

# E.1

## STRATEGIC ENERGY PLAN

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City of Goleta Council Meeting  
July 16, 2019

*Presentation by:*  
Cindy Moore, Sustainability Coordinator  
Angeline Foshay, CivicSpark Climate Fellow  
Jonathan Whelan, Optony Inc.  
Maddie Julian, Optony Inc.



# Presentation Overview

1. Background & Purpose
2. Community Workshops & Outreach
3. Identified Goals & Priorities
4. Strategic Energy Plan Overview Document
5. Strategic Energy Plan
6. Implementation & Budgeting
7. Green Committee Meetings
8. Recommendation

# Lead Consultant Expertise



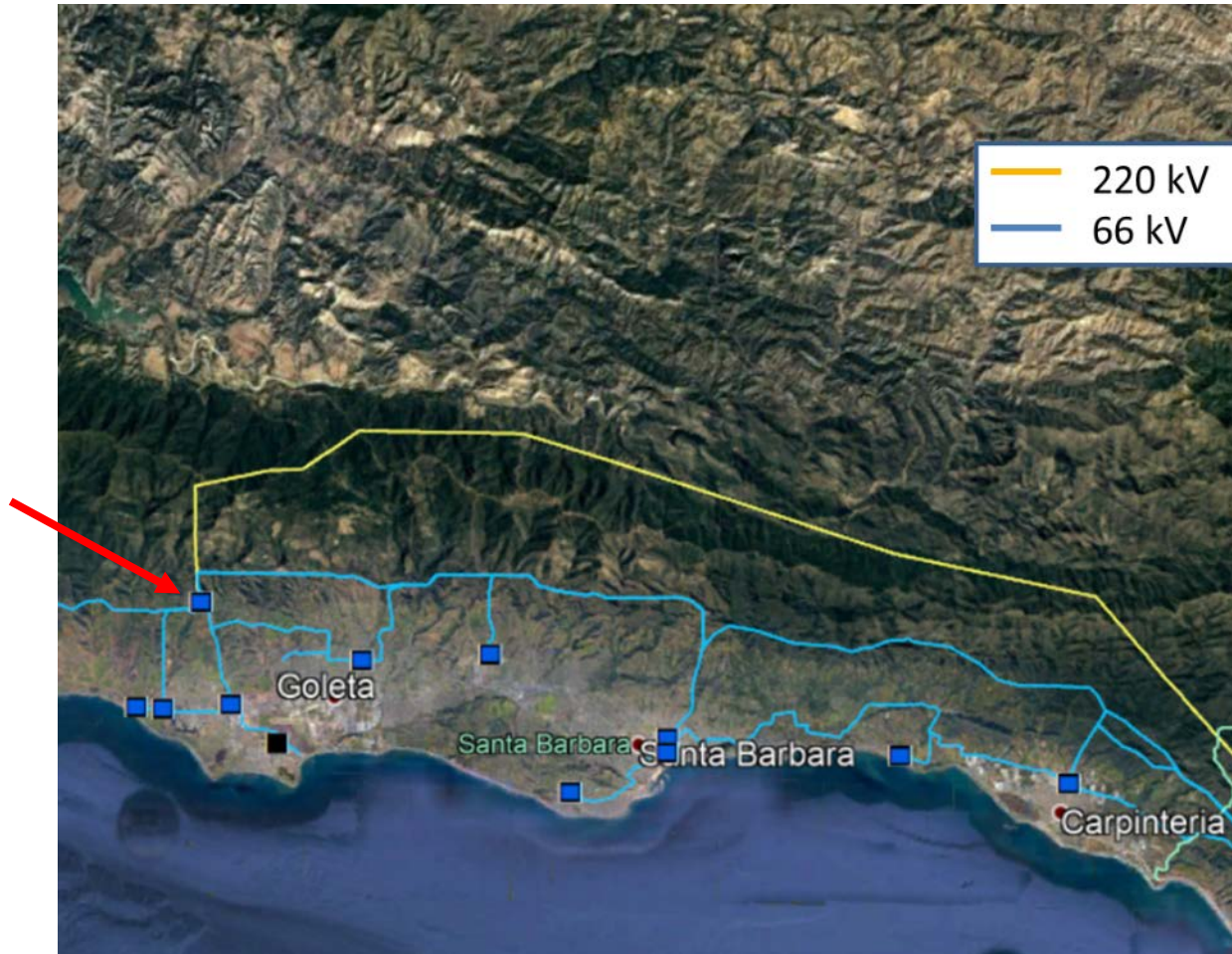
- Local Energy Program Design
- Clean Energy Strategic Modeling
- Policy & Technology Roadmap Creation

# 1. Background & Purpose

- A. December 2017 - Adopted 100% Renewable Energy Goals
  - ✓ Work Plan Requirement
  - ✓ Supports General Plan
- B. July 2018 – MOU with SB County & City of Carpinteria to Participate in Strategic Energy Planning Services Contract with Optony Inc.
- C. Specific Priorities
  - ✓ Reliability & Resiliency

# 1. Background & Purpose

**Why focus on reliability and resiliency?**



# 1. Background & Purpose

## Vulnerability to Public Safety Power Shut-Off (PSPS)

- ✓ Public utilities can preemptively close sections of the transmission line during dangerous weather events to reduce wildfire risk
- ✓ In October 2018, PG&E turned off power to parts of Lake, Napa, Sonoma, Amador, El Dorado, and Calaveras Counties for 1-2 days, impacting over 50,000 customers



## 2. Community Workshops & Outreach

### Kick-Off, Workshops & Focused Meetings

#### 2018

- ✓ September
  - BOS Approves Contract with Optony Inc.
  - Kick-Off Meetings with Partners & Internal Focus Groups
- ✓ October – SB County Stakeholder Survey
- ✓ November – Site Visits

#### 2019

- ✓ March 14<sup>th</sup> – Stakeholder Symposium
- ✓ April 3<sup>rd</sup> – Public Agencies/Special Districts Workshop
- ✓ April 3<sup>rd</sup> – Commercial Property Owners Stakeholder Meeting
- ✓ April 4<sup>th</sup> – Agricultural Property Owners Workshop
- ✓ April 5<sup>th</sup> – Opportunity Zones Workshop
- ✓ May 15<sup>th</sup> – Goleta Public Workshop

## 2. Community Workshops & Outreach

### Online Outreach

- ✓ SB County Stakeholder Survey
- ✓ Monarch Press – 4 Articles
- ✓ City Strategic Energy Plan Webpage
- ✓ Central Coast Power Webpage
- ✓ Social Media – Advertising Events, Soliciting Feedback



### 3. Identified Goals & Priorities

**The community outreach process resulted in the identification of these goals:**

- ✓ Resilience
- ✓ Reduced Carbon Emissions
- ✓ Public Safety
- ✓ Collaboration
- ✓ Self Reliance

## 4. Strategic Energy Plan Overview Document

- Letter from the Mayor
- Strategic Energy Planning Efforts
- Challenges to Reliability & Resiliency
- Working Together
- Community Identified Goals
- Energy Management Hierarchy & Incentives
- Community Outreach
- Energy Justice & Equity
- Leading By Example
- Implementation, Partnerships & Collaboration
- Introduction to the SEP



## 4. Strategic Energy Plan Overview Document

### Energy Justice & Equity

- An energy justice approach ensures:
  - ✓ Access to clean, safe, affordable and reliable energy
  - ✓ No one group shares the disproportionate costs, negative impacts or externalities associated with energy development
- Future SEP implementation considerations should include:
  - ✓ Spanish language inclusivity for all outreach
  - ✓ Programs that address the barriers for low income residents and renting populations

## 5. Strategic Energy Plan (SEP)

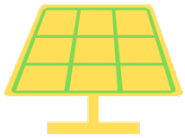
- A. Approach
- B. Baseline Renewable Energy Generation
- C. Renewable Energy Potential
- D. Gap Analysis
- E. Strategies to Meet Goal
  - ✓ Five Program Areas
- F. Sample Site Evaluation
- G. Public Comment

## 5. Strategic Energy Plan

### A. Approach: The SEP provides the pathway



Gap Between Current Use & the Goal



Renewable Energy Potential in Goleta



Obstacles & Opportunities



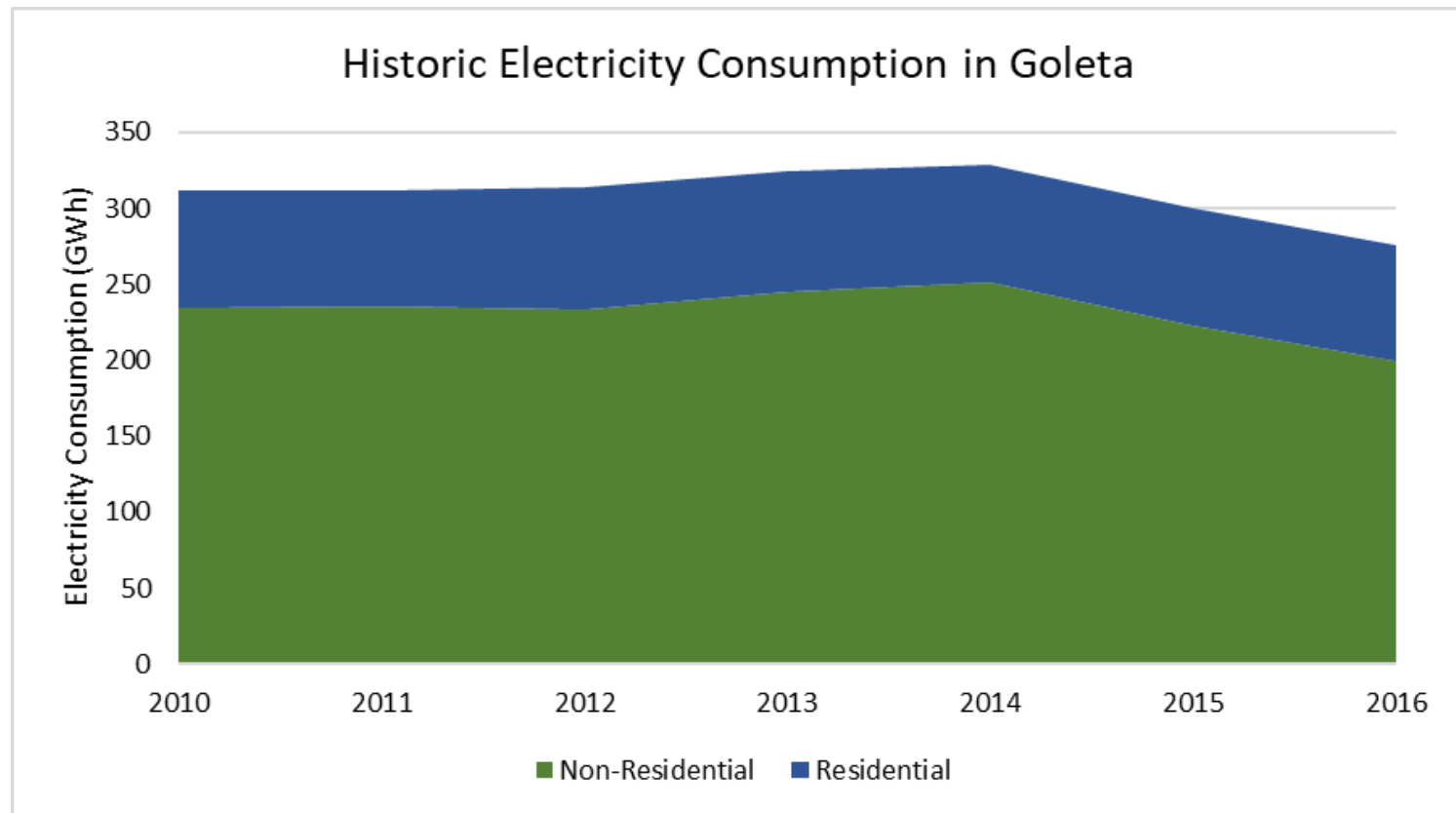
Recommended Actions in 5 Program Areas



List of High-Priority Sites

## 5. Strategic Energy Plan

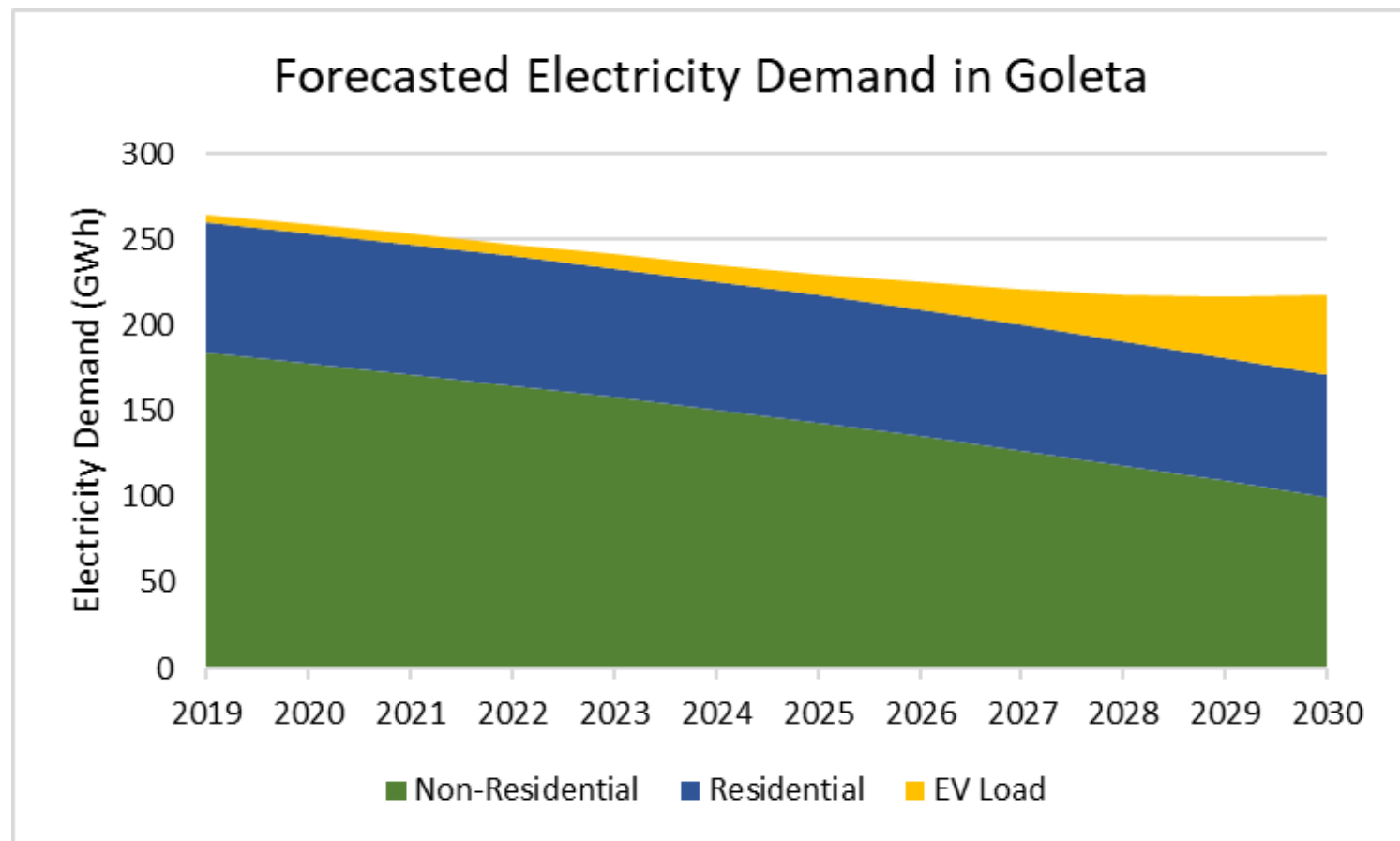
### B. Baseline Electricity Consumption



\* 1 gigawatt-hour (GWh) = 1 million kilowatt-hours (kWh)

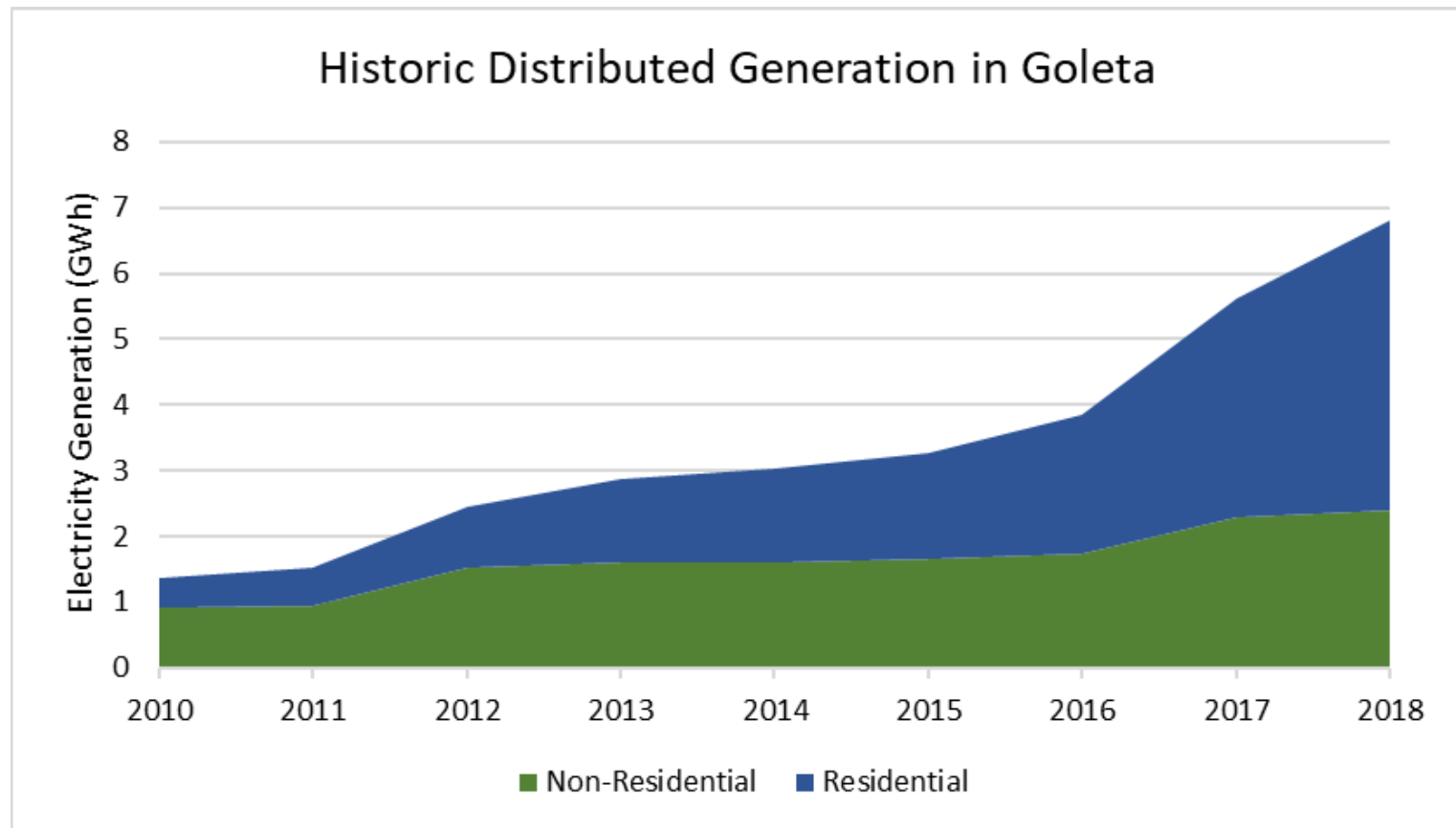
# 5. Strategic Energy Plan

## B. Projected Electricity Consumption



## 5. Strategic Energy Plan




### B. Baseline Renewable Energy Generation





## 5. Strategic Energy Plan

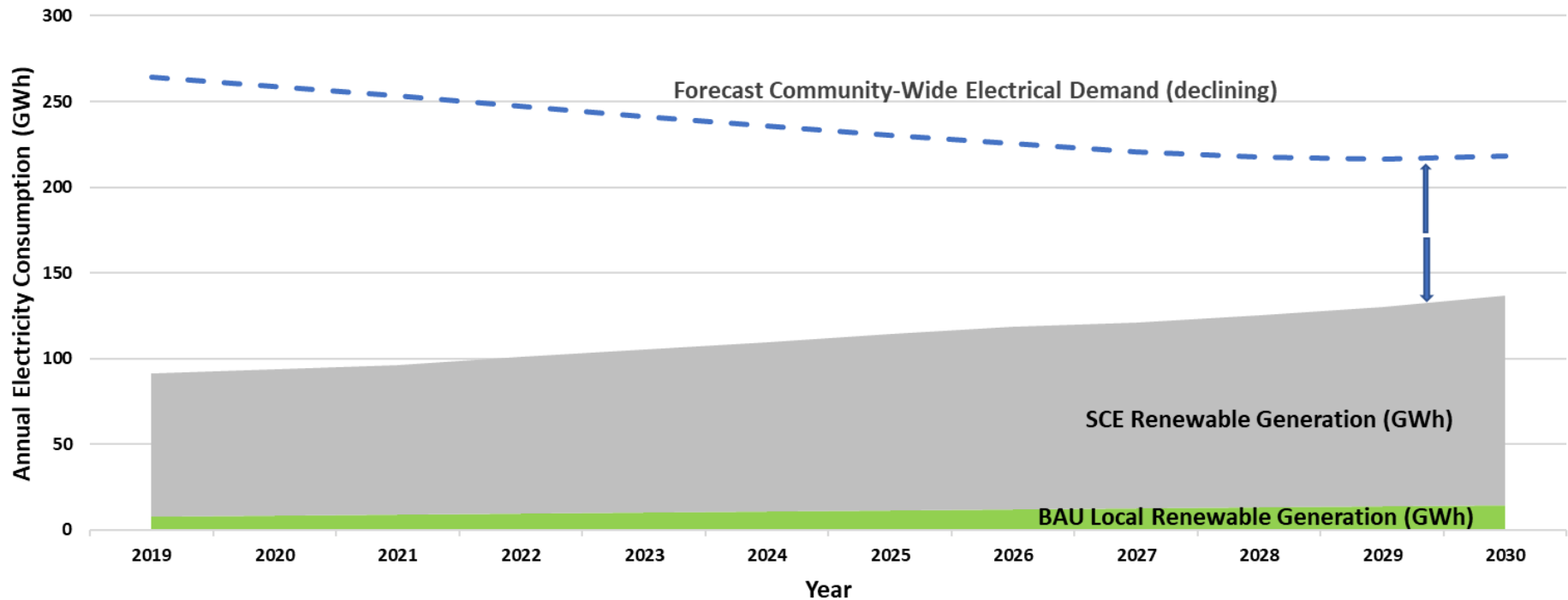
### C. Goleta Solar Potential

Solar Resource		Potential Generation Capacity (MW)	Potential Annual Generation (GWh)	Households Powered
	Rooftop	79 – 107	107 – 155	38,000 – 55,000
	Parking Lots	22 – 26	30 – 38	10,000 – 14,000
	Total	101 – 133	137 – 193	48,000 – 69,000

\* 1 megawatt (MW) = 1,000 kilowatts (kW)

# 5. Strategic Energy Plan

## D. Gap Analysis

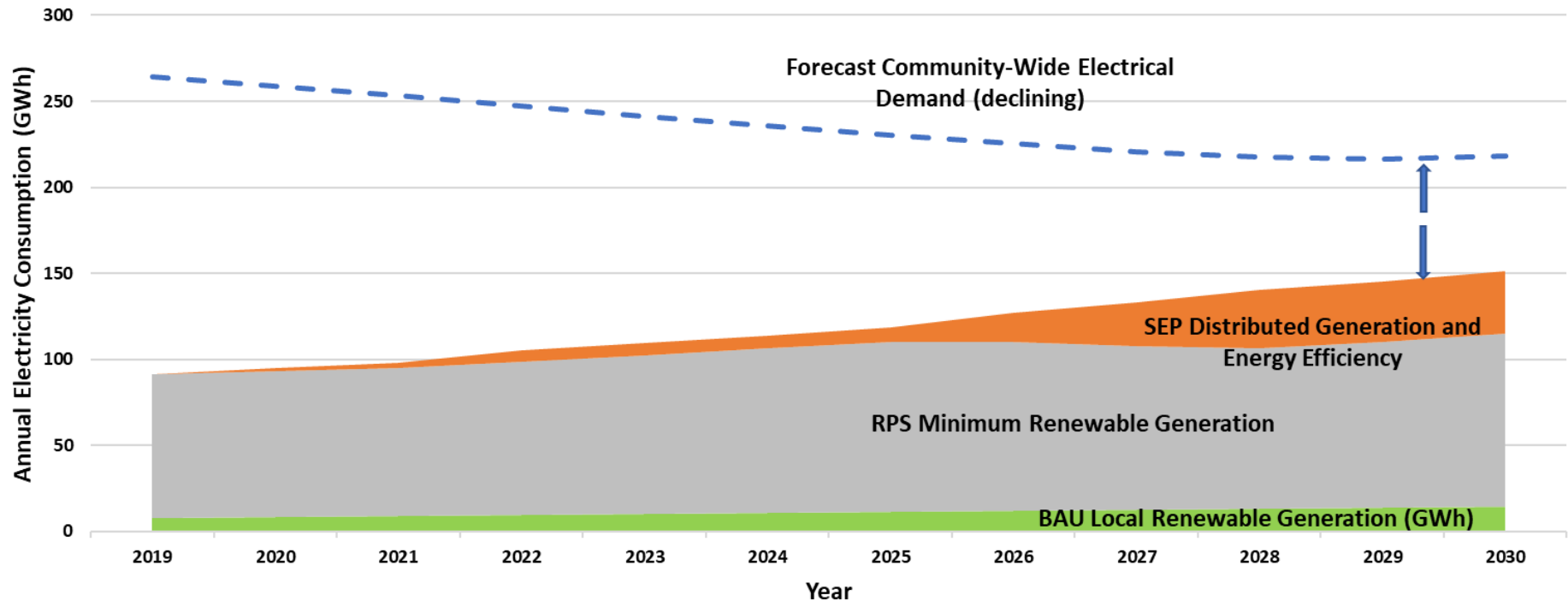


\* SCE = Southern California Edison

\* BAU = Business-As-Usual

# 5. Strategic Energy Plan

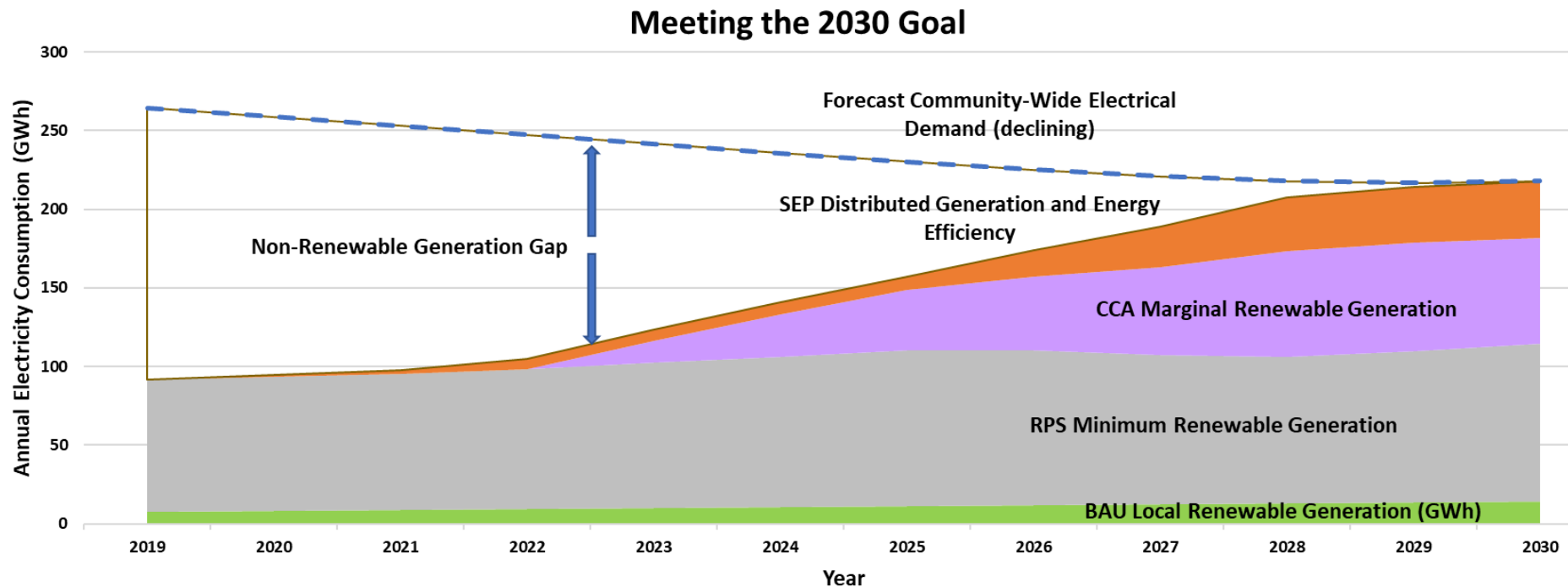
## D. Gap Analysis



\* RPS = Renewable Portfolio Standard (state requirements)

# 5. Strategic Energy Plan

## D. Gap Analysis



\* CCA = Community Choice Aggregation, also called Community Choice Energy or CCE

# 5. Strategic Energy Plan

## E. Strategies to Meet Goal



Regulatory



Utility



Financial and Funding




City Facility



Outreach and Advocacy

# Regulatory Program Area


Program Areas	Strategies	Description
 <b>Regulatory</b>	<b>Streamline Solar and Storage Permitting</b>	<b>Update residential and small commercial solar permitting ordinances to go beyond AB2188 and AB546 regulations.</b>
	<b>Commercial Building Energy Benchmarks</b>	<b>Institute energy benchmarks for large commercial buildings to encourage commercial building owners to undertake energy projects.</b>

- **Potential Actions:**

- Increase expedited permitting threshold from 10 kW to 40 kW
- Require commercial buildings >10,000 sqft to take energy efficiency actions
- Pilot technology-assisted permitting / inspections

\* AB = Assembly Bill from California legislature


# Utility Program Area

Program Areas		Strategies	Description
	Utility	Consider Community Choice Aggregation (CCA)	Continue to explore feasibility of a county-wide CCA and implement or consider joining an existing CCA.
		Community Solar Project	Develop a community solar project for those without access to on-site renewable energy.
		Pilot Back-up Inverter Program	Release an RFO to determine a shortlist of “back-up inverters” that provide resilience benefits in a residential application

## • Potential Actions:

- Partner with County and neighboring Cities to create a CCA, or join an existing CCA
- Develop a community solar project through SCE to increase renewable energy access and resiliency
- Seek to test new inverter capabilities to provide short-term back-up power to a dedicated outlet

# Financial and Funding Program Area

Program Areas		Strategies	Description
 <b>Financial and Funding</b>		<b>Financing Mechanisms</b>	Create an improved PACE or OBF program for residents to finance projects.
		<b>Financial Incentives</b>	Provide financial incentives to fill gaps in viability.
		<b>Diversify Funding Streams</b>	Monitor and apply for regional, state, and federal grants.

- Potential Actions:
  - Partner with foundations and/or local utility partners to create a low-interest funding source
  - Provide performance-based incentives for combined solar and storage projects

\* PACE = Property-Assessed Clean Energy; OBF = On-Bill Financing



# City Facility Program Area

Program Areas	Strategies	Description
 <b>City Facility</b>	<b>Energy Assurance Plan</b>	<b>Create and implement an energy assurance plan to ensure reliability at critical facilities.</b>

- Potential Actions:
  - Install clean energy generation with battery backup at critical City and community facilities
  - Pursue collaborative procurement with partner agencies or local private businesses

# Outreach and Advocacy Program Area

Program Areas	Strategies	Description
 <b>Outreach and Advocacy</b>	<b>One-Stop Shop</b>	<b>Support a county-wide resource and education center to raise public awareness and act as a hub for advertising programs.</b>

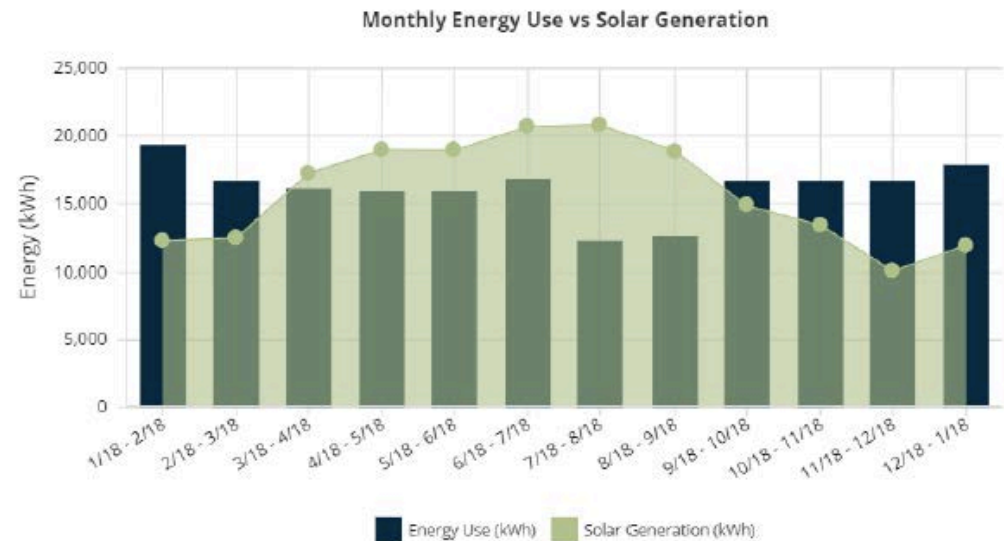
- Potential Actions:
  - Increase targeted outreach efforts to commercial property owners, low-income residents, etc.
  - Support clean energy lobbying efforts

## 5. Strategic Energy Plan

### F. Sample Site Evaluation – Goleta Library



Proposed Solar PV Layout



Energy Use & Solar Generation Profile

PV System Overview	
System Size:	118 kW
Expected Year 1 Output:	190,911 kWh
Electricity Offset:	99%
Expected GHG Reduction:	30 tons CO2/yr

# 5. Strategic Energy Plan

## G. Public Comment

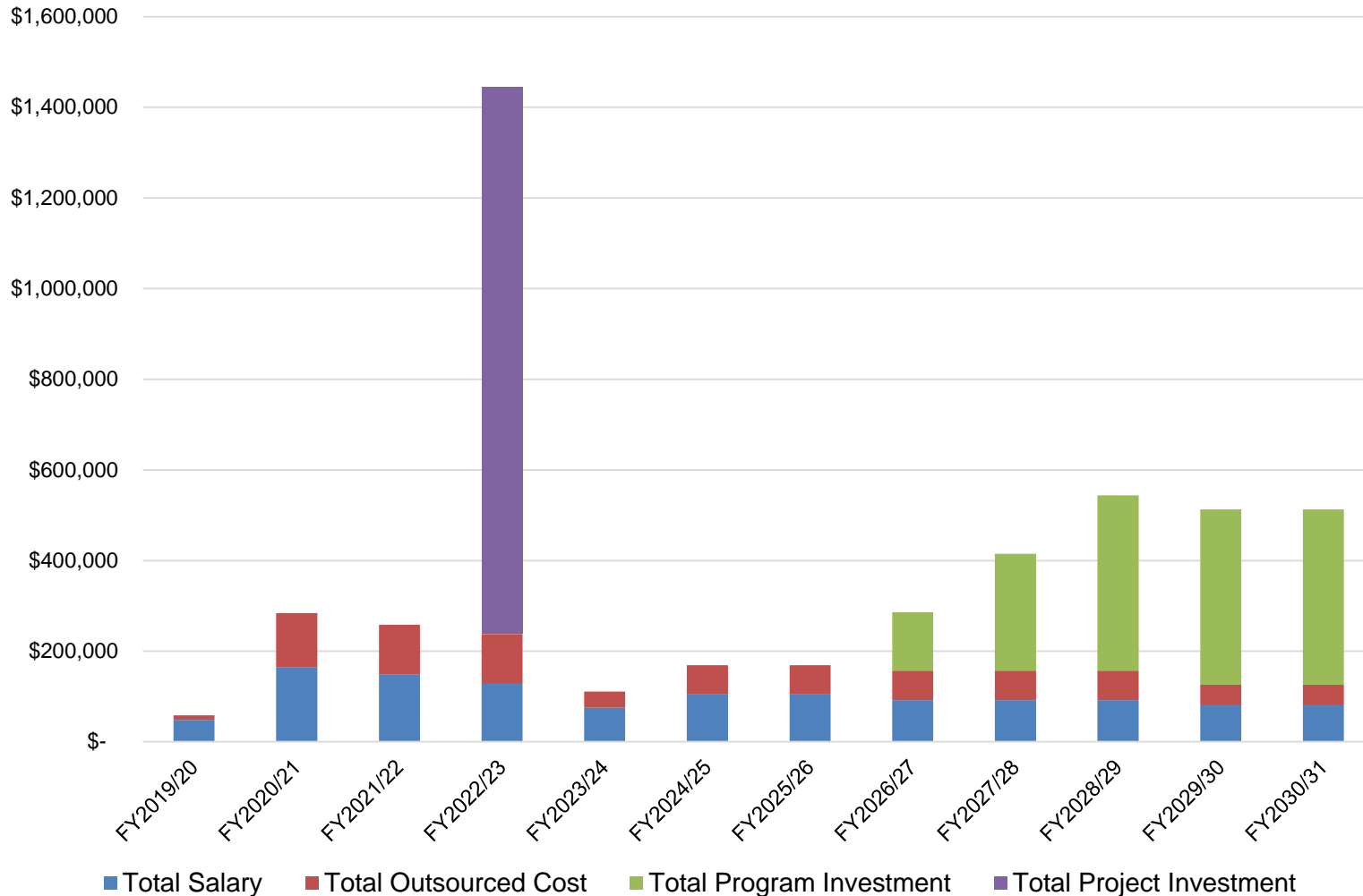
- ✓ Strong Local Participation in Workshops
- ✓ Eight Comment Letters Received
- ✓ Strongly Support:
  - City leading by example
  - Energy assurance plans for critical facilities
  - One-stop shop for education & targeted outreach
- ✓ Frequently-Asked Questions (FAQ) document produced to address questions and comments

## 6. Implementation & Budgeting

- Funding & Staffing Requirements by Strategy
  - ✓ Total Full-Time Equivalent (FTE) Requirement
  - ✓ Estimated Annual Staffing & Capital Costs
- Requires New 0.5 FTE (Assistant Sustainability Coordinator)
- 12-year Estimated Implementation Cost: \$3.83M
- Allocated Budget Drives Costs and Impacts
- New Dedicated Funding Sources Could Be Considered

## 6. Implementation & Budgeting

City of Goleta SEP - Total Budget Requirement



## 6. Implementation & Budgeting

Strategy	% Contribution to Goal	Capital & Consulting Costs	Years	2030 Annual Electricity Impact
6.1.1 Review & Update Ordinances	1.9%	\$10K	1	4 GWh
6.1.2 Commercial Benchmarking	2.2%	\$230K	11	5 GWh
6.2.1 Community Choice Energy	30.7%	\$75K	3	67 GWh
6.2.2 Community Solar	0.6%	\$140K	11	1.4 GWh
6.2.3 Pilot Back-up Inverter Program	0.4	\$25K	2	1 GWh
6.3.1 New Financing	1.4%	\$85K	11	3.1 GWh
6.3.2 Financial Incentives	10.4%	\$1.74M	9	23 GWh
6.4.1 Energy Assurance Plan	0.6%	\$80K + \$1.2M to implement	3	1.3 GWh
6.5.1 One-Stop-Shop	0.1%	-	12	0.2 GWh

[1] This cost assumes the use of PPAs, as available. The estimated capital is reserved to maintain flexibility for the City by enabling cash purchase of equipment, if a desirable PPA is not available, enabling the City to buy down cost of a PPA with upfront investment or to buy out PPAs and own the systems outright (which would have payback and resilience benefits).

## 7. Green Committee Meetings

### A. Energy / Green Issues Standing Committee

#### 2018

- ✓ February 12<sup>th</sup> – SEP RFP
- ✓ March 15<sup>th</sup> – SEP RFP Update
- ✓ June 13<sup>th</sup> - SEP MOU
- ✓ October 18<sup>th</sup> – SEP Update

#### 2019

- ✓ February 4<sup>th</sup> – SEP Update
- ✓ March 13<sup>th</sup> – SEP Update
- ✓ April 25<sup>th</sup> – Draft SEP
- ✓ May 30<sup>th</sup> – Draft SEP & Companion Document
- ✓ June 12<sup>th</sup> – Recommendation



## 8. City Council Recommendation

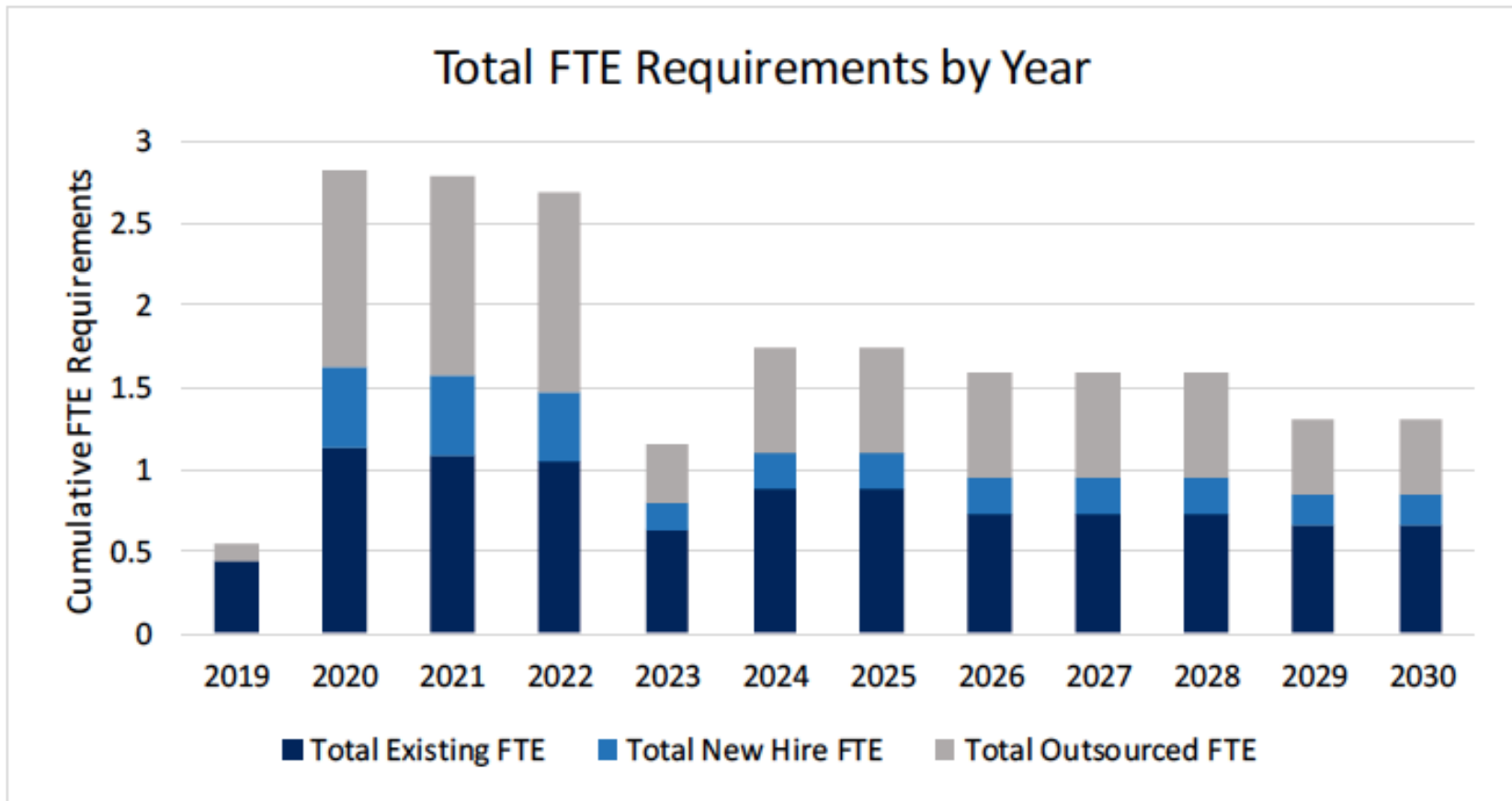
- A. Receive a report from staff and Optony Inc. on the results of the Strategic Energy / 100% Renewable Electricity Plan;
- B. Adopt Resolution 19-\_\_\_, entitled “A Resolution of the City Council of the City of Goleta, California, Adopting the City of Goleta Strategic Energy / 100% Renewable Electricity Plan” (Attachment 1); and
- C. Provide staff direction regarding City Council priorities for implementation.



# APPENDICES

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## 6. Implementation & Budgeting



# 1. Background & Purpose

## **Vulnerability to Public Safety Power Shut-Offs (PSPS)**

- Public utilities can preemptively close sections of the transmission line during dangerous weather events to reduce wildfire risk
- In June 2019, PG&E turned off power to parts of Butte, Yuba, Napa, Solano, and Yolo counties for 1-2 days, impacting over 22,000 customers

# Public Safety Power Shut-Off (PSPS)

- Allows public utilities to pre-emptively close sections of the transmission line during dangerous weather events to reduce wildfire risk
- In October 2018, PG&E turned off power to parts of Lake, Napa, Sonoma, Amador, El Dorado, and Calaveras Counties for 1-2 days, impacting over 50,000 customers

# Public Safety Power Shut-Off (PSPS)



**AP** **AP NEWS**

Top Stories Topics ▾ Video Listen 🔍

**PRESS RELEASE: Paid content from BusinessWire**

*Press release content from BusinessWire. The AP news staff was not involved in its creation.*

**PG&E May Proactively Turn Off Power for Safety in Portions of 12 Counties**

October 13, 2018

SAN FRANCISCO--(BUSINESS WIRE)--Oct 14, 2018--Due to expected extreme fire danger conditions including the Red Flag Warning from the National Weather Service and several other weather factors, Pacific Gas and Electric Company (PG&E) today announced it may be proactively turning power off for safety and conducting a Public Safety Power Shutoff in several northern California cities within the next 24 hours.

# Public Safety Power Shut-Off (PSPS)

PSPS 60,000 customers  
October 14-15<sup>th</sup>, 2018

## Public Safety Power Shut Off

County	Impacted Customers
Amador	8,722
Calaveras	2,797
El Dorado	30,819
Lake	11,309
Napa	5,757
Sonoma	415
<b>Total</b>	<b>59,819</b>








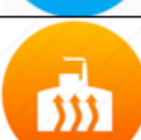
Update: Public Safety Power Shutoff remains in effect for 17k customers in North Bay and 42k in Sierra Foothills. We continue to monitor the weather and will provide updates to our impacted customers in Napa, Lake, Sonoma, Amador, El Dorado and Calaveras counties.

♡ 43 4:51 AM - Oct 15, 2018

💬 172 people are talking about this

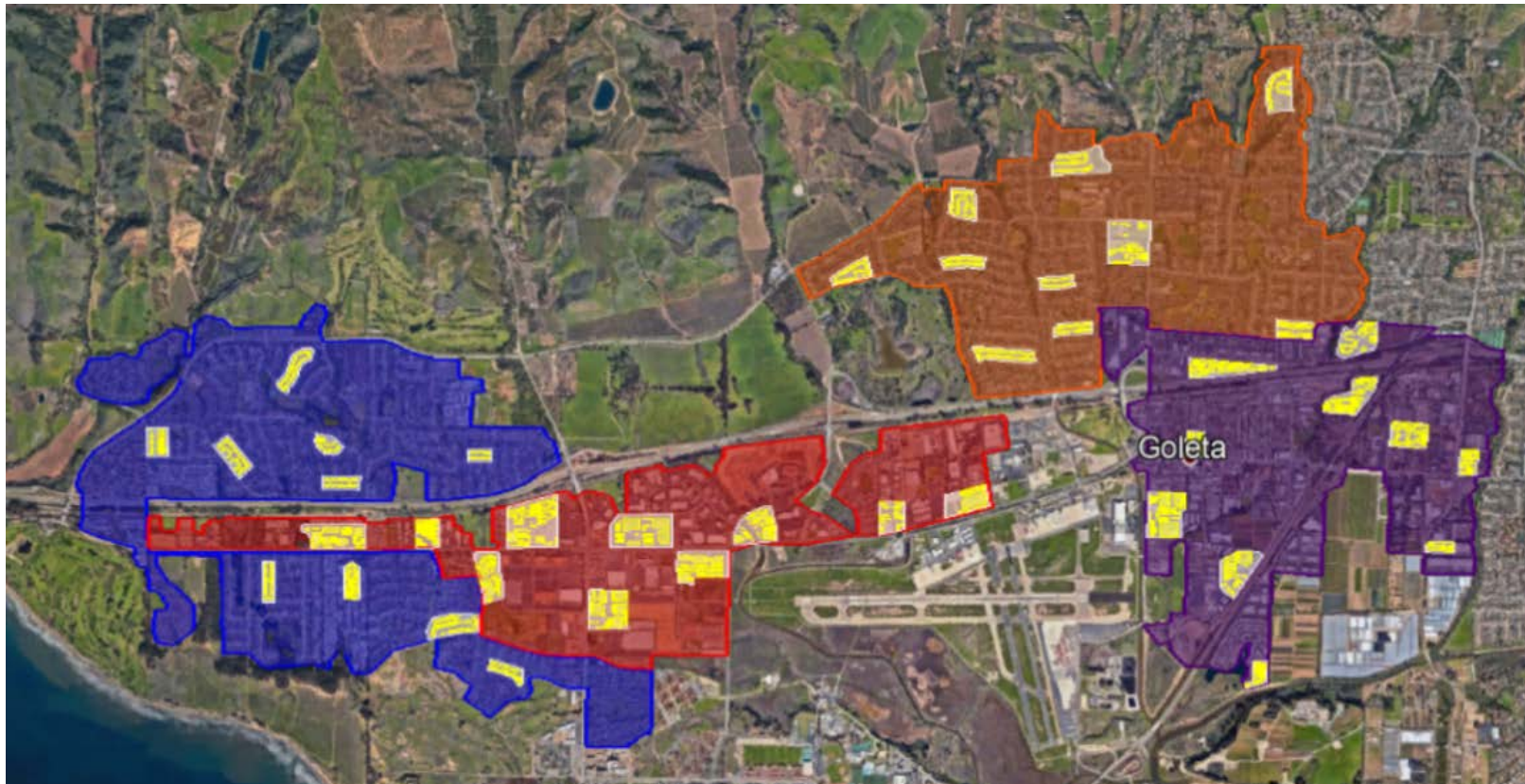


# County Renewable Potential

Renewable Resource		Generation Capacity (MW)	Annual Generation (GWh)	Households Powered
	Solar PV	1,251 – 1,857	2,484 – 3,919	885,000 – 1,400,000
	Biomass	44 – 78	249 – 375	90,000 – 135,000
	Wind	21 – 42	45 – 129	16,000 – 45,000
	Biogas	3 – 7	13 – 20	5,000 – 7,000
	Hydro	3 – 6	6 – 16	2,000 – 6,000
	Geothermal	1 – 2	7 – 13	2,500 – 4,500

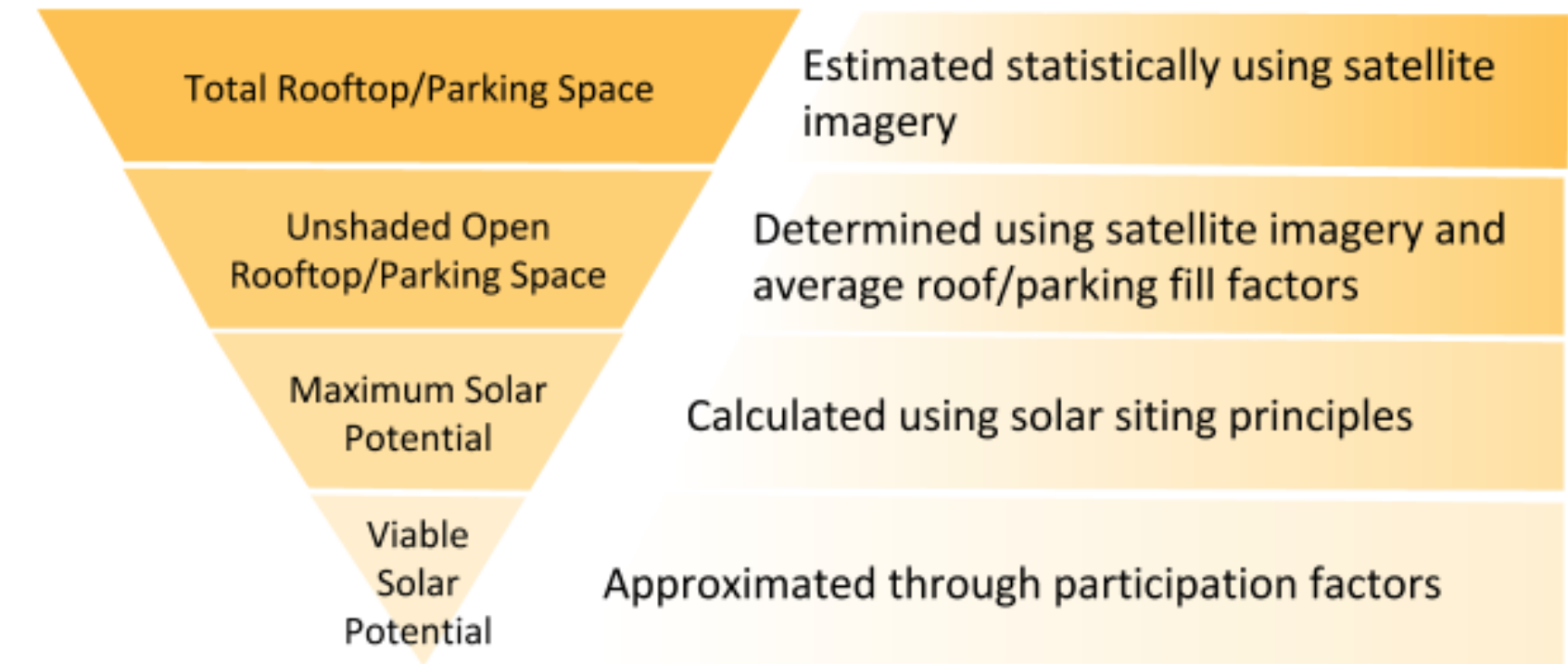
## 2. Strategic Energy Plan Overview

### B. Goleta Renewable Energy Potential



## 2. Strategic Energy Plan Overview

### B. Goleta Renewable Energy Potential



## 2. Strategic Energy Plan Overview

### D. Obstacles & Opportunities

- ✓ Split Incentives - Renters vs. Property Owners
- ✓ Load Constraints - Net Energy Metering
  - Solar installations must equal your energy use
- ✓ Financing barriers
  - Offer alternatives like PACE or OBF
- ✓ Altered TOU Rate schedules
  - Peak solar hours don't get peak price

## 2. Strategic Energy Plan Overview

### D. Obstacles & Opportunities

- ✓ Energy Assurance Plan & Regional Collaboration
- ✓ Consumer Awareness of the RE costs/benefits
- ✓ SCE's RFO process
- ✓ Distribution Grid
  - Areas of Goleta unable to handle any RE deployment due to old infrastructure
- ✓ Federal Income Tax Credits
  - Set to decrease and not renew

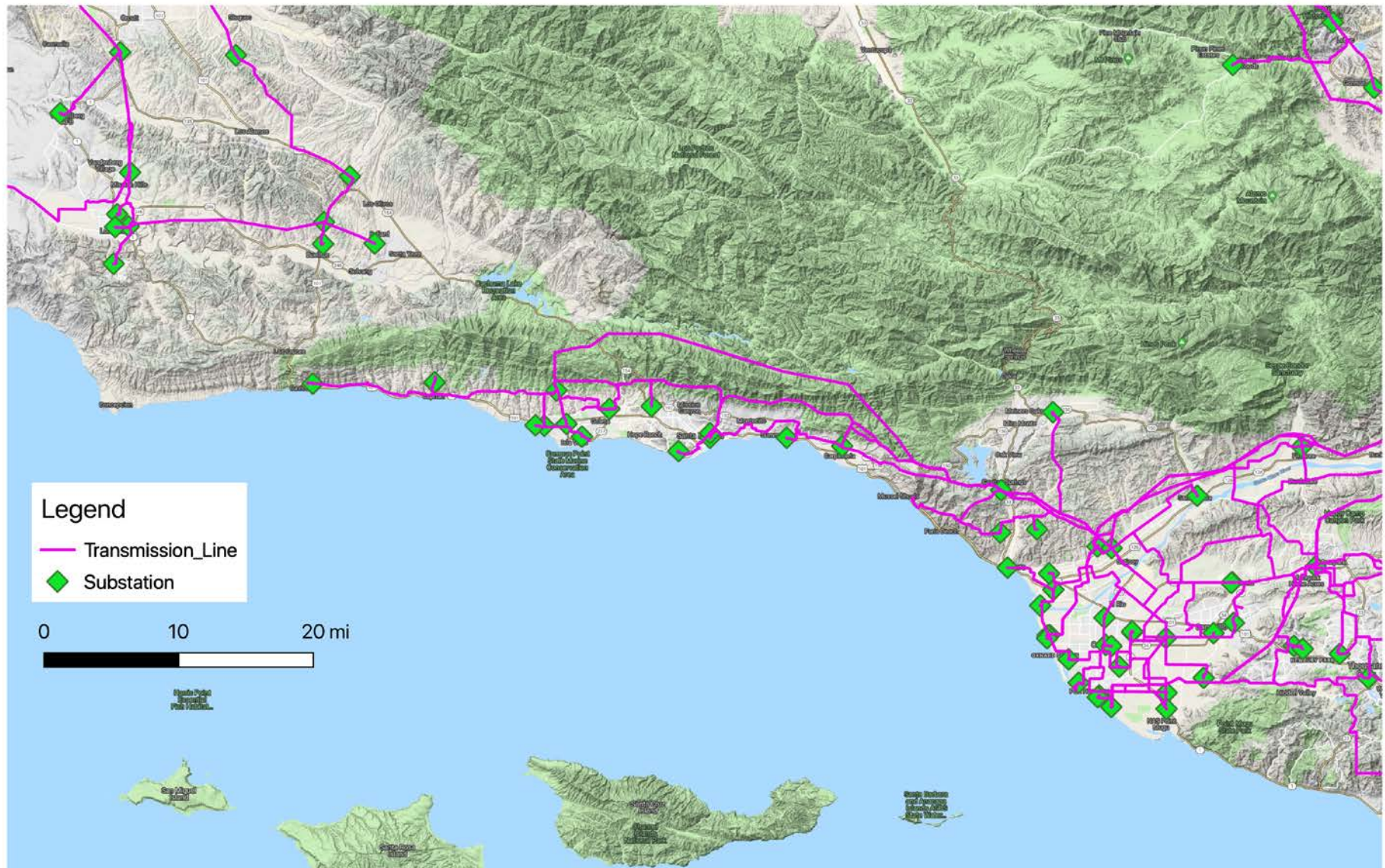
## 2. Strategic Energy Plan Overview

### B. Goleta Renewable Energy Potential

Building Sector	Rooftop Generation Capacity (MW)	Parking Lot Generation Capacity (MW)	Total Generation Capacity (MW)
Residential	6 – 8	0	6 – 8
Commercial	45 – 61	7 – 9	52 – 69
Large Commercial / Industrial	28 – 38	15 – 17	43 – 56
<b>Grand Total</b>	<b>79 – 107</b>	<b>22 – 26</b>	<b>101 – 133</b>



## Goleta Grid Infrastructure Vulnerability



# SCE RFO – Battery Storage

In the last 2 years, the City has...

- approved **one** battery storage conditional use permit (CUP) application
- received **one** application for review
- conducted **five** planning consultations

Location	Use	Status
30 Las Armas Road	500-kilowatt battery storage system	CUP approved by the Planning Commission in 2017
<b>7780 Hollister Avenue</b>	10MW/ 40 MWh	Unsure if use is consistent with the Public-Quasi Public category
6864 Cortona Drive	160 MWh	Planning Consultation completed
71 Ellwood Station Road	40 MW/ 400 MWh	Planning Consultation completed
280 Coromar Drive (Lot 14 in Cabrillo Business Park)	N/A	Planning Consultation completed



# 7780 Hollister Ave. ESS Project

- December 12, 2018: Applicant submitted request for a battery storage use at the subject site via a Conditional Use Permit (CUP) to **allow for utility use**
- Existing General Commercial (C-G) land use designation does not allow for utility type uses, so a **General Plan Amendment (GPA)** would be required
  - *How should **applications** for utility-scale battery facility projects be reviewed?*
  - *What **existing** General Plan use designations do battery facilities fit under or does a **new category** or **overlay**, such as battery facility, need to be created?*

# Energy Storage Uses

## On-Site

- Provides clean backup for outages if paired with solar PV
- Allows demand charge shaving and energy arbitrage to reduce daily electricity costs
- Enables participation in utility demand response programs

## Utility-Connected

- Serves as local capacity for peak periods
- Do not increase local resiliency without local utility-scale generation

# Permitting & Safety

## Considerations for ESS (Energy Storage Systems) Fire Safety (2016)

DNV GL on behalf of Consolidated Edison and NYSERDA (2016)

- *“All energy systems carry with them a **risk** in their deployment; however, the risks identified in this study are **manageable within the limits of today’s engineering controls** for safety when appropriate conditions are met. The resulting requirements in codes, if implemented, are within the boundaries of the typical built environment.”*

## Energy Storage System Guide for Compliance with Safety Codes and Standards (2016)





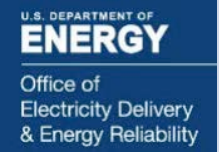

Pacific Northwest National Laboratory, Sandia National Laboratories, funded by the Energy Storage Systems Program of the U.S. DOE (2016)

- *“This Compliance Guide (CG) is intended to help address the acceptability of the design and construction of stationary ESSs, their component parts and the **siting, installation, commissioning, operations, maintenance, and repair/renovation** of ESS within the built environment”*

## Energy Storage Safety Strategic Plan (2014)

Office of Electricity Delivery and Energy Reliability, U.S. DOE

- *“The discussion within this document explores the current landscape of energy storage deployments and technologies and identifies specific areas in **validation techniques, incident response and safety codes, standards and regulations (CSR)** where the community should focus its efforts”*

Title	Description	Organization
<p><i>“Considerations for ESS (Energy Storage Systems) Fire Safety” (2016)</i></p>	<p>Identifies <b>fire risks</b> with batteries and finds that current engineering controls are appropriate</p>	 
<p><i>“Energy Storage System Guide for Compliance with Safety Codes and Standards” (2016)</i></p>	<p>Guidelines for <b>site design</b></p>	 
<p><i>“Energy Storage Safety Strategic Plan” (2014)</i></p>	<p>Identifies current landscape of energy storage <b>safety</b> standards and specific areas of improvement</p>	
<p><i>“Safety Best Practices for the Installation of Energy Storage”</i></p>	<p>Links to the most relevant <b>best practices</b> and <b>standards</b> from a wide range of sources</p>	

# Code Design

Codes, Standards and Regulations (CSRs) will ultimately vary by project because of differences in:

- electrolyte chemistries
- size of the battery
- whether it is located inside or outside, etc.

## Santa Clara Field Inspection Guidelines for ESS



### Interconnection of storage battery systems

#### *Field Inspection Guidelines for interconnected residential battery storage systems*

- ☐ Storage batteries for dwellings have the cells connected to operate at less than 50 volts. (NEC 690.71(B)(1))
- ☐ Live parts of battery systems for dwellings are guarded to prevent accidental contact by persons or objects. (NEC 690.71(B)(2))
- ☐ Flexible battery cables are listed RHW or THW, 2/0 minimum for battery cell connections. (NEC 690.74) NOTE: welding cables, marine, locomotive (DLO), and automotive cables do not meet the current Electrical Code requirements. (NEC 110.3(A) & (B))
- ☐ Flexible battery cables do not leave the battery enclosure. (NEC 690.74 & 400.8)
- ☐ Flexible, fine strand cables are only be used with terminals, lugs, devices, and connectors that are listed and marked for such use. (NEC 690.31(F), 690.74, 110.3(B) & 110.14)
- ☐ High interrupt, listed, DC rated fuses or circuit breakers are used in battery circuits. The AIC is at least 20,000 amps. (NEC 690.71(C) & 110.9)
- ☐ Cables to inverters, DC load centers, and/or charge controllers are in a conduit. (NEC 690.31(A) & 690.31(E))

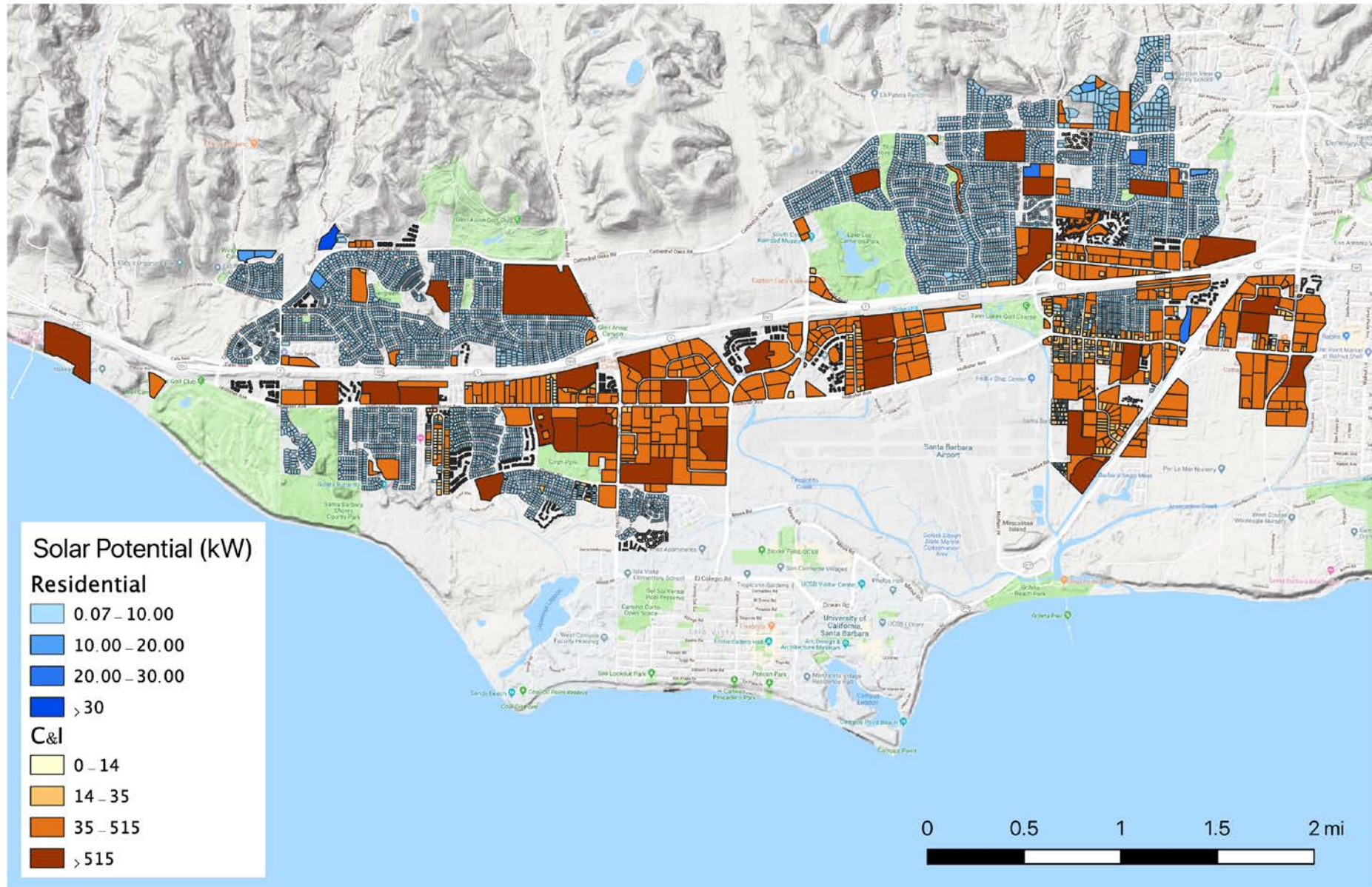
# Case Studies

1. Two 10 MW SCE-owned Tesla battery energy storage systems adjacent to SCE's **Mira Loma Substation** in Ontario
2. **Hybrid Enhanced Gas Turbine (EGT)**: One 10 MW combined with the Center Peaker plant gas turbine in Norwalk, CA





## Goleta Solar Potential Residential & Commercial and Industrial



## 6. Implementation & Budgeting

	Planning & Enviro Review Director	Sustainability Coordinator	Assistant Sustainability Coordinator	Assoc. Planner	Senior Planner	Civic Spark Fellow	Building Official
6.1.1 Review and Update Ordinances	4%	20%	-	20%	8%	8%	-
6.1.2 Commercial Benchmarking	5%	9%	13%	20%	5%	9%	1%
6.2.1 Community Choice Energy	10%	20%	10%	-	-	10%	-
6.2.2 Community Solar	2%	11%	12%	-	-	21%	-
6.2.3 Pilot Back-up Inverter Program	0%	20%	20%	-	-	10%	-
6.3.1 New Financing	10%	10%	25%	-	-	10%	-
6.3.2 Financial Incentives	6%	14%	10%	-	-	10%	-
6.3.3 Diversify Funding Streams	25%	29%	21%	-	-	25%	-
6.4.1 Energy Assurance Plan	5%	6%	11%	-	-	6%	-
6.5.1 One-Stop-Shop	-	41%	19%	-	-	40%	-

Note: Any remaining % of responsibilities will fall to **Outsourced Temp Consulting**