**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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| Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339. | Rulemaking 19-09-009 (Filed September 12, 2019) |

# COMMENTS OF THE CLEAN COALITION IN RESPONSE TO TRACK 1 MICROGRID AND RESILIENCY STRATEGIES STAFF PROPOSAL, ISSUED AT THE CALIFORNIA PUBLIC UTILITIES COMMISSION ON JANUARY 21, 2020.

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January 30, 2020

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## I. INTRODUCTION

Pursuant to Rule 14.3 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the Clean Coalition respectfully submits these comments regarding specific questions presented the Staff Proposal and IOU proposals in Track One of the Order Instituting Rulemaking (OIR) Regarding Microgrids Pursuant to Senate Bill 1339, issued January 21, 2019.

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement and interconnection of distributed energy resources ("DER") — such as local renewables, advanced inverters, demand response, and energy storage — and we establish market mechanisms that realize the full potential of integrating these solutions. The Clean Coalition also collaborates with utilities and municipalities to create near-term deployment opportunities that prove the technical and financial viability of local renewables and other DER.

Senate Bill 1339 of 2018 calls for the Public Utilities Commission to, among other things, create a framework "To facilitate the commercialization of microgrids for distribution customers of large electrical corporations", by setting rates and tariffs, as well as developing methods "to reduce barriers with microgrid deployment." In the OIR, the Commission noted three overarching policy goals for this proceeding that should be addressed: "(1) Reducing greenhouse gas emissions; (2) adapting to the impacts of a changing climate; and (3) protecting the health, safety, and lives of California residents during catastrophic events, such as wildfires, floods, earthquakes, extreme weather, or cyber-attacks". Track one of the proceeding is

focused on short term microgrid and resilience strategies that can be implemented before fire season of 2020. The track includes four main priorities, each of which is the focus of multiple different proposals in the staff proposal. This includes;

1. Prioritizing and streamlining interconnection applications to deliver resiliency services at key sites and locations;
2. Modifying existing tariffs to maximize resiliency benefits;
3. Facilitating local government access to utility infrastructure and planning data to support the development of resiliency projects; and
4. Investor Owned Utility proposals for immediate implementation of resiliency strategies, including partnership and planning with local governments.

The Clean Coalition has focused these comments on specific questions in the staff proposal rather than broadly addressing all of the questions.

## II. RESPONSES TO ALJ QUESTIONS

### a. Interconnection Proposals

**Please indicate support of or opposition to the adoption of each proposal and justify the rationale. For the proposals that include implementation options, please indicate which options should be supported or opposed and why.**

Proposals 1 & 2 are "no brainers" reflecting active proposals and discussions from the R.17-07-007 Rule 21 proceeding working groups and should be adopted as recommended by Energy Division staff.

Proposal 3 - Interconnection Queue

- Options 1 & 2 are essentially the same - allowing queue jumping for priority projects - the issue is only one of cost allocation, and in any case these microgrid projects are essentially grid upgrades, but if they actually reduce hosting capacity then this would increase costs for queued applicants - this could be offset by continuing to allocate costs as they would have been for the queue position.

- Option 3 (adding staff and IT resources) is obvious, although it will take time to hire and train staff or develop the IT resources. 18 proposals for IT/automation improvement are already before the Commission from the Working Group 3 Final Report.[1]
- Note that much of the delays occur not in the application review process but after an Interconnection Agreement has been completed as interconnection applications bounce between utility departments for final engineering, confirmation of deposits, service planning and construction scheduling for any customer interconnection facilities or upgrades that are required (attach example GIA schedule VGES). This is in part because DER interconnection requests are given lower priority than urgent needs of existing customers. In this case, interconnection requests supporting resilience may be prioritized in order to support service to existing customers.

Proposal 4: Allow the Use of Smart Meters for Electrical Isolation
This proposal should be prioritized and urgently reviewed to determine how soon the technical and logistical elements can be clarified and resolved. This has high potential to support prioritization of critical loads using AMI equipment that is already in place. While individual customers can install disconnection switches already, many inverters are programmed to disallow operation in islanded mode. However, if lower priority loads can be remotely disconnected, then critical loads can be more readily served from limited available resources.

**This is an important alternative to the permanent installation of gas fired generation as designated in IOU PSPS RFOs designed to serve 100% of normal and peak loads 100% of the time. The ability to focus on priority loads will allow preferred resources to meet the need within the highly restricted utility sites designated in the RFOs, while also accepting new or existing preferred resources located anywhere within any islanded areas - crucially this includes areas that cannot be served from the substation during a PSPS or other outage.

**b. Interconnection Proposal 1:**

**Are the three listed system types — (1) Rule 21 non-export storage, (2) NEM + Paired storage (Alternate Current [AC] Coupled and Direct Current [DC] coupled), and (3) NEM Solar — the most appropriate system types to consider in this proposal? Please justify the response. Beyond these three system types, should the utilities develop standardized single**

[1] A summary of the report can be found in Appendix A.

**line diagrams for additional technologies or system types? If so, which technologies or system types should be prioritized and why?**

Rule 21 export and WDAT streamlined procedures should also be rapidly pursued, including flat fees or (capped) allowances for upgrades and facilities in zones where rapid DER deployment is of value. For example, where the utility can streamline the Cost Certainty Option in Rule 21 and provide a guaranteed fixed cost in 30 days, and timely construction of any utility facilities, that would greatly accelerate urgent deployment of local distributed generation and storage. The utility can further streamline the process by offering a fixed standard fee for interconnections that conform to the utility's own interconnection capacity assessment (ICA) hosting capacity determination that no upgrades will be expected. In instances where 1. upgrades would greatly increase hosting capacity, 2. additional DER is deemed of equal or greater value in supporting local resilience, and 3. DER is expected to be deployed if the hosting capacity is available, then the utility should be authorized and required to perform hosting capacity upgrades. This addresses the "first mover" barrier in which no additional DER is deployed because the first applicant bears the cost of the upgrade.

**For each of the three system types described — (1) Rule 21 non-export storage, (2) NEM + Paired storage (AC Coupled and DC coupled), and (3) NEM Solar) — should a size limitation be placed on projects utilizing pre-approved single line diagrams? If so, what should it be and why?**

No size limit should be put in place if projects follow pre-approved single line diagrams. This will conserve CPUC resources and help to streamline interconnection, hastening the deployment of microgrids for resilience purposes.

**Under what circumstances should field inspections be required? What system installations and settings need to be verified by field inspections?**

Inspections should not duplicate those already completed by the local AHJs.

**c. 3.2.1. Storage Charging Proposals**

**Please indicate support of or opposition to the adoption of either proposal and justify the position. Please also indicate which proposal warrants most support and justify the response.**

The Clean Coalition supports proposal one. If an energy storage device is being charged with a 100% renewable resource, there should be no limit to how it can export to the grid. However, a device should not be able to charge from the grid and export that energy back to the grid at a higher rate to make a profit.

### d. 3.2.2. Storage Capacity Limit Proposals

**Please indicate support of or opposition to the adoption of either proposal, and discuss the position taken.**

- The Clean Coalition supports Tariff Problem 1: Proposal 1 – Allow both export and import during pre-PSPS window.
- In order to allow energy storage systems to provide full resilience benefits, require the IOUs to allow energy storage systems to, in advance of PSPS events, both import from and export power to the grid.
- There is good reason that the energy storage should be able to export to the grid during and immediately prior to PSPS events. BTM storage capacity can provide valuable assistance to the utility in meeting peak demand during these periods and complement the use of FOM storage in balancing local renewable resources and loads.

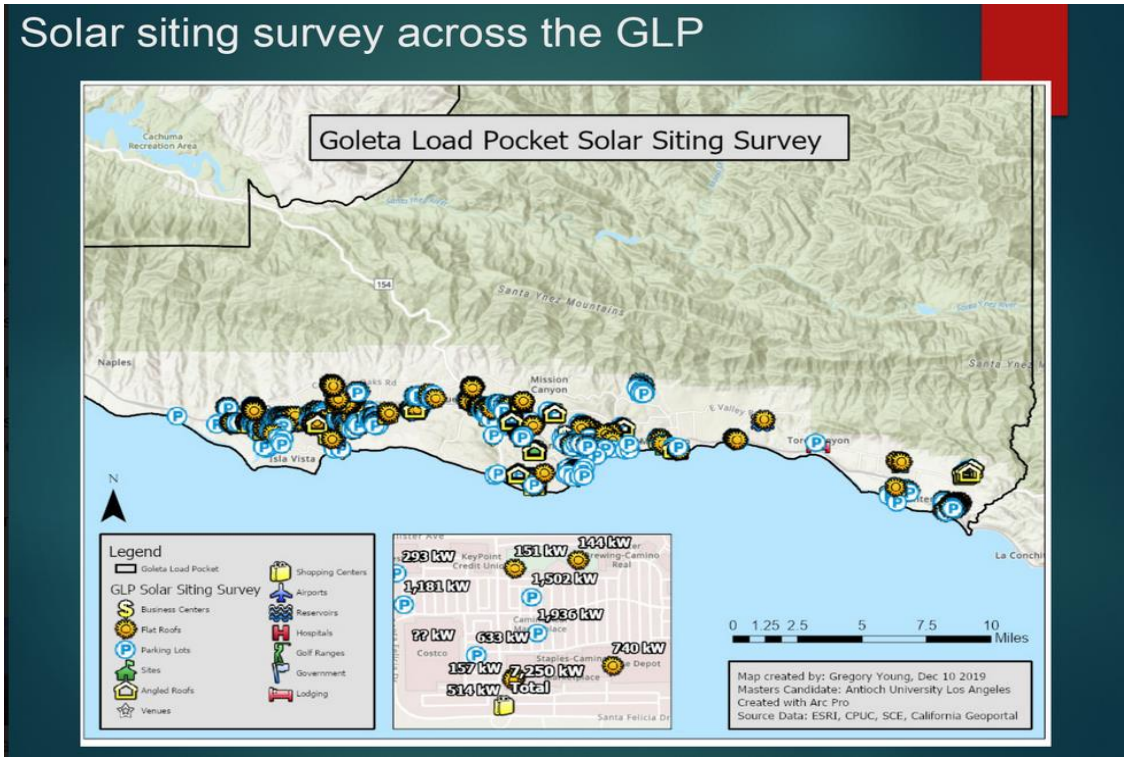
### e. 3.3. Ensuring Local Government Access to Distribution Infrastructure Data to Facilitate Development of Resiliency Projects

**What data from the list in Proposal 5 and Appendix 4.4 is essential for microgrid development? Please list the line numbers of data from the text of Proposal 5 as well as the line numbers of individual data points from Appendix 4.4 in response. Please indicate whether the response reflects the data that is needed for the development of a microgrid that is behind the customer meter or in front of the customer meter.**

.Shp files are the most useful for microgrid development since they can be used to perform detailed analysis through GIS software, whereas .kmz (or .kml) and other Google Earth files are unable to perform the same analysis. Most of the data in appendix 4.4 refers to transmission and distribution information; the biggest dataset not mentioned in appendix 4.4 is a list of critical facilities CCAs or other municipalities can use to determine the best areas for the development of critical facility microgrids and true Community Microgrids. Similarly, data should be included with maps of low income and disadvantaged communities that could use the resilience offered by a critical facility microgrid.

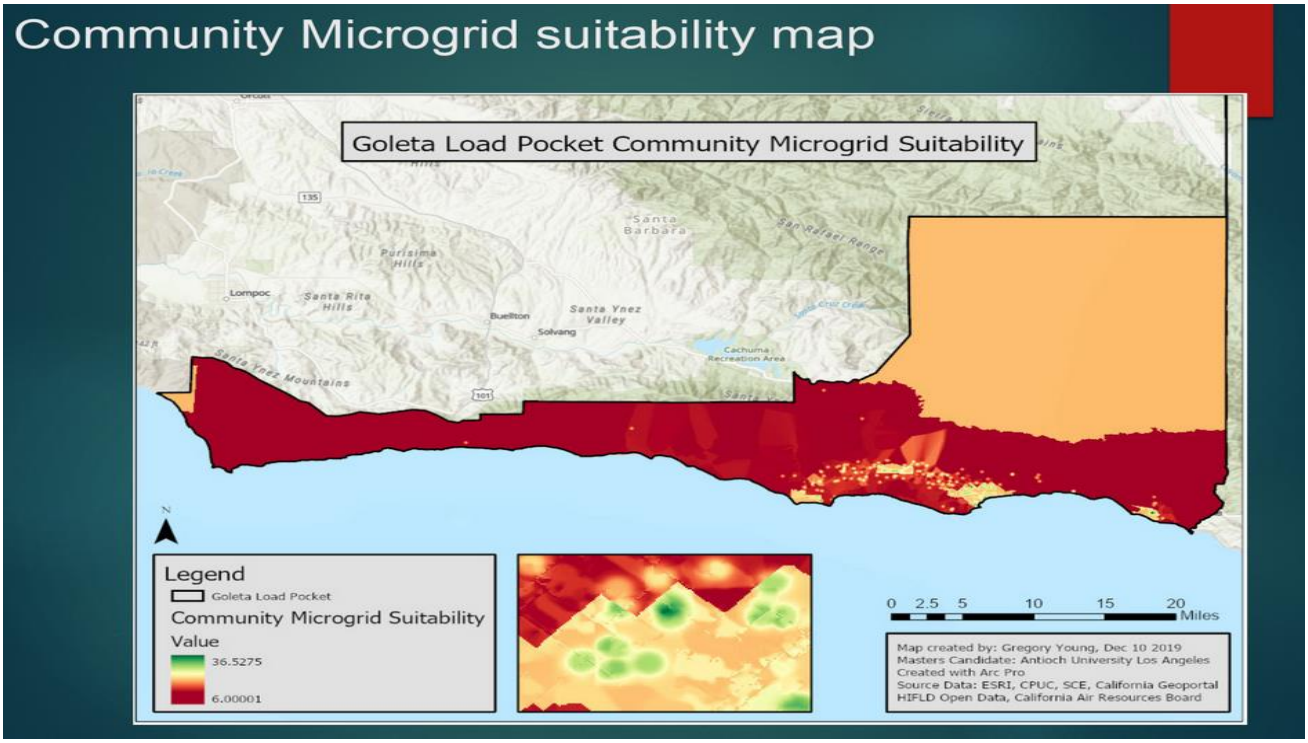
A graduate student working with the Clean Coalition is developing a tool create a suitability map that would help identify critical facilities, providing opportunities for critical facility microgrids and true Community Microgrids. The tool semi-automates this process by creating numerical values in suitable Community Microgrid regions for optimal locations for microgrids.

Using the Goleta Load Pocket as an example, the tool takes Solar Siting Survey data and combines it with a list of critical facilities.



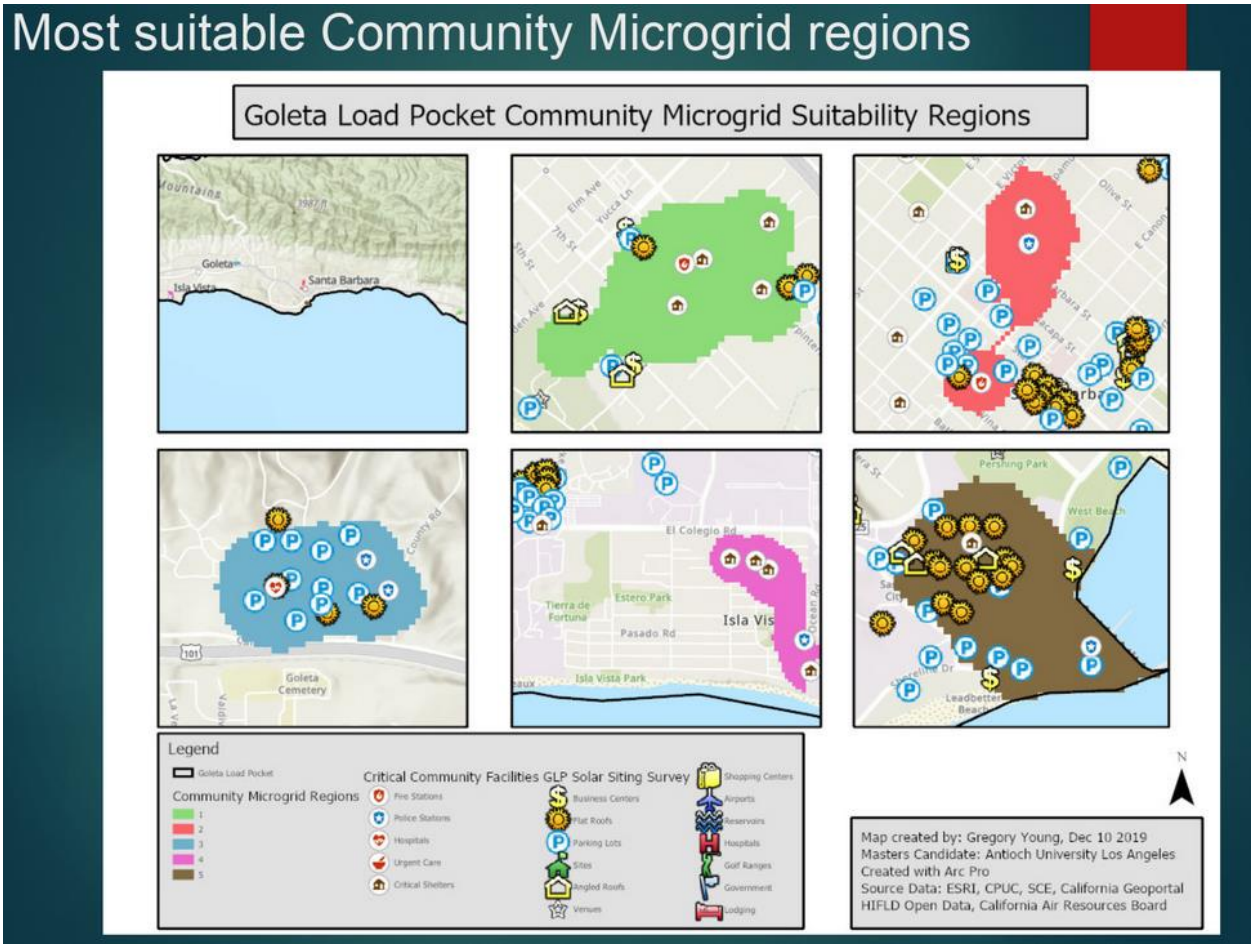

*Solar Siting Survey of the GLP*

This information is then combined with low income areas to create a suitability map so that areas matching all of the specs – low income communities, high fire risk areas, areas with critical facilities, and circuits with a high hosting capacity – lead to higher values on the map.




*Heat Map of the GLP*

Each of the areas with the highest values on the suitability can be magnified to show all of the areas that could be interconnected to a Community Microgrid. The geen areas have the highest values and therefore are the most suitable for critical facility microgrids.



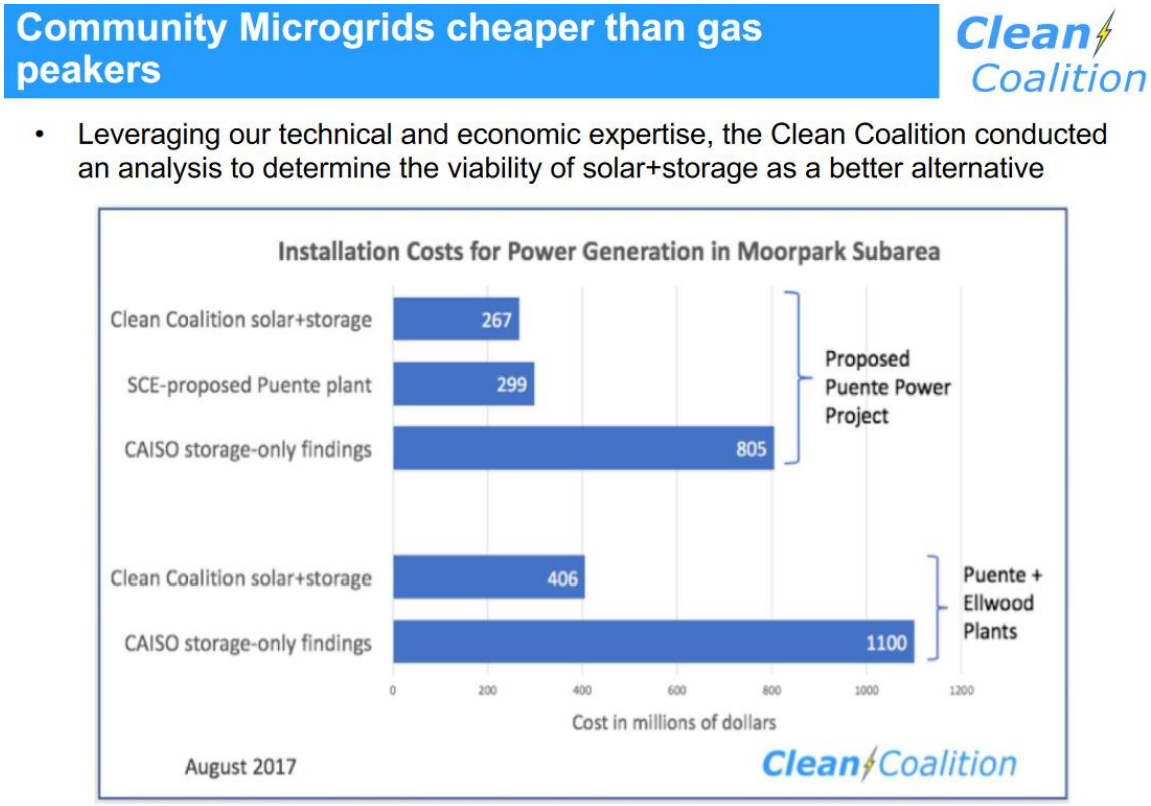

This tool would help bridge the gap between municipalities and ICA maps that are provided by the utilities and in doing so, it has the potential to assist municipalities in understanding where community microgrids could be located to best provide resilience to their community.

### f. 3.4.1. All Investor Owned Utility Proposals

**Please indicate support of or opposition to each proposal and explain the rationale. In response, please clearly distinguish between the action proposed and the cost recovery mechanisms proposed, if any.**

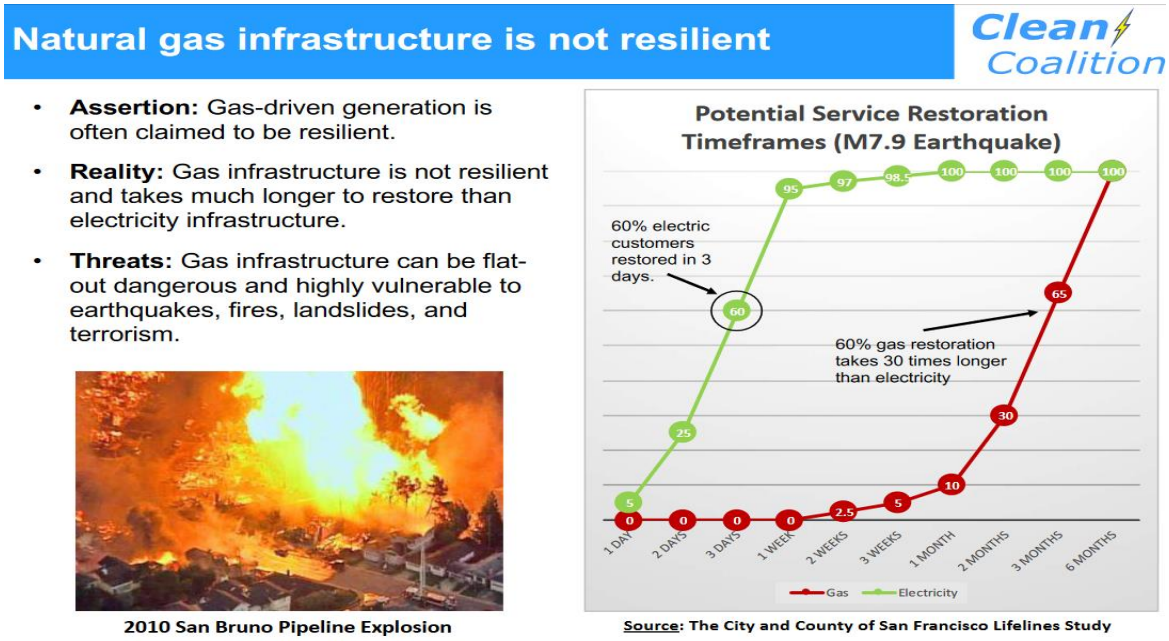
Before addressing each of the IOU proposals individually, it is worth taking a moment to consider the inadequacy of natural gas substation microgrids in creating true economic, environmental, or resilience benefits. Both SCE and PG&E suggest natural gas infrastructure should be installed, trying to purport the choice as necessary for resilience, though both IOUs admit that these natural gas assets are temporary and will be replaced with clean renewable generation in the near future.

Planning to install what will soon become stranded assets increases the life cycle cost of an already economically unfeasible plan. The Clean Coalition has done an analysis, using the example of the proposed Puente Peaker Plant in 2017, to demonstrate that installing a solar + storage community microgrid is more cost effective that expanding natural gas generation.




*Clean Coalition Cost Analysis of the Puente Peaker Plant vs. a Community Microgrid*

As a solution to prevent outages, gas generation is by no means resilient. The extensive supply lines used to pipe gas are easily disrupted, which is also extremely dangerous, as has been demonstrated in the multiple gas pipe explosions. The 2010 San Bruno explosion, which is in PG&E's service territory, blew up an entire city block, killing eight people and injuring fifty-one others. The last place natural gas generation should be considered is right next to substations, especially in crowded urban centers.



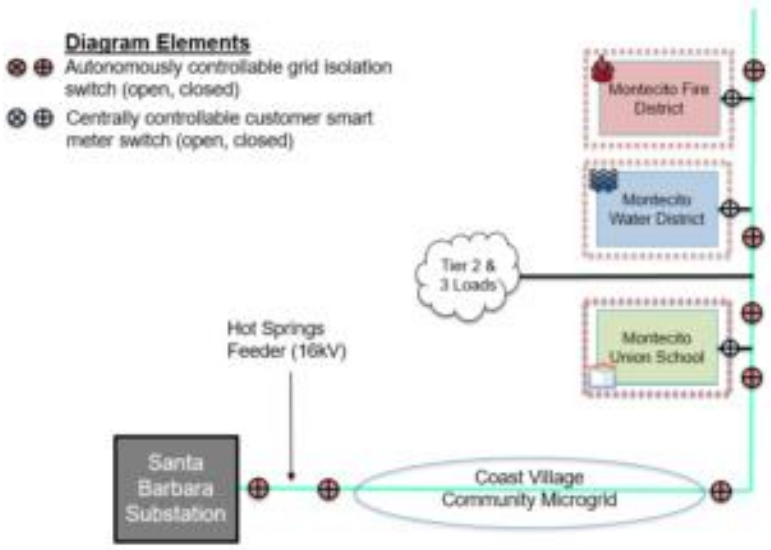

*Natural gas does not provide resilience*

Gas generation is being proposed as a resiliency solution despite the fact that gas generation is not resilient at all, as the chart above demonstrates. Replacing natural gas infrastructure takes 30 times longer than it does to repair electric infrastructure after a natural disaster like an earthquake. Considering natural gas does not provide true resilience, the only real reason that these gas generation projects are being proposed is because they will be deployed before the start of the fire season in 2020. However, this claim is also doubtful and the reality is that the production will not be built in time; it would be vastly more sensible to take a little more time to build lasting resources that add to the state's renewable energy goals rather than carbon-emitting resources. Any generation project needs to bring a trifecta of economic, environmental, and resilience benefits. Knowingly installing what will become stranded assets unfairly shifts costs of decommissioning and replacement to the ratepayers.

SCE

The Clean Coalition applauds SCE for mentioning microgrid projects in its service territory, such as the Montecito Community Microgrid Initiative, but it should be reiterated that the Community Microgrid could be easily built with cooperation from SCE. In its proposal, Edison only included a small paragraph providing an overview of Montecito Community Microgrid, without proving any real information about the project. The Clean Coalition is working with each of the microgrid sites in Montecito and believes that with full cooperation from SCE going

forward, the projects can be deployed rapidly. The block diagram of the project below shows that the Montecito Community Microgrid demonstrates the same basic approach as the Redwood Coast Airport Microgrid being developed in PG&E service territory. Through the three BTM microgrids and strategically placed grid isolation switches, the Montecito Microgrid will be able to island at multiple points along the electric feeder, creating a Community Microgrid.




*Montecito Community Microgrid Block Diagram*

Since the fire and water districts are adjacent properties there is no over-the fence interconnection concerns with the project and what SCE calls Montecito Union – actually called the Montecito Union School – is down the same electric feeder. In addition to bringing increased resilience to the community, which is essential in an area that has been devastated by fires and debris flows, the Montecito Community Microgrid is the first step towards creating a regional Community Microgrid that spans across the entire Goleta Load Pocket.


*Map of the Goleta Load Pocket (GLP)*

The Goleta Load Pocket[2] (GLP) spans a 70-mile stretch of California coastline from Point Conception to Lake Casitas, encompassing the cities of Goleta, Santa Barbara (including Montecito), and Carpinteria. The GLP is served by only two transmission lines, which both run on the exact same transmission towers through tens of miles of mountainous terrain that is rated at the highest fire risk level — resulting in the GLP being extremely vulnerable to transmission outages, including during PSPS. The GLP's single point of interconnection to the transmission system exists at the Goleta Substation, and if one of the transmission lines goes out, the second and only other transmission line will go out too — and the GLP will completely lose the source of the vast majority of the energy that serves it.

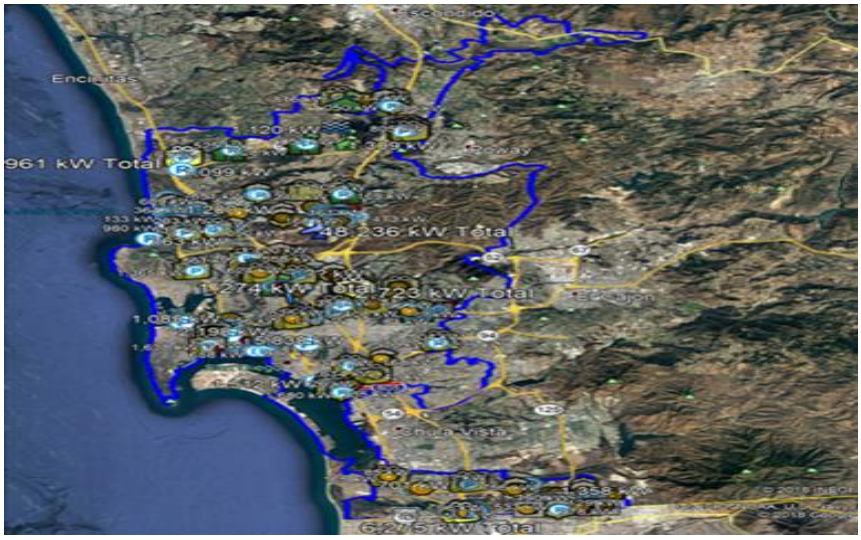
Because the GLP is a highly transmission-vulnerable, disaster-prone region, the GLP Community Microgrid is being designed to deliver an unparalleled trifecta of economic, environmental, and resilience benefits to the area. To achieve indefinite renewables-driven backup power that provides 100% protection to the GLP against a complete transmission outage ("N-2 event"), 200 MW of solar and 400 megawatt-hours (MWh) of energy storage needs to be sited within the GLP.

Thanks in part to the multiple energy storage projects proposed in the region by SCE, the GLP is already close to the magic number 400 MWh and only five times the amount of solar currently deployed is needed to meet the 200 MW goal. With cooperation from SCE, the most effective method of procuring this solar energy is a state-of-the-art Feed-In Tariff (FIT).

The Clean Coalition designed a FIT for the City of San Diego that includes Market Responsive Pricing and a Dispatchability Adder. A pricing comparison[3] between the FIT and SDG&E's business-as-usual (BAU) renewables procurement, on a 20-year levelized basis, shows that local renewables procured under the San Diego FIT priced at 6.9¢/kWh would be competitive with SDG&E's forecast cost of 9.5¢/kWh, accounting for future procurement, legacy Power Charge Indifference Adjustment (PCIA) costs, and meeting RPS standards. This is important considering that SDG&E's BAU procurement would be almost entirely remote centralized renewables, requiring exorbitantly expensive transmission lines.

[2] Clean Coalition Goleta Load Pocket Community Microgrid web page, https://clean-coalition.org/community-microgrids/goleta-load-pocket/

[3] San Diego FIT vs. BAU analysis, https://clean-coalition.org/wp-content/uploads/2019/03/San-Diego-FIT-vs-BAU-economics-18_wb-8-Mar-2019.xlsx




*San Diego Solar Siting Survey conducted by the Clean Coalition*

In a Solar Siting Survey that the Clean Coalition conducted for the City of San Diego (pictured above), over 500 megawatts (MW) of technical solar siting potential were identified on large rooftops, parking lots, and parking structures with siting potential of at least 1 MW. The siting potential expands to multiple GW if the minimum project size is lowered to 100 kW.

Grid Isolation Switches:

The Clean Coalition wants to complement SCE on making progress installing RAR switches and believes that grid isolation is essential to create any true microgrid. On the west end of the Goleta Load Pocket, there is about 20 miles of distribution lines that follow the coastline, an area that has been frequently experiencing PSPS events.


*SCE PSPS Map in the Goleta Load Pocket*

When there is a problem at either end of the feeder, the entire line is de-energized, stranding communities in the center, such as Hollister Ranch. With increased grid isolation capabilities, a

true community would be able to island sufficiently, allowing communities on either side of the feeder that being de-energized to remain electrified.

PG&E

The Clean Coalition believes that the Redwood Coast Airport Microgrid is the perfect example of the necessity of installing grid isolation switches when creating a functional Community Microgrid; it is at the end of the James Creek feeder, approximately seven miles (as the crow flies) away from the James Creek substation. If a natural gas substation microgrid were deployed, everything downstream from a sectionalizing device on that feeder would be shutdown. RCAM includes grid isolation switches that prevents this by allowing both sides of the outage area to be electrified. Community Microgrids apply the same principles that PG&E is using on isolated substations for all customers on isolated feeder sections - i.e. a far more granular implementation of the same concept that can be used where substation power cannot reach the customers or to serve critical loads where substations cannot meet the total load.

Rather than using gas generation near substations, it would be far more effective to rely on renewable generation in combination with energy storage. The Clean Coalition is working on a Front of the Meter energy storage project in downtown San Francisco called Valencia Gardens Energy Storage. The project will increase the hosting capacity of the circuit and since it is a Front of the Meter project, it can easily be replicated in other locations.

Cost Sharing

PG&E has requested almost $270 million in cost recovery for deploying natural gas substations, which would only be allowed if PG&E is investing at least as much in cost effective preferred alternatives, including RAR grid isolation switches, and leveraging SGIP energy storage to allow Community Microgrid service to isolated feeder sections and priority loads. Using a cost benefit analysis, the use of highly distributed preferred resources tends to be both more effective and at a lower cost than continued diesel, gas, or grid hardening approaches. In the ideal world, PG&E would only be able to recover costs for money is being spent to develop true microgrids to

incentivize resilient DER rather than temporary fossil fuel generation. Cost recovery should be allowed until a new tariff is developed through this proceeding.

SDG&E

The Clean Coalition supports the development of LADC microgrid software and believes that its use should be widespread. Microgrid operating software offers additional grid services, allowing the local electric utility to optimize the performance of the distribution system through demand reduction, voltage management, grid isolations, and real-time distribution operation model and analysis (DOMA), among other features. SDG&E has been developing microgrids and grid isolation switches for more than ten years now, demonstrating to the CPUC and the IOUs that a statewide rollout of this technology could and should be done. Islanding and installing RAR switches will help to mitigate the damage by PSPS events.

The Clean Coalition also supports SDG&E's plan to increase EVCI at critical facilities; as the state continues its transition to electric vehicles, having resilient charging infrastructure is essential to ensure that an outage does not cripple mobility.

**Is CPUC approval required in order to implement any of the proposals?**

No comment

**For proposals that require CPUC approval, what standards should be used to determine whether approval is justified?**

Established cost effectiveness and 'least cost best fit' standards should be applied, available state and federal incentives, and the risk of stranded asset investment in non-preferred resources with full consideration of loading order dispatch, RPS and emissions target mandates in approving any long term infrastructure investments or contracts.

**For proposals that require CPUC approval, was sufficient information provided? If not, please describe what additional information is needed. Examples of possible additional information are provided below. Indicate whether the below information is necessary and why or why not. Please add any additional information that should be considered and why.**

1. **Explanation of the criteria and reasoning for determining how to prioritize the locations and/or customers to be served (e.g., frequency of PSPS events or number of customers); and**
2. **Costs and impacts of alternative approaches to achieving the goal of the proposal (e.g., reducing the impacts of PSPS outages) that were considered and rejected, such as alternative technologies or fuels, infrastructure hardening, distribution or transmission system sectionalization.**

PG&E's DGEMS RFO approach fails to address outage mitigation for all other customers, and fails to provide evaluation of alternative limited or prioritized continuity of service - near zero cost measures such as voluntary 'flex your power' emergency customer load reduction could greatly reduce the cost of emergency temporary power provision, and the savings could be directed toward preferred alternatives. Data on potential for temporary demand reduction, and on estimated actual critical loads, should be provided and used in evaluation of proposals.

g. ***3.4.2. Proposals Regarding Emergency Temporary Generation***

**Should CPUC impose any requirements on how the IOUs engage with local government agencies with regards to siting, equipment specification, or operating conditions before operating emergency temporary generation so that community concerns regarding noise, odor and potential health effects can be addressed? Why or why not? If so, what requirements should CPUC impose and why?**

Yes, IOUs should work closely with local government agencies including CCAs to coordinate the deployment and use of all available DER, including non-IOU resources, demand response and load shedding to optimize resilience, prioritize needs, and minimize impacts including cost.

**If the CPUC should require monitoring and reporting of air quality, sound, odor, and/or health effects during operation of emergency backup power, please comment on how such information would further the public interest. For example, could it be used to mitigate future impacts or establish limits?**

Yes, monitoring should be required, though it should not be necessary if the IOUs choose the right solution and do not include any type of fossil fuel generation. SB 1339 is clear that there should be no subsidizing of fossil fuel solutions.

**Please comment on what information should be provided, as a minimum, by a utility seeking authorization for the procurement of portable generators, whether utility-owned or contracted with a third party, to be used to provide emergency backup power to utility customers during emergencies. Indicate whether the below information should be required or not, and why or why not. Please add any additional information that should be required and discuss why it should be required.**

- **Type(s) of generator that would be deployed (type and capacity, in MW);**
- **Type(s) of fuel that would be used;**
- **Separate unit costs for equipment, fuel, carbon allowances, and permitting; and**
- **Greenhouse gas and criteria air pollutant emissions factors for each combination and generator and fuel type that would be operated, using standard assumptions (including assumptions used) to facilitate comparison.**
- **If conventional, fossil-based diesel or natural gas is proposed, quantitative and qualitative comparison with the most competitive alternative fuel sources and technologies and narrative explanation of why the fossil-based options are proposed instead of the most competitive non-fossil alternatives.**

Clean Coalition supports all of the above as essential components for any consideration of cost effectiveness, least-cost-best-fit analysis, and consideration of alternatives. We stress that the Commission's Locational Net Benefits Assessment, Grid Needs Assessment, and (avoided) transmission impacts are further key factors in determining the best options, especially for any permanent investments or long-term contracts.

## III. CONCLUSION

The Clean Coalition appreciates the opportunity to submit these comments on this Staff Proposal and IOU Proposals. This staff proposal is a step in the right direction towards creating more resilient communities before the start of fire season 2020. It is important to make sure that steps forward do not include new fossil fuel generation; while they may be short terms solution, decisions made in track 1 will help usher in a decentralized future of Community Microgrids.

Respectfully submitted,
Ben Schwartz
____/S/_____
Policy Associate for the
Clean Coalition

Dated: January 30, 2020

# Appendix A: Summary of Interconnection Working Report 3

**Table 1: Sub-Proposals Grouped by Utility Support and Proponent Ranking**
(For details on each sub-proposal, see Annex C; for party comments on each, see Annex D)

| | Sub-proposal | Utility support |
|---|---|---|
| **Tier A: Strong Utility Support and Strong Proponent Ranking** | | |
| 2 | Include an option for transmission or distribution interconnection in the online application | PG&E, SCE, SDG&E (distribution only) |
| 4 | Add V2G-DC (vehicle-to-grid) interconnection options to portal | PG&E, SCE |
| 7 | Online signature option for all required interconnection application and related signatures such as Generator Interconnection Agreements | PG&E, SCE, SDG&E |
| 9 | Eliminate manual data entry as much as possible by integrating with applicant databases or allowing batch uploads | PG&E, SCE, SDG&E (partial, no batching) |
| 10 | Eliminate requirement to provide existing system info when applying for additional interconnection capacity (either solar or storage) | PG&E, SCE, SDG&E |
| 11 | Automated data validation check when submitting application | PG&E, SCE, SDG&E |
| 15 | Allow applicants to access updated project status at any time, make edits at any time, add search and filter functions based on contractor, customer, etc | PG&E, SCE, SDG&E |
| 16 | Online payments for all payments, including standard payments such as NGOMs for residential storage systems or meter socket adapters | PG&E, SCE |
| **Tier B: Some Utility Support and Higher Proponent Ranking** | | |
| 1 | Question-response facility with 24-hour turnaround, ***or*** online chat box | For question-response option only: SDG&E 1 day; PG&E 3 days; SCE 1 day standard |
| 6 | Automate the "deemed complete" process for standardized or template-based single-line diagram projects | PG&E & SCE (to extent possible), SDG&E |
| 8 | Add link in ICA maps that allows applicant to jump from the ICA map to the online interconnection portal, location-specific info automatically populated | PG&E, SCE |
| 14 | Create one-click Authority Having Jurisdiction (AHJ) approval process, possibly app-based or web-based | SDG&E |
| 17 | Allow contractors to generate forms for standard agreements like IFFOA, NGOM, etc. | SCE |

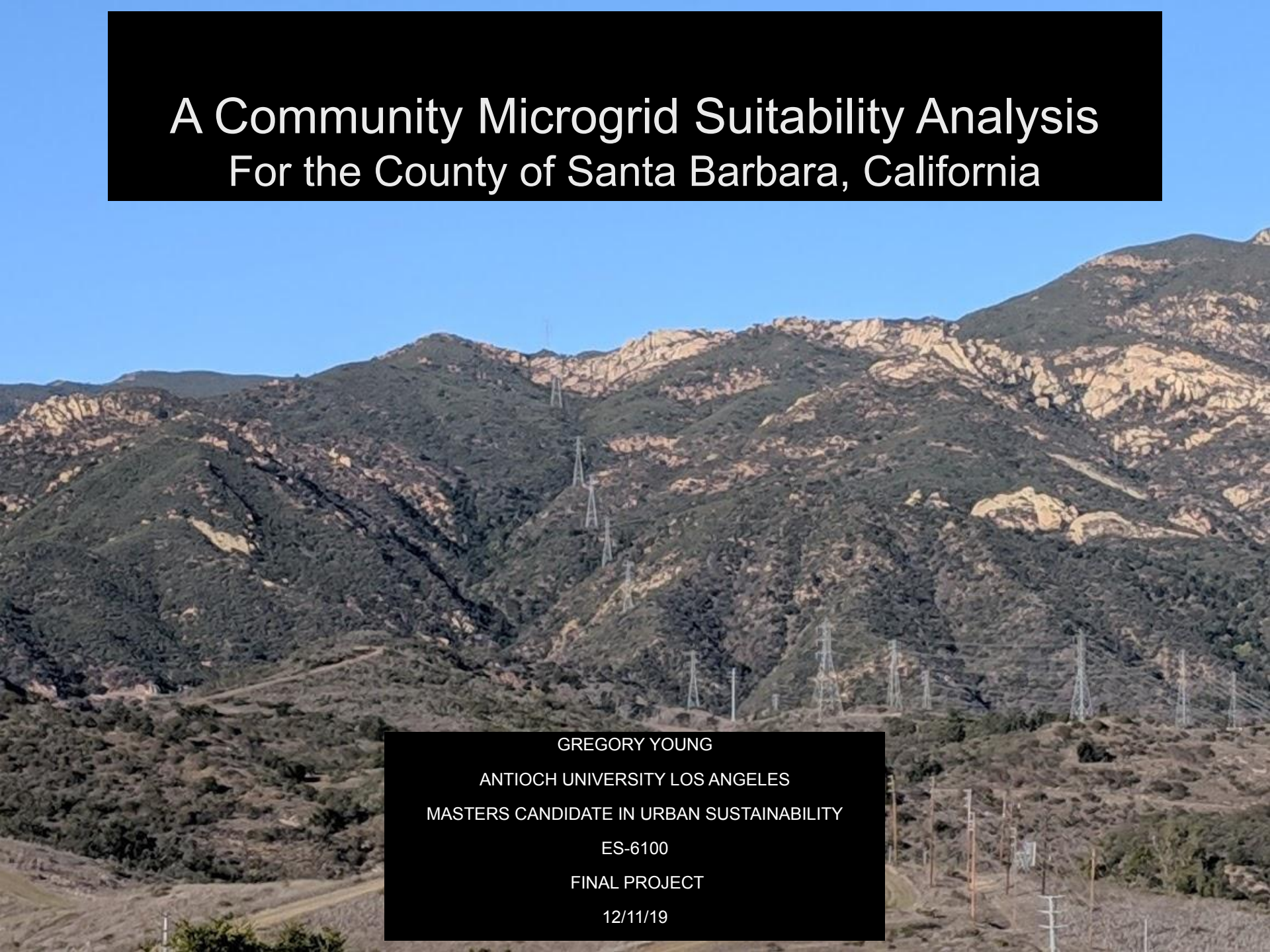
**Table 2: Priority-Ranked Portal Improvements**
(Based on Working Group Surveys conducted by proponent GPI, which assigned priority scores and specified Commission action, plus Working Group discussions)

| Sub-Proposal | Description | Priority Score | IOUs See Need | Commission Action? |
|---|---|---|---|---|
| **"Must Have"** | | | | |
| 11 | Automated data validation check when submitting application | 14 | Yes | Principle |
| 15 | Allow applicants to access updated project status at any time, make edits at any time, add search and filter functions based on contractor, customer, etc. | 14 | Yes | Specific |

| | | | | |
|---|---|---|---|---|
| 9 | Eliminate manual data entry as much as possible by integrating with applicant databases or allowing batch uploads | 11 | Yes | Principle |
| 4 | Add DC V2G (vehicle to grid) interconnection options to portal | 10 | Yes | Specific |
| **"No Brainers"** | | | | |
| 7 | Online signature option for all required interconnection application and related signatures such as Generator Interconnection Agreements. | 13 | Yes | Specific |
| 10 | Eliminate requirement to provide existing system info when applying for additional interconnection capacity (either solar or storage). | 12 | Yes | Specific |
| 16 | Online payments for certain payments, including standard payments such as NGOMs for residential storage systems or meter socket adapters | 12 | Yes | Specific |
| **"Highly Desired"** | | | | |
| 18 | Have one state-wide portal for consistency. **OR**, consistency in project status names, visibility utility vs. installer's hands, and due date tracking | 11 | No | Principle |
| 6 | Automate the "deemed complete" process for standardized or template-based single-line diagram projects | 10 | Yes | Principle |
| 17 | Allow contractors to generate forms for standard agreements like IFFOA, NGOM, etc. | 9 | Yes | Specific |
| 2 | Include an option for transmission or distribution interconnection in the online application | 8 | Yes | Specific |
| 3 | Provide an Application Programming Interface (API), harmonized across utilities | 8 | Yes | Principle |
| 8 | Add link in ICA maps that allows applicant to jump from the ICA map to the online interconnection portal, location-specific info automatically populated | 8 | Yes | Specific |
| **"Good to Have"** | | | | |
| 14 | Create one-click Authority Having Jurisdiction (AHJ) approval process, possibly app-based or web-based | 9 | Yes | Principle |
| 12 | Notification-only process for standard residential interconnections (certain configurations of pre-defined "standard" residential systems under a certain size) | 8 | No | Principle |
| 5 | Add automated PAR option to portals. This would allow applicants to apply for, pay for, and receive PAR reports almost instantaneously | 6 | No | Principle |
| 1 | Question-response facility with 24-hour turnaround, **OR** chat-box | 5 | No | Principle |
| 13 | Remove customer interaction requirements in favor of customer notifications only. Customer is not required to sign any documents or be involved | 5 | No | Principle |

## Appendix B:

# A Community Microgrid Suitability Analysis
## For the County of Santa Barbara, California



GREGORY YOUNG

ANTIOCH UNIVERSITY LOS ANGELES

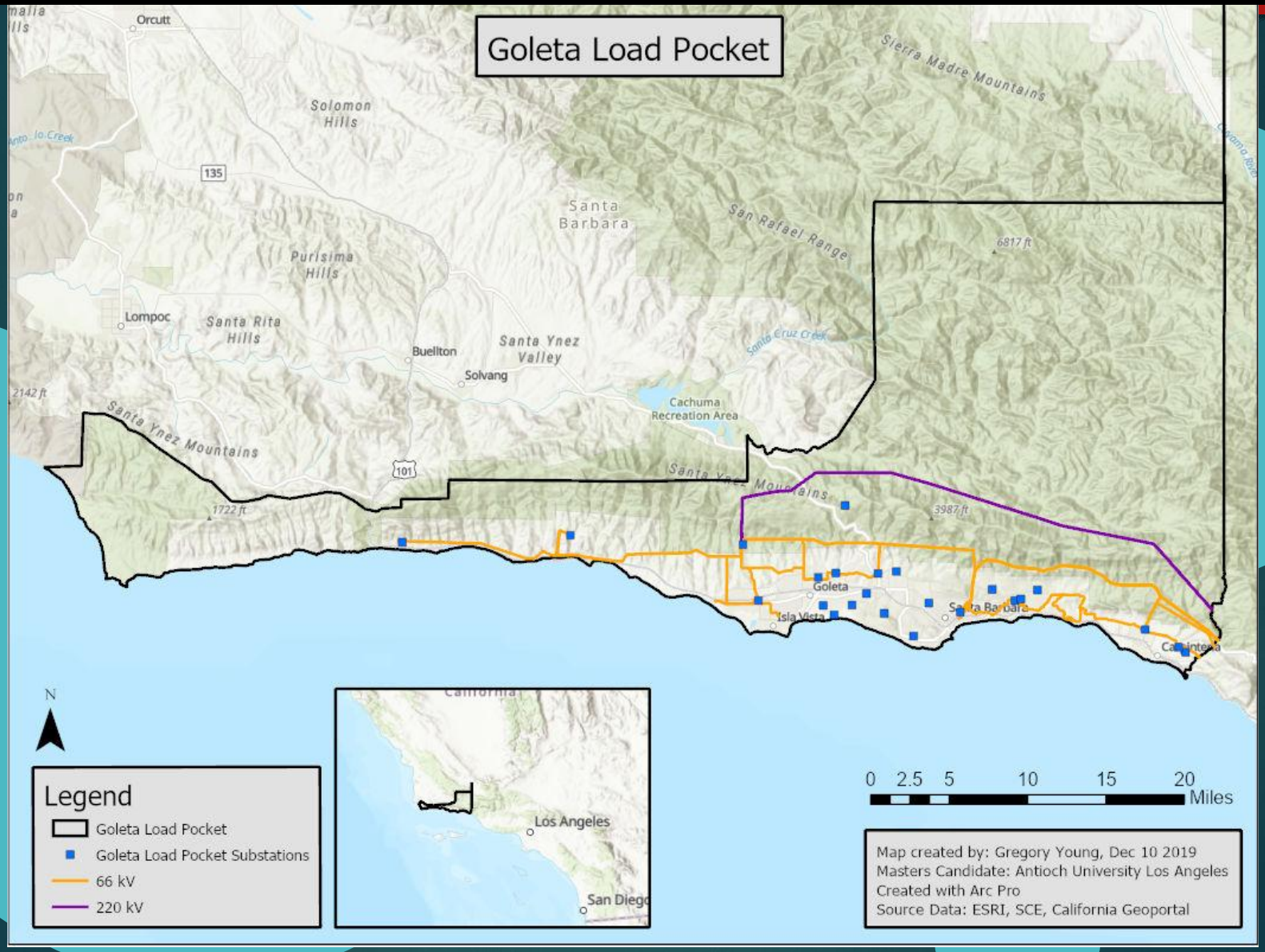
MASTERS CANDIDATE IN URBAN SUSTAINABILITY

ES-6100

FINAL PROJECT

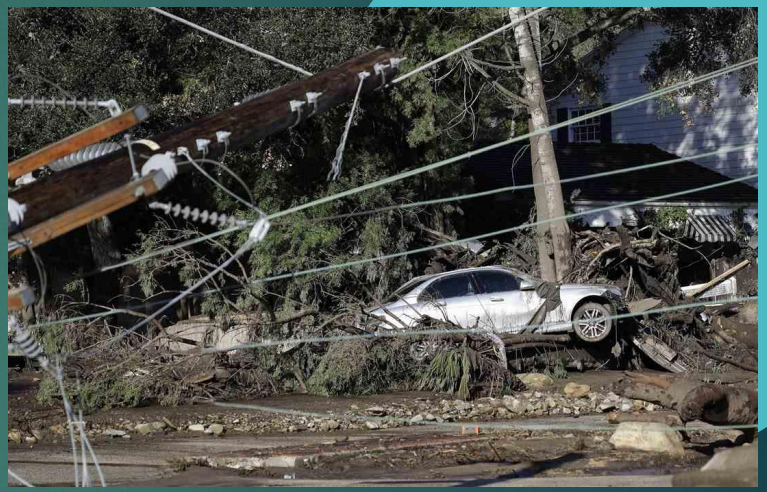
12/11/19

# The Goleta Load Pocket



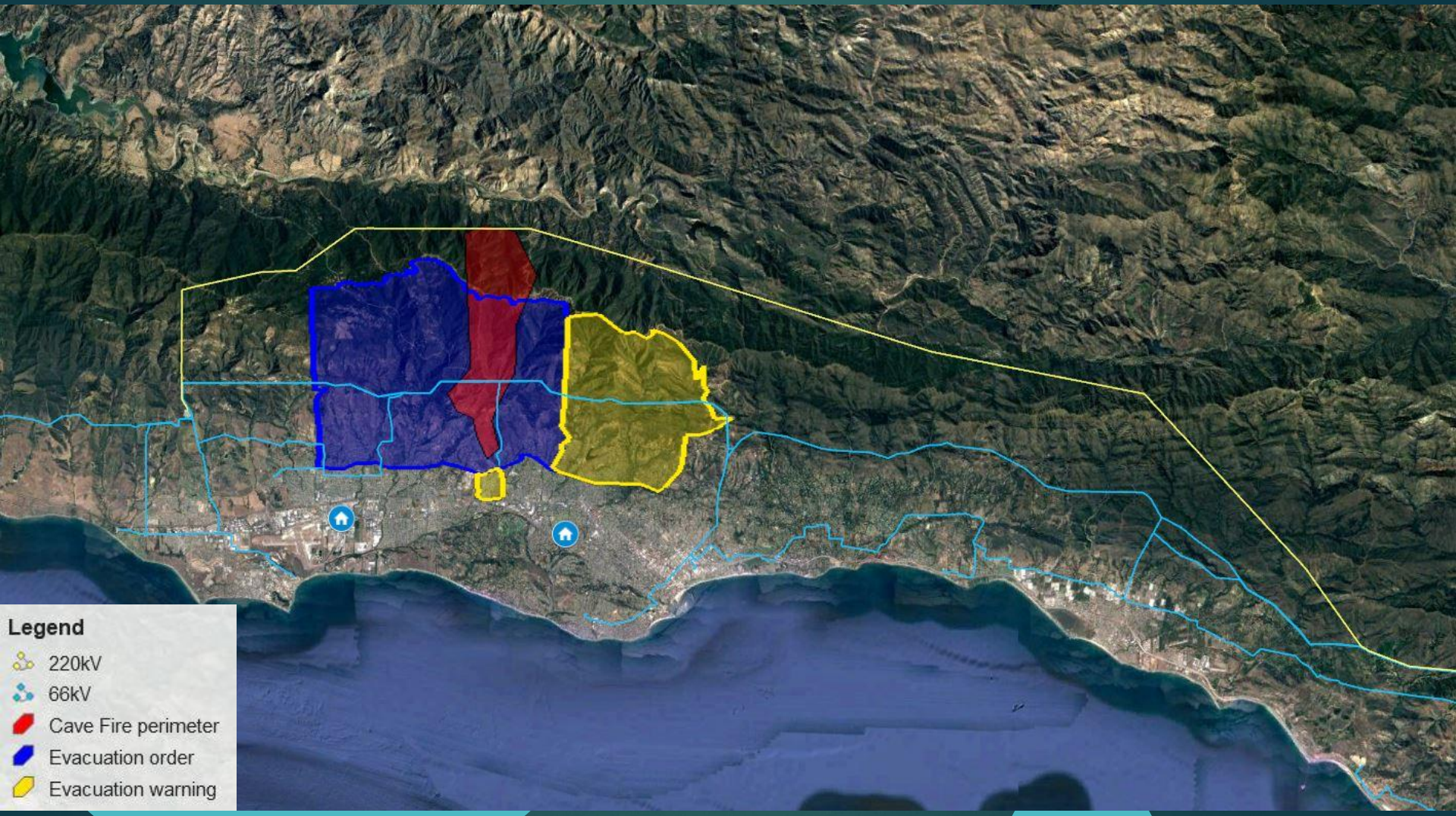
# Background

Thomas Fire 2017-18

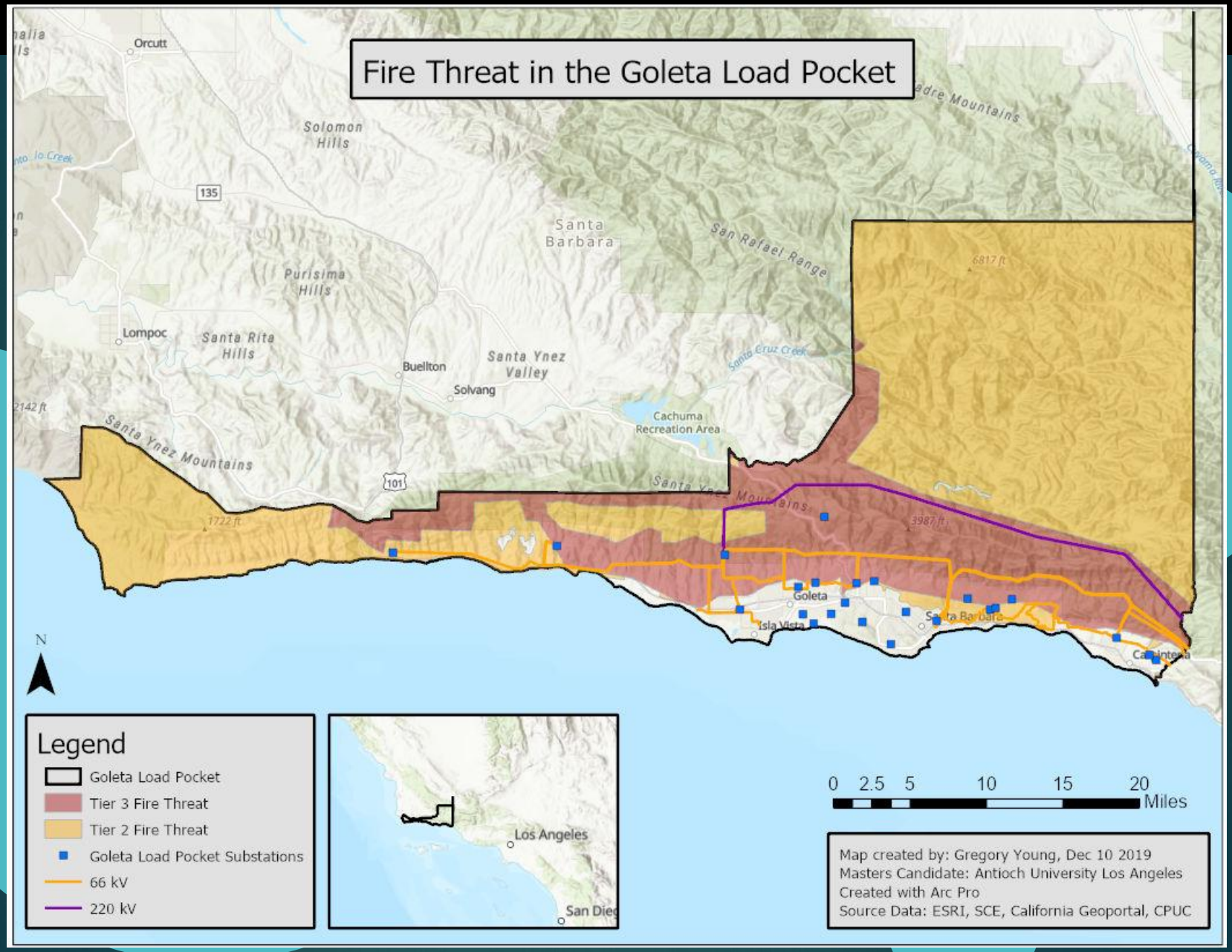


Montecito Debris Flows 2018

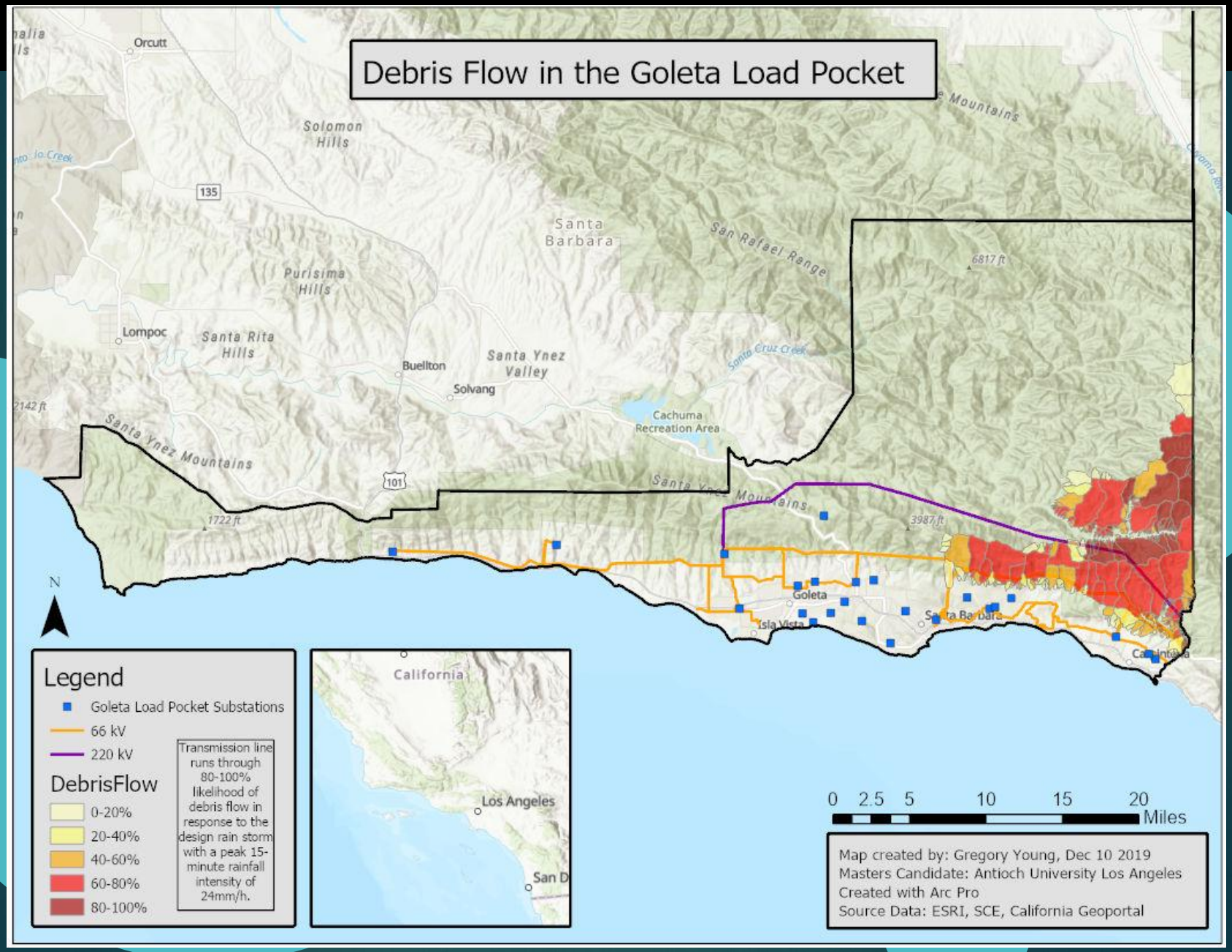
# Camp Fire – November 2019



# GLP – Fire Threat Map



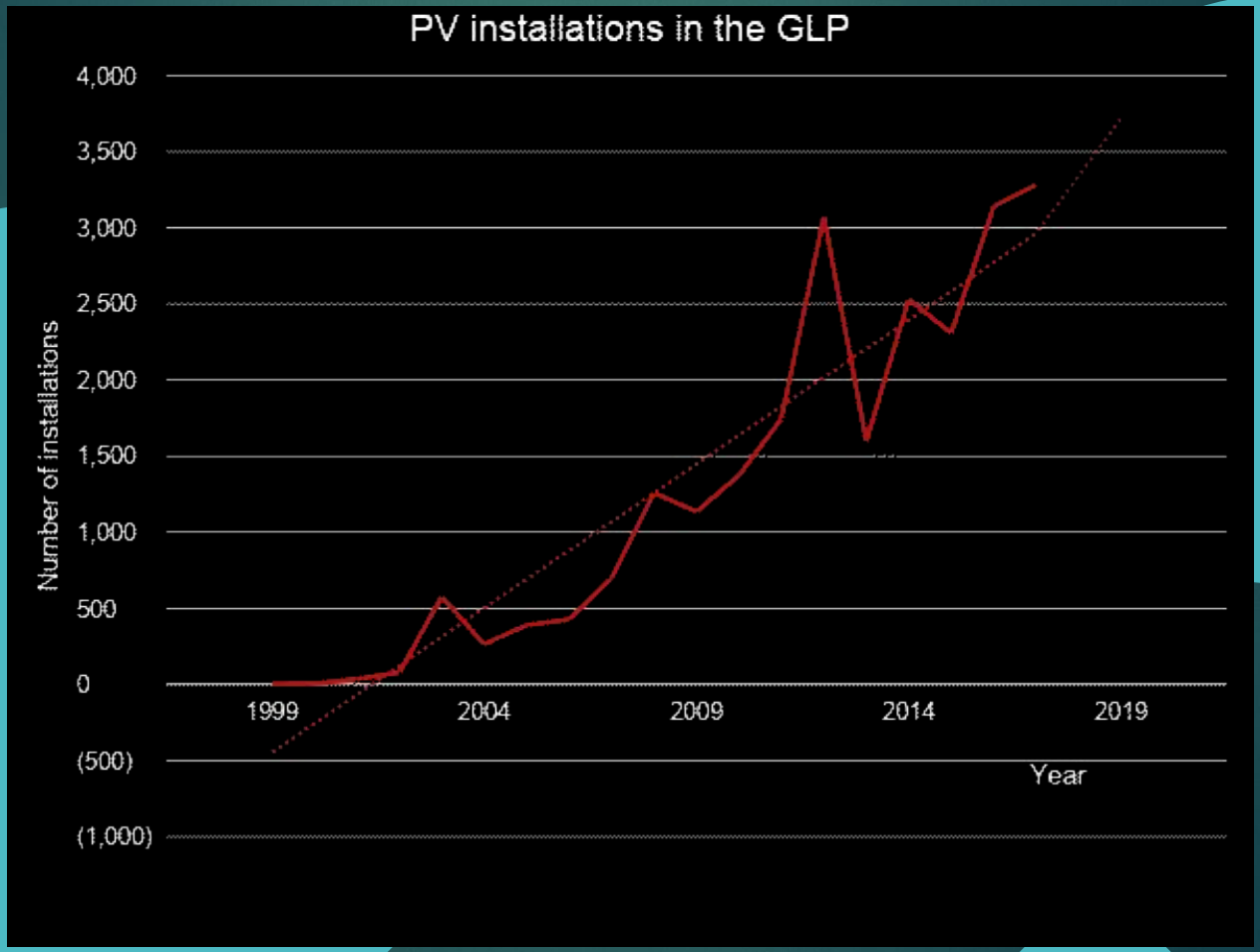
# GLP – Debris Flow Map



# Southern California Edison (SCE) statements

"Due to the rugged mountainous terrain, any required repair and replacement of transmission lines and transmission towers could take up to several weeks if a natural disaster, such as a landslide or earthquake, occurs" (A Hernandez, 2019).

# GLP – PV installations over time



# What is a Community Microgrid?

- A targeted and coordinated distribution grid area served by one or more substations.
- High penetrations of local renewables and other distributed energy resources (DER) such as energy storage and demand response.
- Staged capability for indefinite renewables-driven backup power for critical community facilities across the grid area.

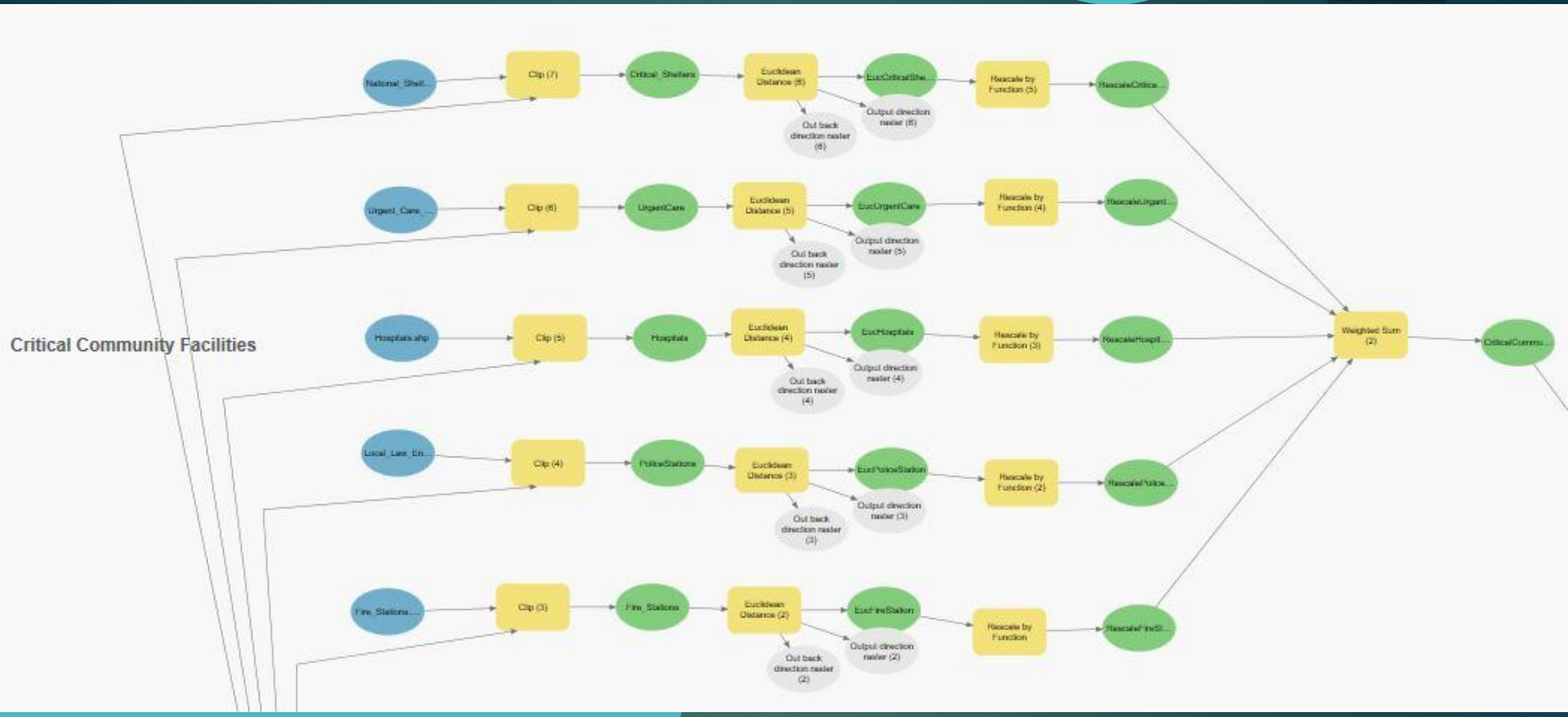
# Project question

- Where are the most suitable regions for the development of Community Microgrids in the Goleta Load Pocket based on the following criteria?
  - In close proximity to critical community facilities such as fire stations, police stations, hospitals, urgent care centers, and critical sheltering sites.
  - Within low-income communities.
  - Within close proximity to electrical feeder segments that have high operational flexibility.

# Data sets used

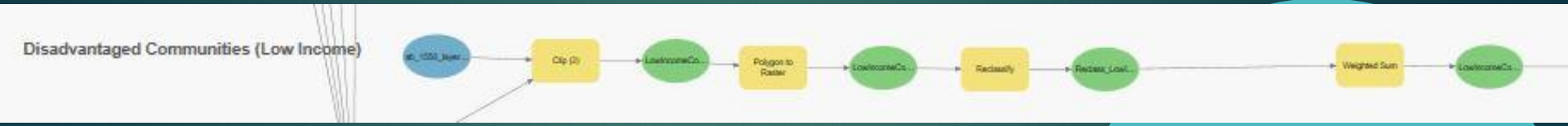
| Data Set | Acquisition Date | Application |
|---|---|---|
| **Fire stations** | 11/10/19 | Deriving suitability raster layer |
| **Hospitals** | 11/10/19 | Deriving suitability raster layer |
| **Urgent care centers** | 11/10/19 | Deriving suitability raster layer |
| **Police stations** | 11/10/19 | Deriving suitability raster layer |
| **Critical sheltering sites** | 11/10/19 | Deriving suitability raster layer |
| **AB1550 areas** | 11/10/19 | Deriving low income communities for suitability raster layer |
| **SCE service layers (SCE Boundary, ICA segments, transmission and distribution lines, substations.** | 11/10/19 | Defining study boundaries, important map elements, and suitability raster layer |
| **SCAG California Counties** | 11/10/19 | Defining study boundaries |
| **CPUC Fire Threat areas** | 11/10/19 | Defining study area |
| **Solar Siting Survey points** | 11/10/19 | Adding value to results |
| **Debris flow risk** | 11/10/19 | Defining study area |

# Critical community facility's sub model



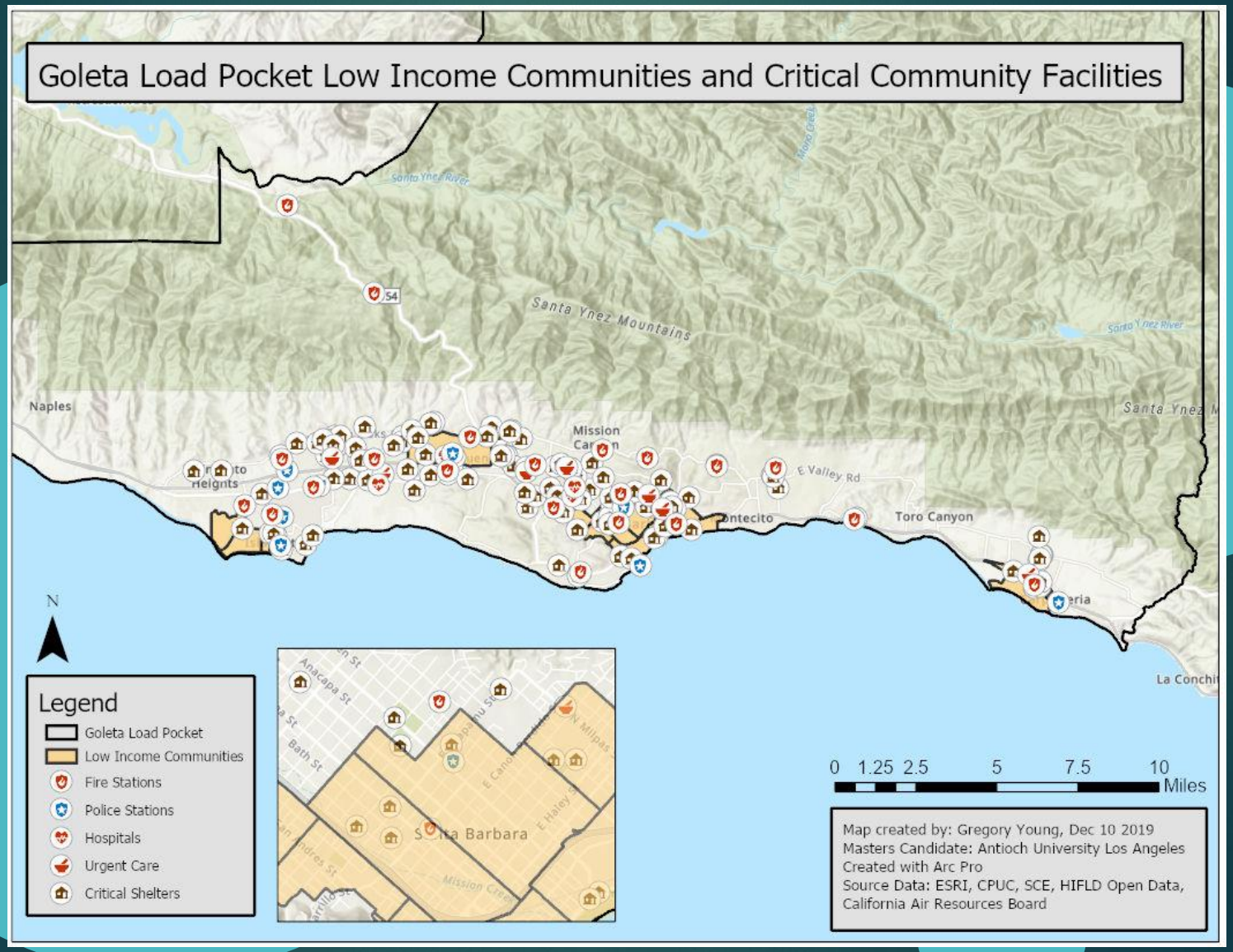

- Clipped data sets to study area
- Created Euclidean Distance raster layers
- Rescaled all layers to the same value (1-10): 1 = low and 10 = high
- Weighted all inputs with the same value

# Low-income community's sub model

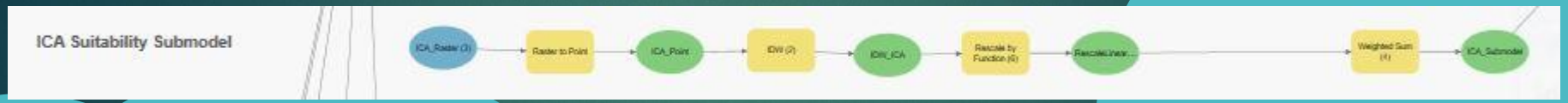



- Clipped data set to study area
- Changed from polygon to raster layer
- Reclassified so that inside low-income communities received a value of 10 and outside received a value of 0
- Weighted Sum tool was included for the potential of future related criteria

# Critical community facilities and low-income communities within the GLP

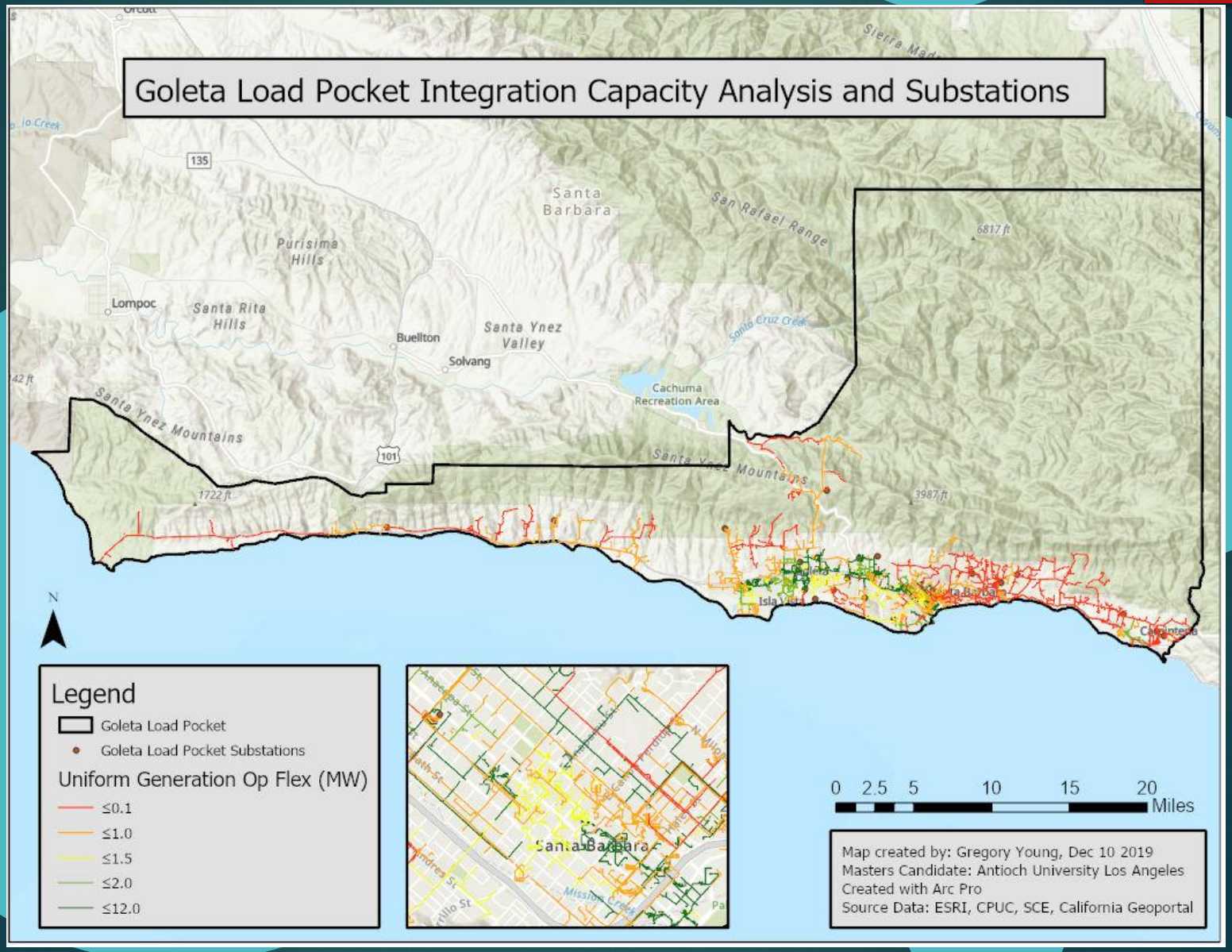


# Interconnection Capacity Analysis (ICA) sub model

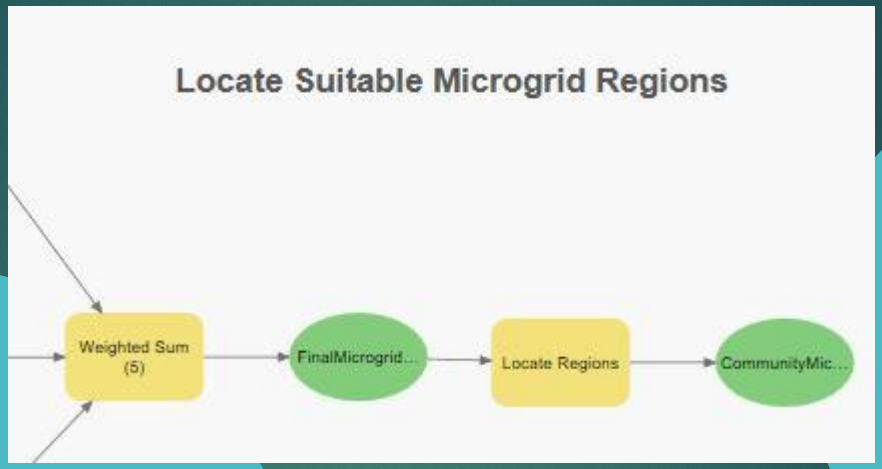



- Clipped data set to study area
- Changed from polyline to raster layer
- Changed from raster to point layer
- Used the Inverse Distance Weighted technique (IDW tool) to interpolate from the point layer to a raster layer that shows the inverse distance away from the points
- Used Rescale by function to change the value from 1 to 10
- Weighted Sum tool was included for the potential of future related criteria

# Interconnection Capacity Analysis (ICA) in the GLP

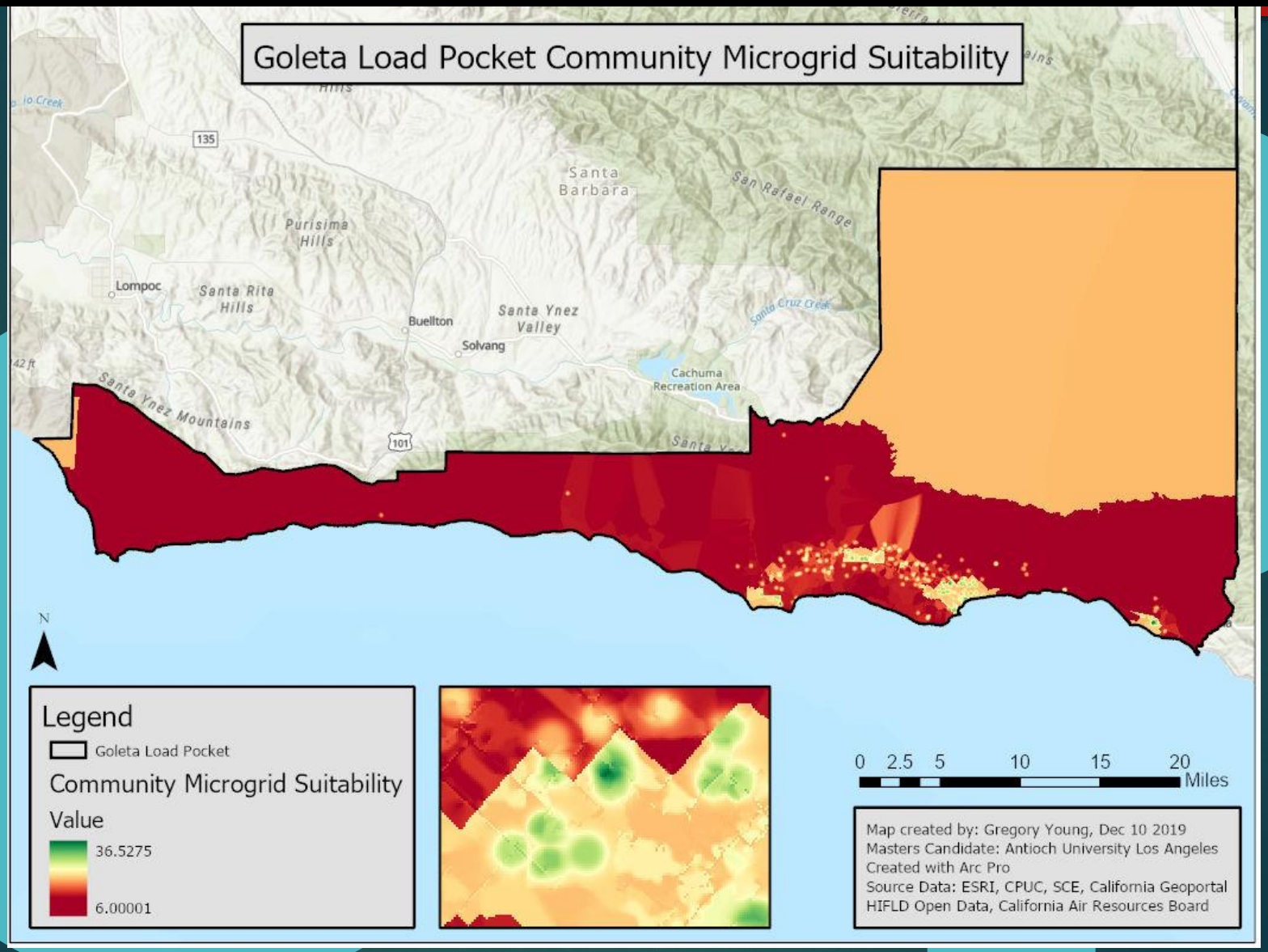


# Final Community Microgrid suitability model and locate regions

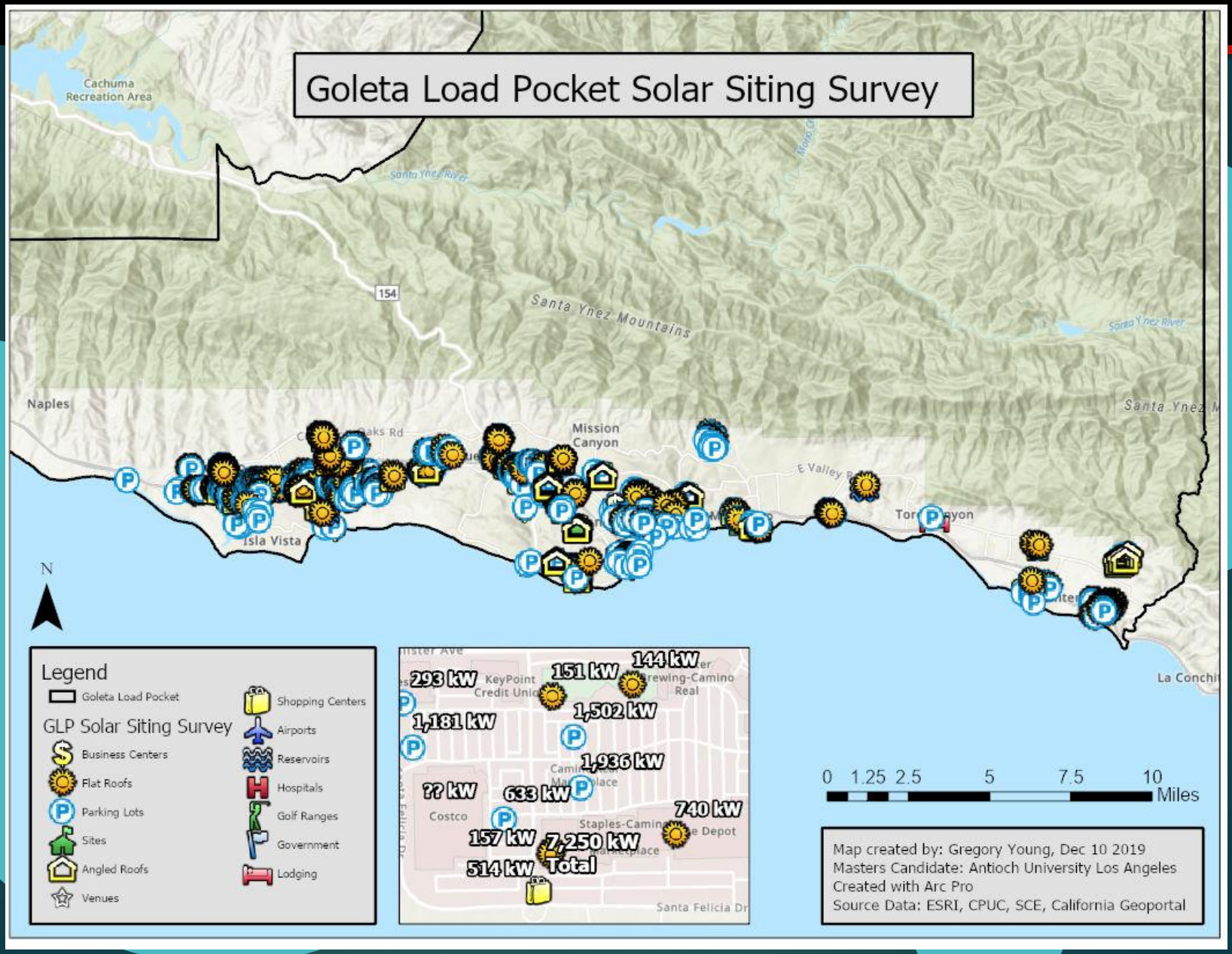



- Used the value of 1 for the weighted sum across all sub models
- Located 5 regions with a combined total area of 2,000,000 meters

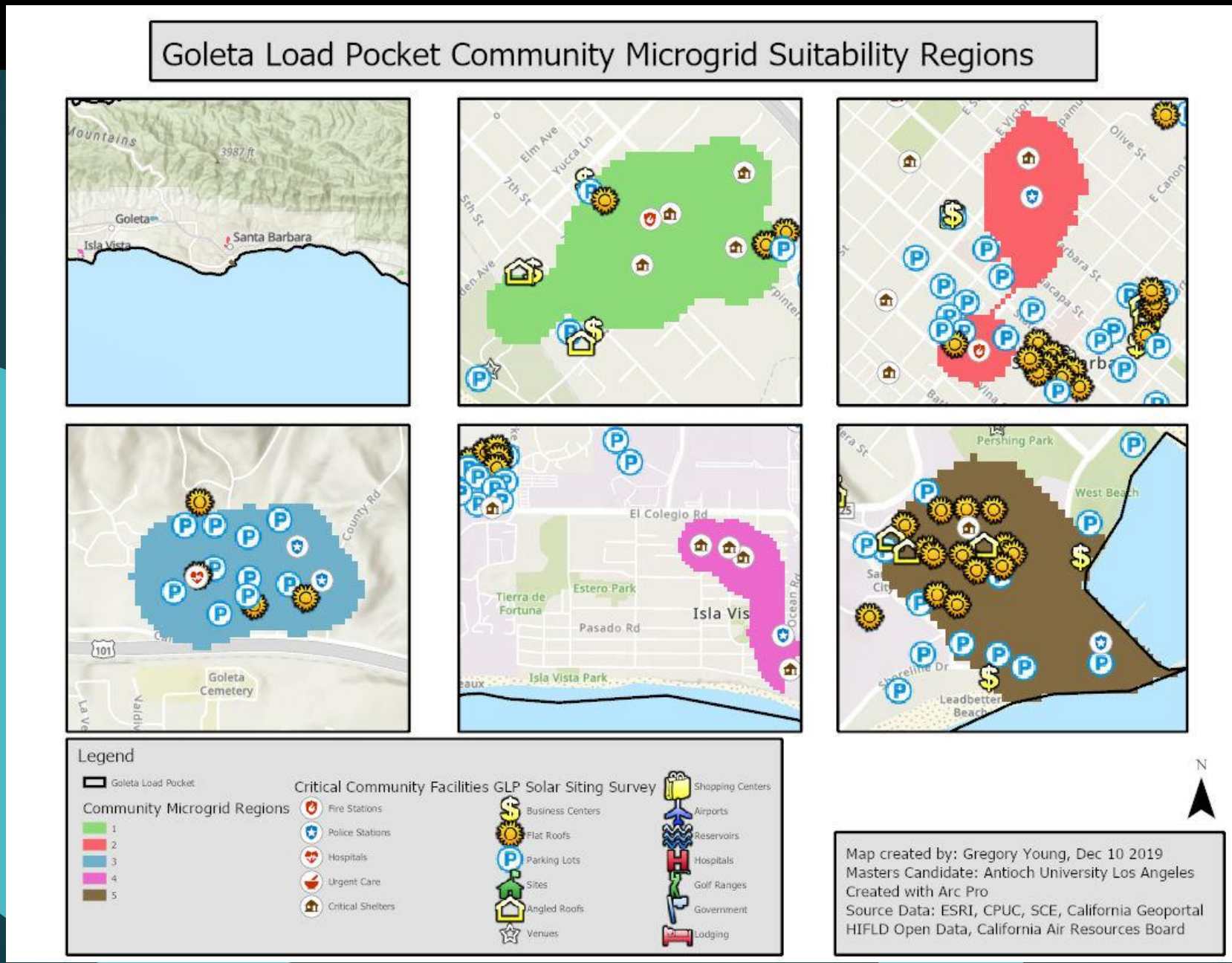
# Community Microgrid suitability map



# Solar siting survey across the GLP



# Most suitable Community Microgrid regions

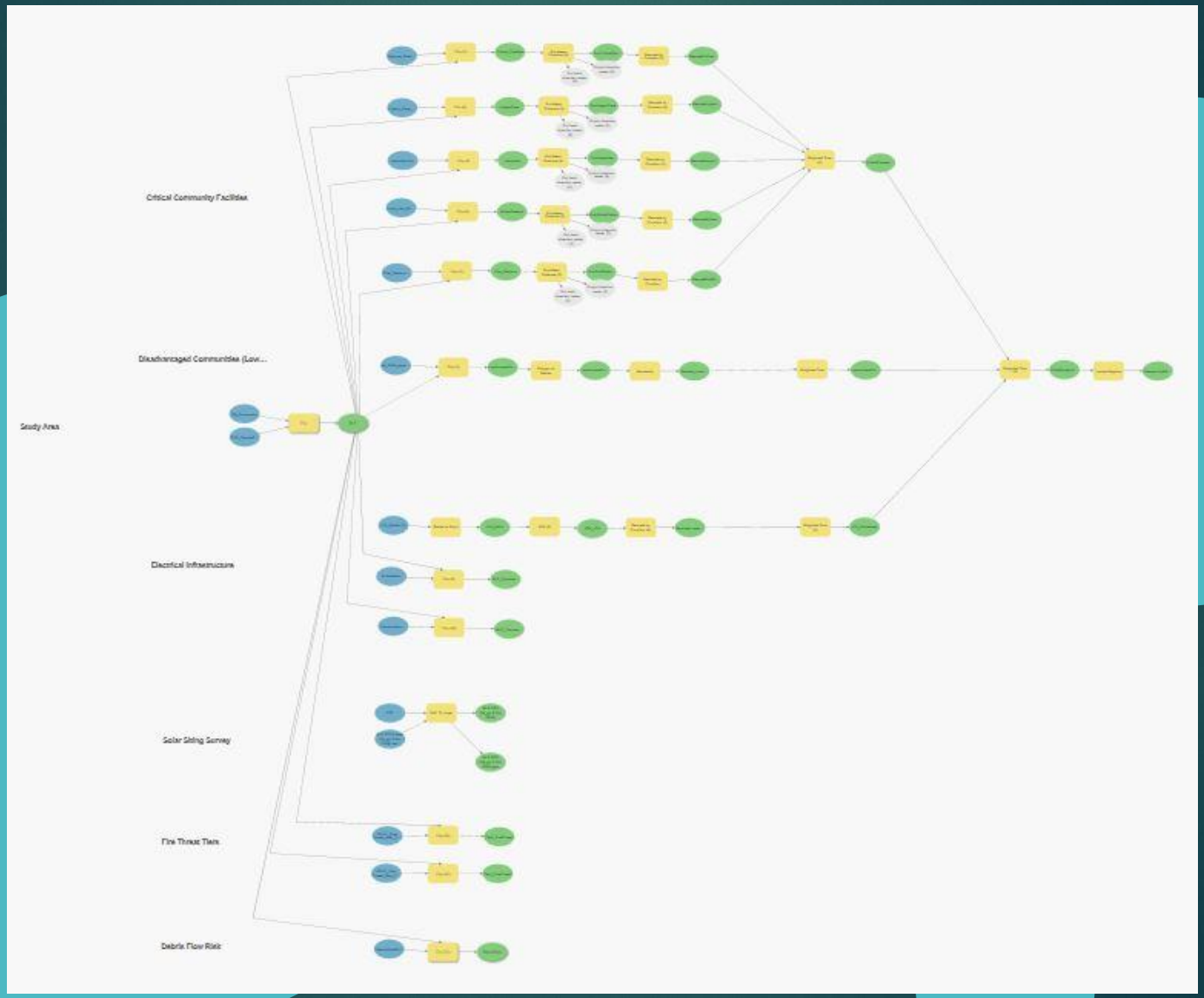


# Results

- Contains a fire station and two critical sheltering sites
- Has around 7MW of solar siting potential in or around the region
- Is within a low-income community
- Has around 1MW of Operational Flexibility in the surrounding circuit segments

- Isla Vista (Pink – 2)
  - Contains three critical sheltering sites and one police station
  - The solar siting is Non-Applicable at this time as Isla Vista was not sited for solar potential. University of California Santa Barbara is bordering this region and has a large amount of exiting solar PV.
  - Is within a low-income community
  - Has around 1MW of Operational Flexibility in the surrounding circuit segments
- Downtown Santa Barbara (Red – 2)
  - Contains one critical sheltering site, 1 police station, and 1 fire station.
  - Has over 5MW of solar siting potential within or around this region.
  - Is within a low-income community
  - Has a mixture of 1 MW, 1.5MW, and 12 MW of operational flexibility.
- East of El Sueno (Blue - 3)
  - Contains a hospital and two police stations
  - Has over 3MW of solar siting potential within or around this region.
  - Is within a low-income community.
  - Has 12 MW of operational flexibility in the surrounding circuit segments
- SBCC and the Santa Barbara Harbor (Brown - 5)
  - Contains one police station and 1 critical shelter site.
  - Has over 8 MW of solar siting potential in or around this region
  - Is within a low-income community.
  - Has 12 MW of operational flexibility in the surrounding circuit segments

# Final Community Microgrid suitability model with solar siting survey



# Thanks!