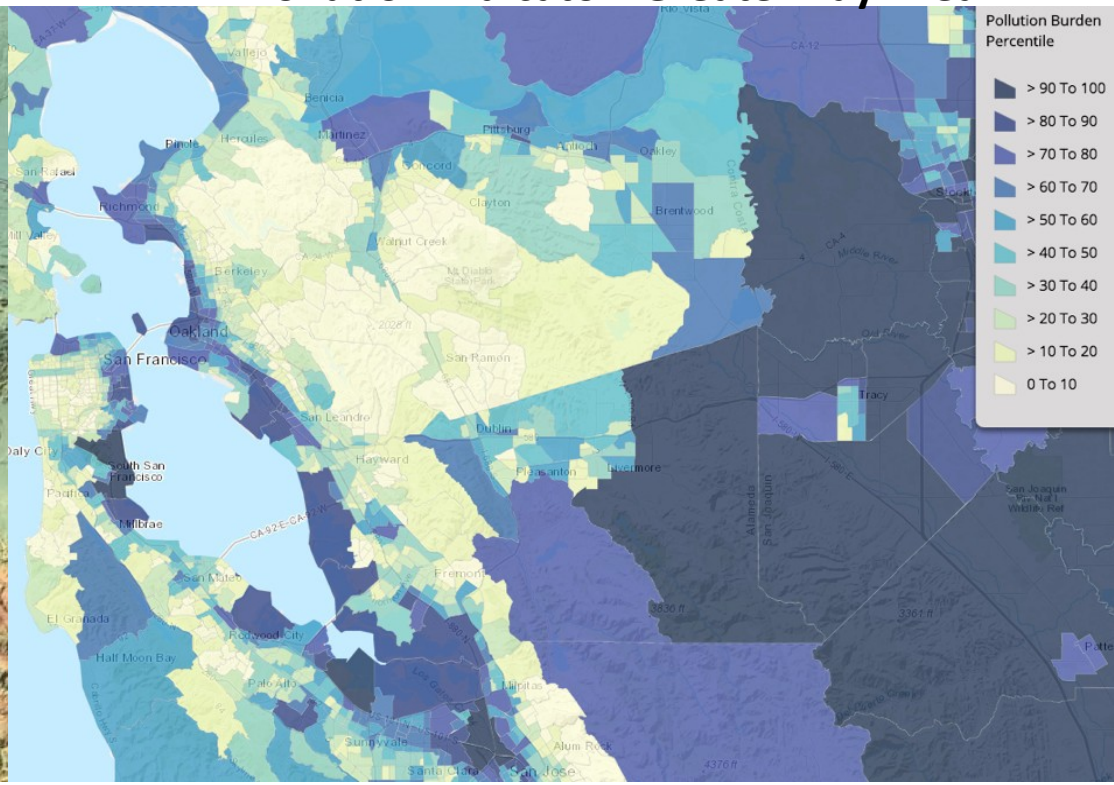


Emission Reduction

- Displacing Combined Cycle Natural Gas (CCNG) generation with emission-free facilities will reduce air pollution, especially downwind.
- 10 MW of PV is equivalent to removing 1,567 cars from the road.

Regional Wind Patterns

Pollution Indicator: Greater Bay Area



Emissions & Sensitive Populations

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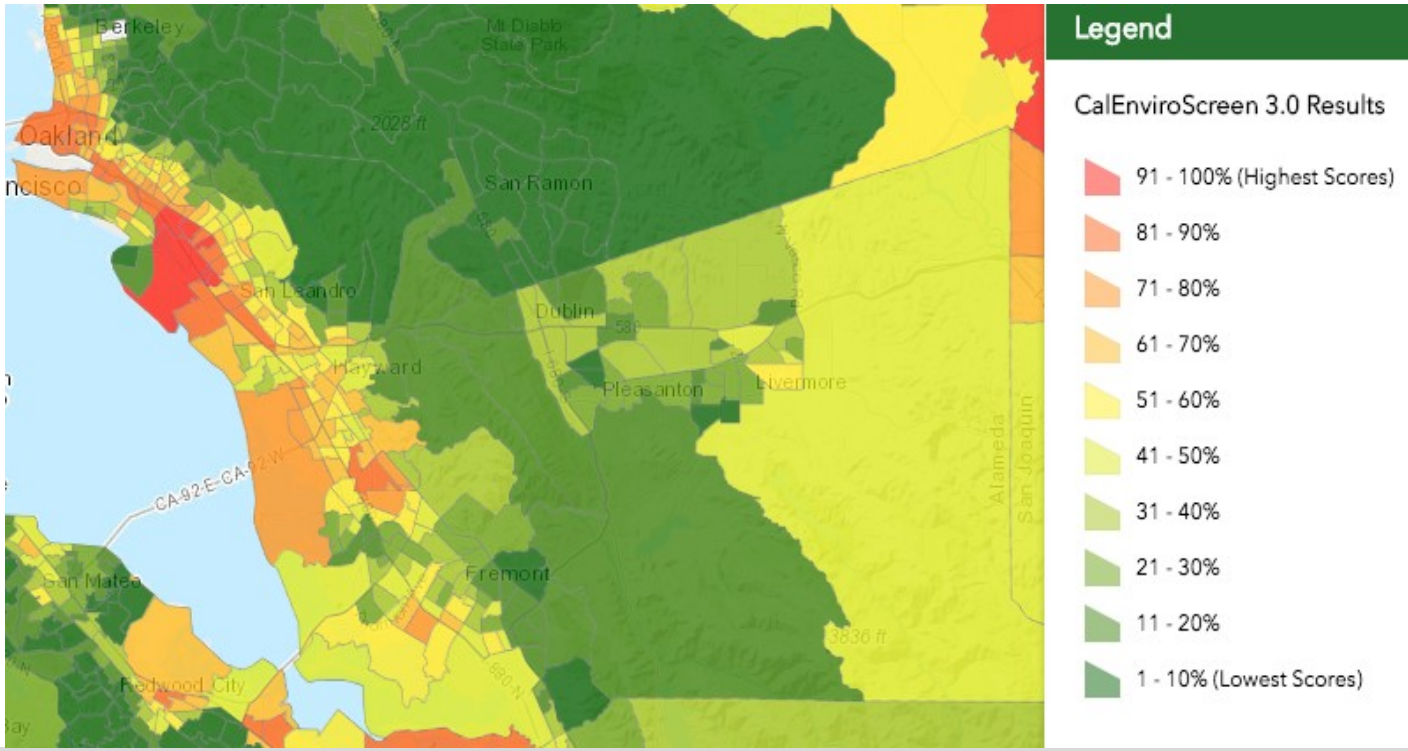
Air quality has multiple economic costs, both directly related to health, and more broadly to regional attractiveness, influencing attraction and retention of investment, employees, and visitors, and associated economic development.

CalEnvrioScreen results show the locations of Disadvantaged Communities throughout Alameda County.

DER development can be targeted to benefit these areas.



Impacted & Sensitive Populations

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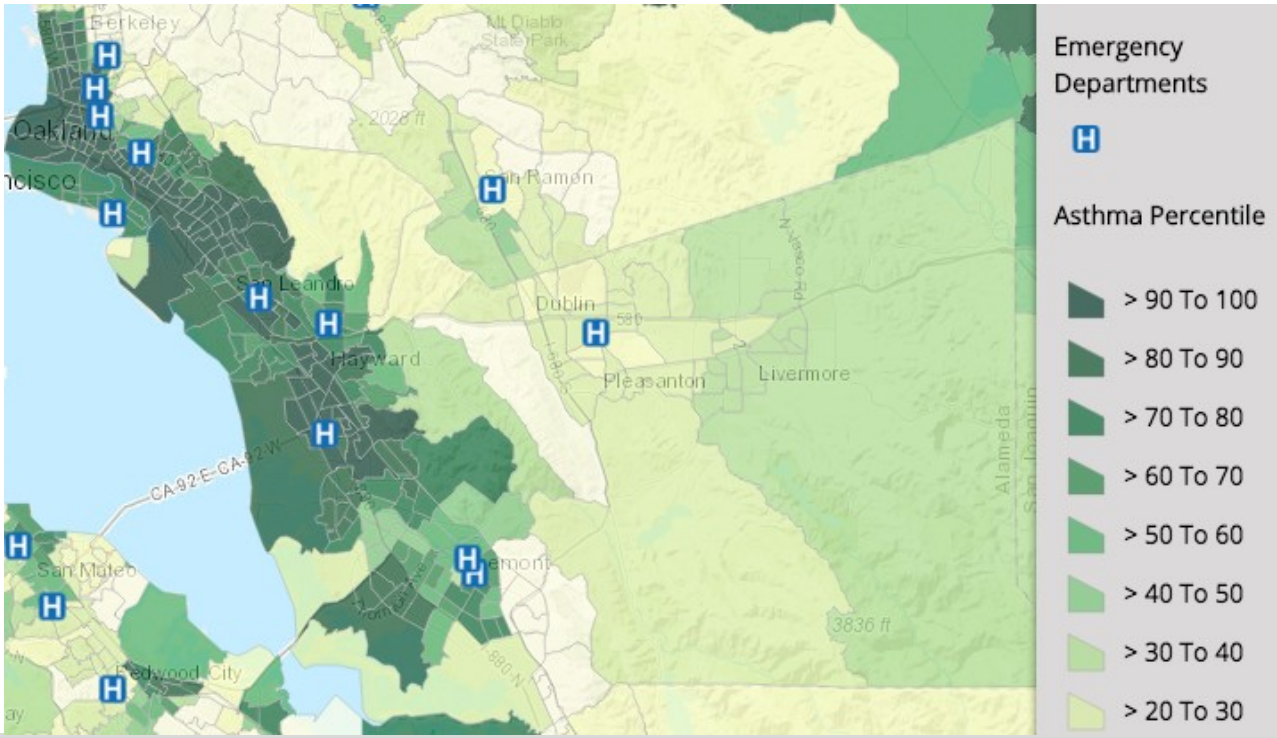
Air pollution contributes to health problems, especially for children and elderly.

- Local nitrous oxide, ozone, and diesel emissions correlate closely with variations in asthma rates by location.
- Emission-free power generation, and increased electrification of transportation and building energy use, directly reduce these three primary contributors to poor local air quality.

Alameda County Asthma Rates

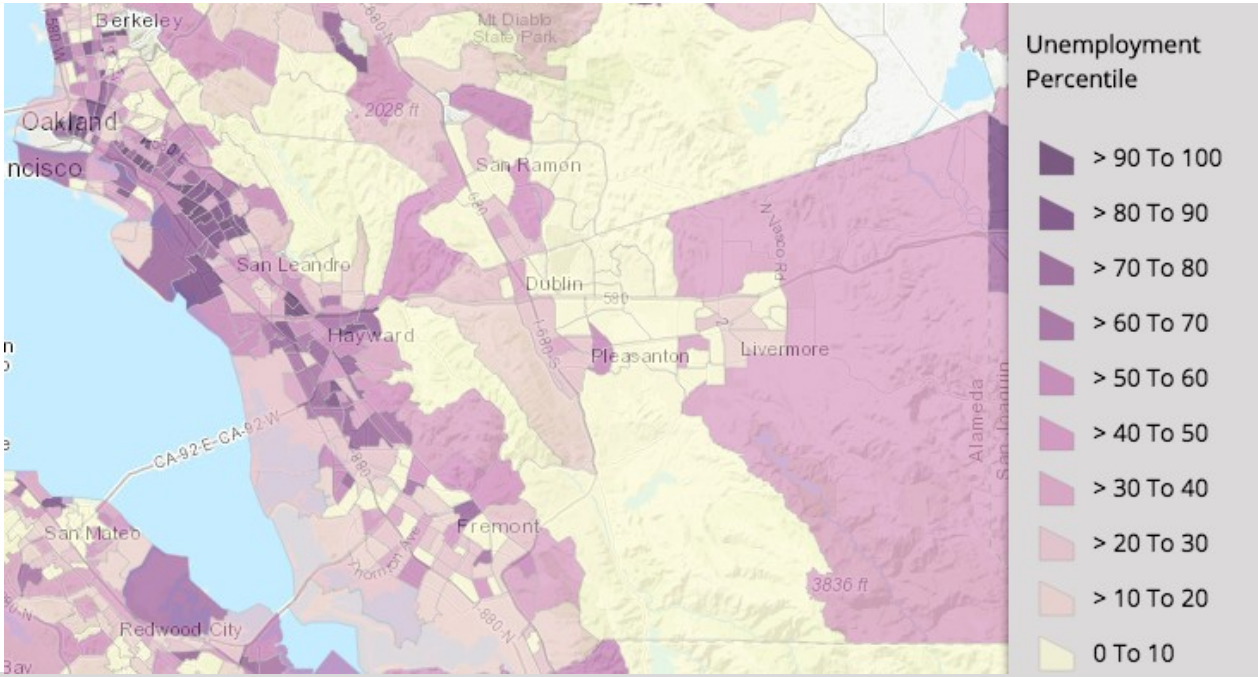


Employment

High locational correlation

- Unemployment levels
- Health factors
- Opportunities to replace conventional generation
- Areas with local capacity requirements and transmission constraints

Unemployment Rates: Alameda County



Land Impact

Land use varies by installation and siting.

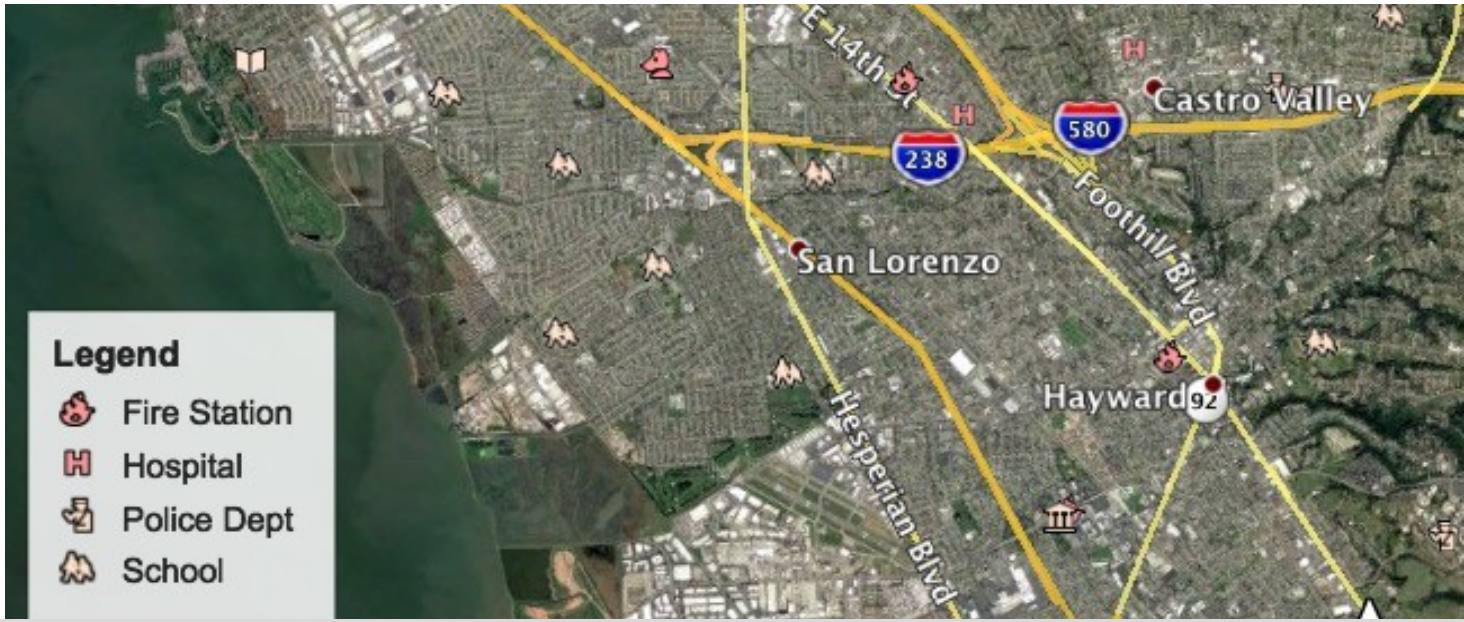
- 10 MW of local PV installed on built environments will avoid impacting 75 acres of land compared to siting this same renewable capacity on pristine or arable lands.
- Some grazing and agricultural uses are compatible with PV or wind facilities.
- While conventional CCNG facilities require relatively little land for the generating facility itself, the land impacts resulting from the extraction and delivery of fuel to these facilities is comparable.
- Local land impacts also include the transmission lines to deliver energy from large or remote resources, affecting wild lands, farms, parks, view sheds, and residential zones
- DG and other DER avoid impacts when they are deployed as a secondary use on existing structures, parking lots, or otherwise already disturbed land.
- PV can provide added value through beneficial shading.

Co-location

- Locating distributed generation near loads with similar profiles increases value and reduces costs.
- The Solar Siting Survey shows that large commercial and public rooftops and parking areas are prime siting opportunities for solar generation at commercial scale.
- Co-location of energy storage with renewable resources allows the storage to qualify for the Federal Investment Tax Credit (ITC), reducing the capital cost by 30%.
- Energy storage facilities are highly capable of mitigating the grid impacts of both excess load and excess generation, thereby supporting increased grid hosting capacity.
- DER capacity can be applied to multi-use applications, providing services both to the individual customers and to the community grid, locally balancing higher penetrations of distributed generation while supporting daily and emergency grid operation.

Critical Facilities

- Critical public facilities are located throughout the county, and concentrated in population centers.
- Critical facilities provide services to the population during local and regional emergencies to support rescue, relief, and recovery operations.
- DER can provide ongoing reliable backup power to maintain power for nearby hospitals, fire and police facilities, water supply, and schools or other buildings used as temporary shelters.
- DER can be onsite or through local microgrids connecting these resources



Conclusion

- Locational correlations can be seen between siting opportunities, grid needs, health impacts, customer value, and economic development investment.
- These indicate high-value opportunities to meet the electrical needs of the service area while also addressing local needs for clean air, employment, and environmental justice for disadvantaged communities.
- Weighted scoring of each factor can optimize procurement decisions to meet community goals.