



**TRIBAL CLIMATE
HEALTH PROJECT**



Adaptation Plans: Part 1

Tribal Climate and Health Adaptation Webinar #6

Since Last Webinar

Suggested Reading

- [Oregon Climate and Health Resilience Plan](#) – Executive Summary (Oregon Health Authority)

We now have a plan.

It starts with building our workforce capacity to promote long-term changes in:

- The plan includes case studies and videos that highlight how our public health workforce is already taking action to build community resilience.
- Our Climate and Health Program is leading a collaborative of local health departments across the state who are implementing resilience strategies.
- Climate and health strategies in the new Resilience Plan include:

policies,

- Actively engaging with our diverse community partners and elevating the voices of our most vulnerable populations to inform policy priorities.
- Informing policies that affect air quality and reduce air pollution.
- Promoting policies that strengthen our local food systems.

systems,

- Conducting regular monitoring of climate and health indicators, and monitoring the progress made on our resilience strategies.
- Equipping our health care partners with the information they need to protect patients from climate-related health risks.
- Supporting community-driven climate adaptations that contribute to building an evidence base for effective climate and health interventions.

and environments.

- Promoting community improvements that encourage walking, biking and the use of public transit.
- Helping to ensure access to safe places for communities to gather, build community and take refuge.
- Prioritizing public health interventions that address the root causes of health inequities and preventable diseases in Oregon.

Chat Discussion:

What did you read about that surprised you? Has your state produced any kind of similar report?

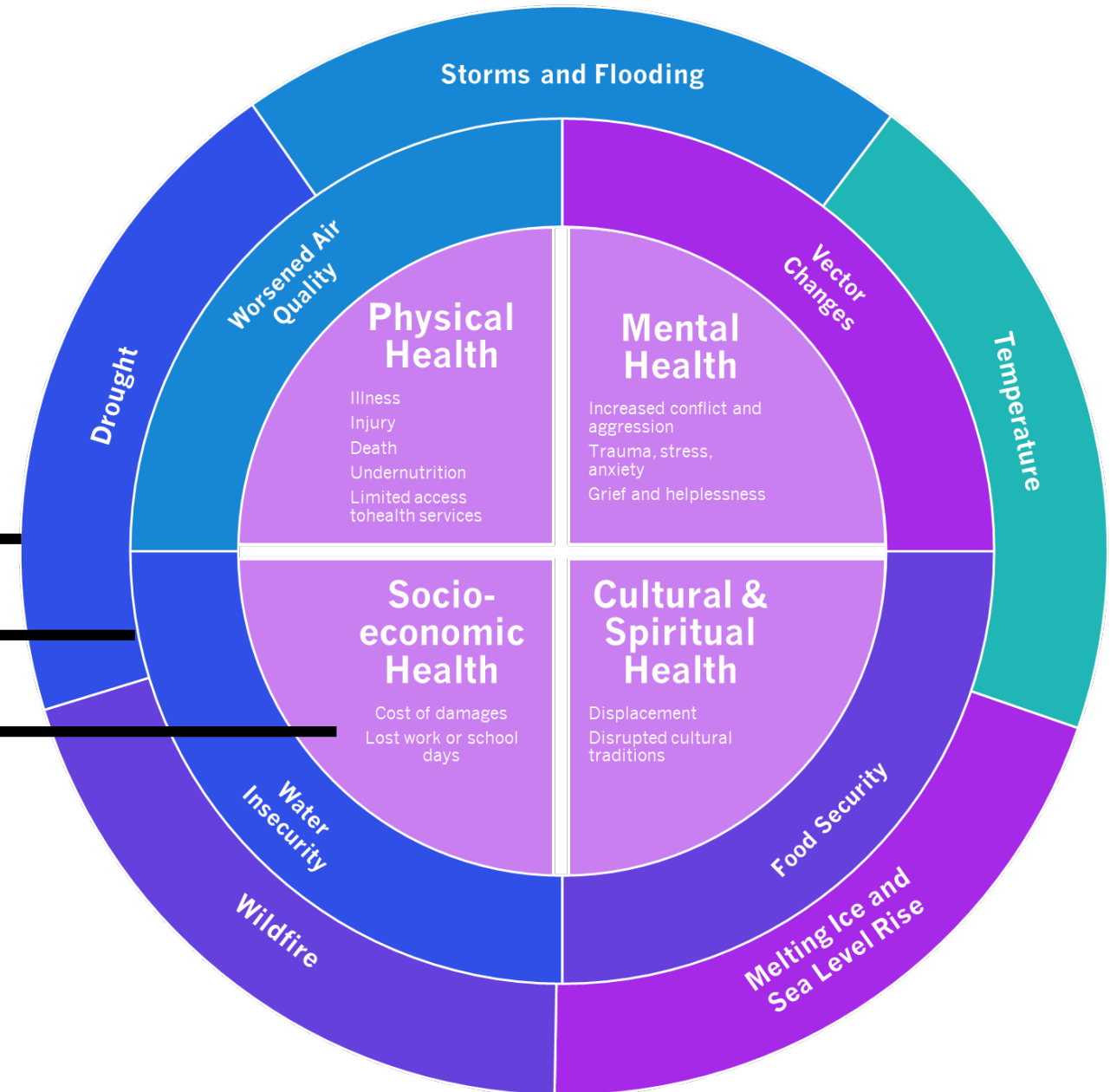
Adaptation Planning

To recap, vulnerability assessments will help to identify and prioritize health and other adverse impacts of climate exposures

Exposures

Secondary Exposures

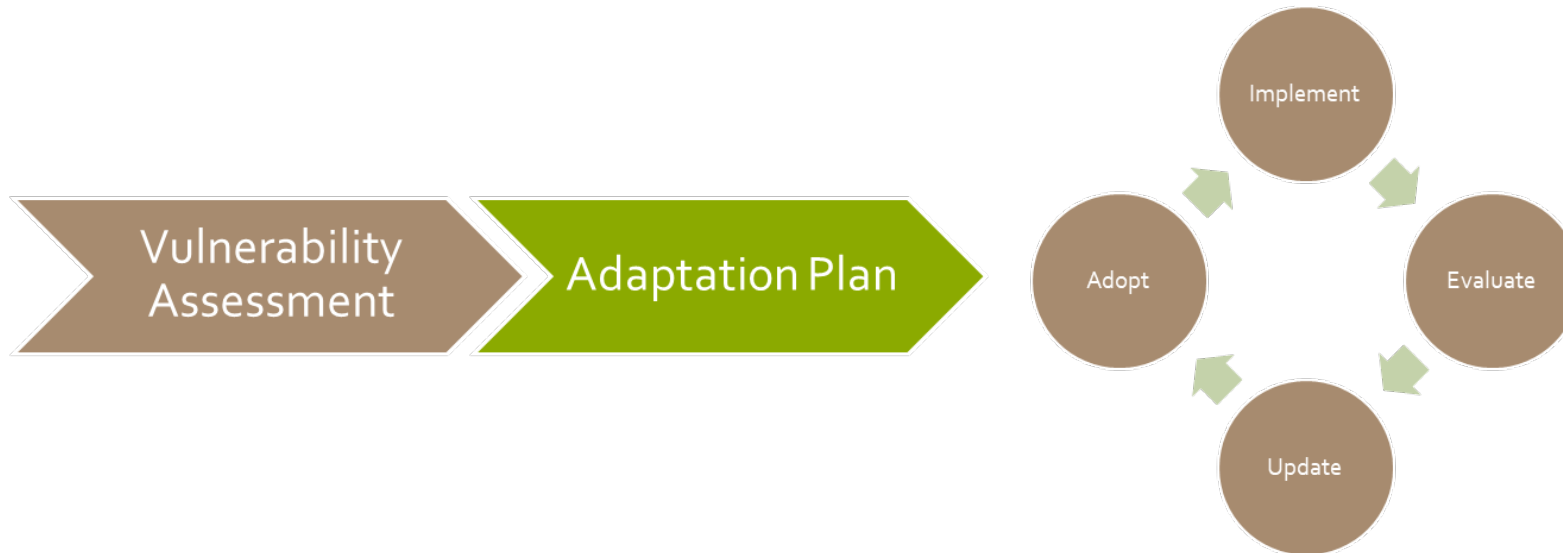
Health Impacts Summary



Poll

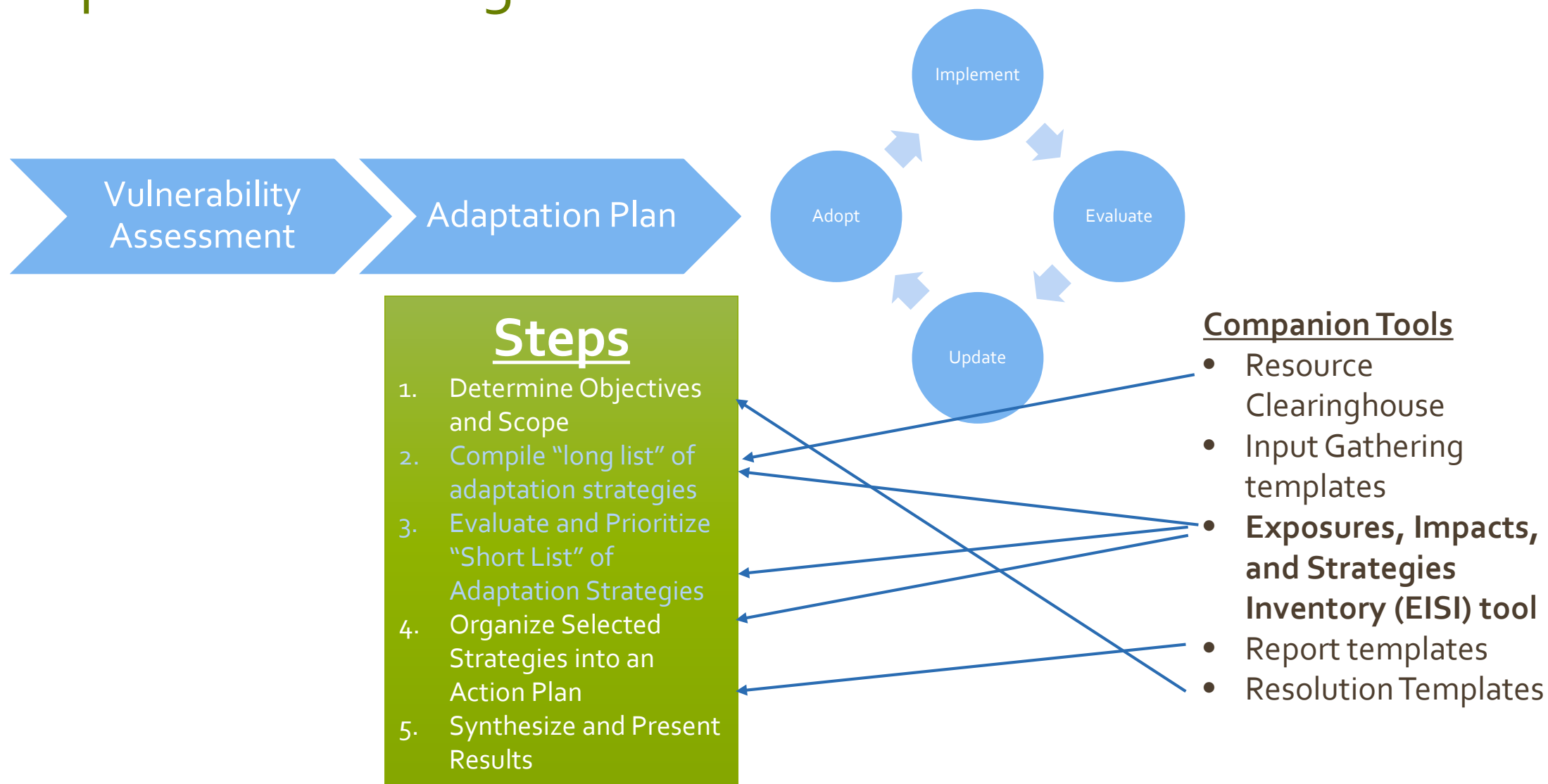
Adaptation Planning

Next, conduct an adaptation plan to decide how to roll out the most effective interventions or strategies to reduce each key vulnerability and improve community resilience



- There are many strategies that can help you safeguard human health
- Tribes are uniquely capable of building upon their capacity to cope with changes
- Federal impediments and other barriers can constrain tribes' adaptive capacity

Adaptation Planning: TCHP Framework & Tools



Adaptation Planning

Steps

1. **Determine Objectives and Scope**
2. Compile “long list” of adaptation strategies
3. Evaluate and Prioritize “Short List” of Adaptation Strategies
4. Organize Selected Strategies into an Action Plan
5. Synthesize and Present Results

Step 1: Determine Objectives and Scope

- Did specific direction come from a Council?
 - Again, consider a resolution
- Are you changing course?
 - Different lead?
 - Different partners?
 - Different approach?
- Assess resources, capacity and limitations
- Set parameters of assessment
 - Adaptation goals
 - Timeframe
 - Boundaries
 - Exposures of concern
 - Impacts types of concern (health/social, natural, built environment)
 - Key assets

Sample Adaptation Goals

Goals:

- To become a more adaptive community that can remain resilient and independent in the face of climate change impacts to Pala’s health, social, natural and built environments within the reservation
- To increase community and employee awareness of climate change impacts, risks and preparedness opportunities
- To be a leader and provide an example for other communities

Vision statement

Pala’s wellbeing, prosperity, culture, lands, self-sufficiency, and sovereignty are protected against the impacts of climate change. Our community remains healthy, strong, and resilient



Climate Summit in Spokane (July 30, 2019)

- **Full Trainings**

- [Two-day Tribal Climate Change and Health Adaptation Workshop at Pala \(June 5-6, 2019\)](#)
- [IN PROGRESS: Tribal Climate Change and Health Adaptation Webinar Series \(to start August 2019\)](#)

Tool – [Exposures, Impacts, and Strategies Inventory \(EISI\) tool](#) (Updated October 2, 2019 BETA VERSION). This is a draft of a customizable companion tool that can support communities that are conducting adaptation planning. Information and data sources are compiled and organized to present information needed at several decision-making steps to help your community prepare to take the most effective actions. We are continuing to build functionality and improve information. The latest update includes more indicators and data sources (national and California specific). Please send questions or comments to ahacker@prospersustainably.com.

Template – [Climate Vulnerability Experiences and Priorities Survey](#) for gathering initial community input. If you have a Google account, you can use [this link](#) to create and save a copy of this template to customize for your tribe.

Sample Reports – [Pala Band of Mission Indians Climate Change Vulnerability Assessment](#) and [Climate Change Adaptation Plan](#). These reports incorporate health impacts and strategies. This Word version allows others to modify for their own community.

Other Relevant Training Materials not Produced by the Tribal Climate Health Project

[Tribal Resolution Template –ITEP's Tribal Climate Change Resolution Template](#)

Playlist – Check out [Tribal Climate Health's Youtube playlist](#) of climate and health videos produced by other agencies

Adaptation Planning

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2. **Compile “long list” of adaptation strategies**
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Step 2. Compile “long list” of strategies that address vulnerability impacts and adaptation goals

- Good news! You’re probably already on your way
- Ways to generate an initial list
 - Identify your existing actions
 - Research more actions
 - Brainstorm new actions

TCHP’s Exposures, Impacts, and Strategies Inventory (EISI) tool can help (DEMO)



Group Discussion:

What types of adaptation actions has your tribe already taken?

FileHomeInsertPage LayoutFormulasDataReviewViewHelpPower Pivot

CutCopyFormat Painter

Calibri11

B I U

Font

Wrap Text

Alignment

General

Number

Conditional Formatting

Format as Table

Cell Styles

InsertDeleteFormat

Cells

AutoSumFillClear

Editing

Sort & Filter

Find & Select

Ideas

U4

Operations and Management

3) EVALUATE AND TRACK STRATEGIES														P	Q	R	S	T	U	V	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BM	E									
														EVALUATE STRATEGIES												PLANNING DETAILS																							
	Exposure				Secondary Exposure			Impact Type			Adaptation Strategy Options					Adaptation Strategy Type					Status	Need	Feasibility			Timeframe (Years)						Responsible Department	Involved Departments	Potential Partners/ Resources	Estimated Budget	Potential Funding Needs	Percent Complete to Date												
#	Temperature	Storms and flooding	Melting Ice and Sea Level Rise	Drought	Wildfire	Air quality	Vectors	Water Insecurity	Food Insecurity	Health: Human	Health: Cultural & Spiritual	Health: Socio-economic	Other: Natural Environment	Other: Built Environment	0	Policy, Planning, Land Use	Community Engagement, Education and Notification	Infrastructure Improvements	Data Information Technology	Operations and Management	Cross Agency Collaborations	Community rank: COMPLETE, IN PROGRESS, ONGOING, EXPAND, NEW	Community rank: High, Medium, or Low	Staff capacity/expertise	Existing Funding or Likely Grant Opportunities	No major legal, political, natural or cultural	Community rank: High, Medium, or Low	1	2	3	4	5	6 to 10	11 to 20															
1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Form intertribal emergency consortium to assist each other during disasters						x																												
2	x	x	x		x					x				x	Install back up power generators to protect critical facilities (lift stations, pumps, etc) from short term power outages			x																															
3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Identify partners to coordinate emergency and adaptation activities with across jurisdictional or agency boundaries to leverage resources further						x																												
4					x					x	x	x	x	x	Establish cooperative agreements for fire management, readiness and response with other local entities						x																												
5		x	x		x					x					Establish disaster relocation centers and protocols					x																													
6		x								x	x	x	x	x	Install stream monitoring gages for early flood warning				x																														
7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Conduct a vulnerability analysis to identify risks and an adaptation plan to protect important assets		x																																
8				x				x		x	x	x	x	x	Create or update Source Water Protection and/or Drought Contingency Plans		x																																
9	x	x	x	x	x	x	x	x	x	x					Conduct education to encourage community members to prepare for exposure (e.g. home improvements, check equipment, list family/friends and neighbors who may need assistance, know closest evacuation/cooling centers, personal cooling strategies, develop family emergency plan, subscribe to alert systems, vector-borne disease prevention)			x																															
10	x	x	x	x	x	x	x	x	x	x					notifications before and during exposure event via website, text, social media, TV, radio, and other media. Notifications should include relevant safety tips (e.g. limit outdoor activities, don't drive through flooded roads, limit water usage, evacuation zones, boil advisories, etc) and how to access additional information or help. Implement emergency communications to provide realistic recovery timeline and plan to set reasonable expectations given likely post-event challenges to avoid greater mental health impacts.																																		
															equipment and processes to allow for real time climate		x																																

Tribal Examples of Health Adaptation Strategies

Steps

1. Determine Objectives and Scope
2. Compile “long list” of adaptation strategies
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Temperature Extremes

- [Mescalero Apache Tribe \(NM\)](#) – Hoop houses, greenhouses and solar power to protect food crops
- [Mashpee Wampanoag Tribe \(MA\)](#) – Provide early, real-time heat warnings
- [Choctaw Nation \(MI\)](#) – Promote food cooperatives, CSA programs, tribal garden plots

Storms and Flooding

- [Kiana, Alaska](#) – Conduct education to help residents avoid food and water safety risks
- [Mikah Tribe \(WA\)](#) – Regional climate adaptation dashboard shows it has completed watershed and salmon habitat restoration

Drought

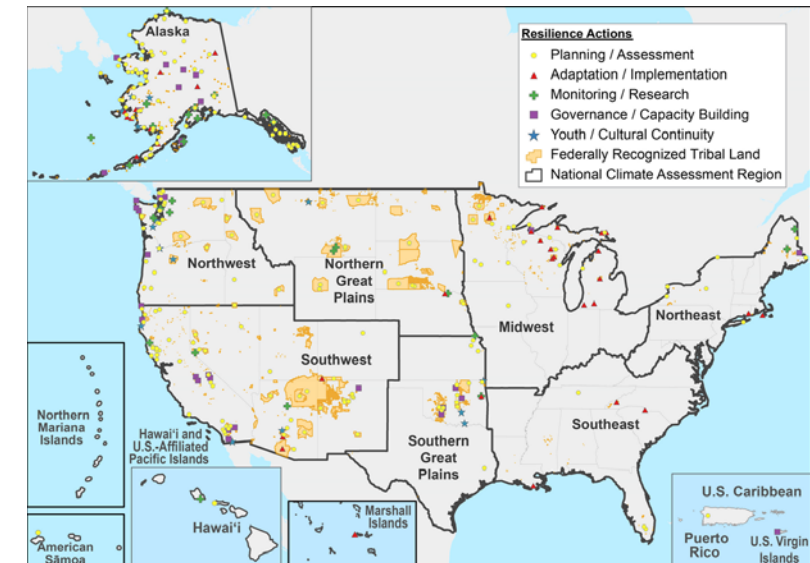
- [Chickasaw Nation \(OK\)](#) – Create or update a drought contingency plan
- [Blackfeet \(MT\)](#) – Increase water storage capacity naturally by protecting beavers and restoring riparian areas
- [Tohono O’odham \(AZ\)](#) – Developing seed-banks of traditional plants to improve food security

Wildfire

- [Karuk Tribe](#) – Collaborate with federal agencies on forest management plans including traditional wildfire techniques
- [Yakama Nation](#) – Partnering to increase air quality monitoring and developing local committees to implement climate measures for most vulnerable populations

Melting Ice and Sea Level Rise

- [Biloxi-Chitimacha-Choctaw](#) – Develop plans for phased relocation, if necessary
- [Wainwright \(AK\)](#) – Promote location devices for hunters and travelers
- [Alaska Native Tribal Health Consortium](#) - Local Environmental Observer (LEO) Network map tool connects knowledge keepers to document/share observed climate/health changes



TRIBAL MICROGRID PROJECTS & ADAPTATION PLANNING

JUNE 16, 2020



Presenter Introduction

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Presentation Outline

- Planning a Tribal Microgrid Project (Overview)
- Microgrid Basics
- Example Threats, Impacts, and Strategies
- Considering the Need for a Tribal Microgrid
- Case Study – San Pasqual Government Complex Microgrid
- Case Study – Rincon Microgrid Projects
- Funding, Technical Assistance, and Other Resources

Planning a Tribal Microgrid Project

- Vulnerability/resiliency/adaptation assessments and planning
- Determine scope, goals, and objectives
- Gather and analyze site information and data
- Complete feasibility study and preliminary analysis
- Conduct microgrid project procurement
- Design and engineer the microgrid
- Construct and commission the microgrid
- Perform ongoing operations and maintenance

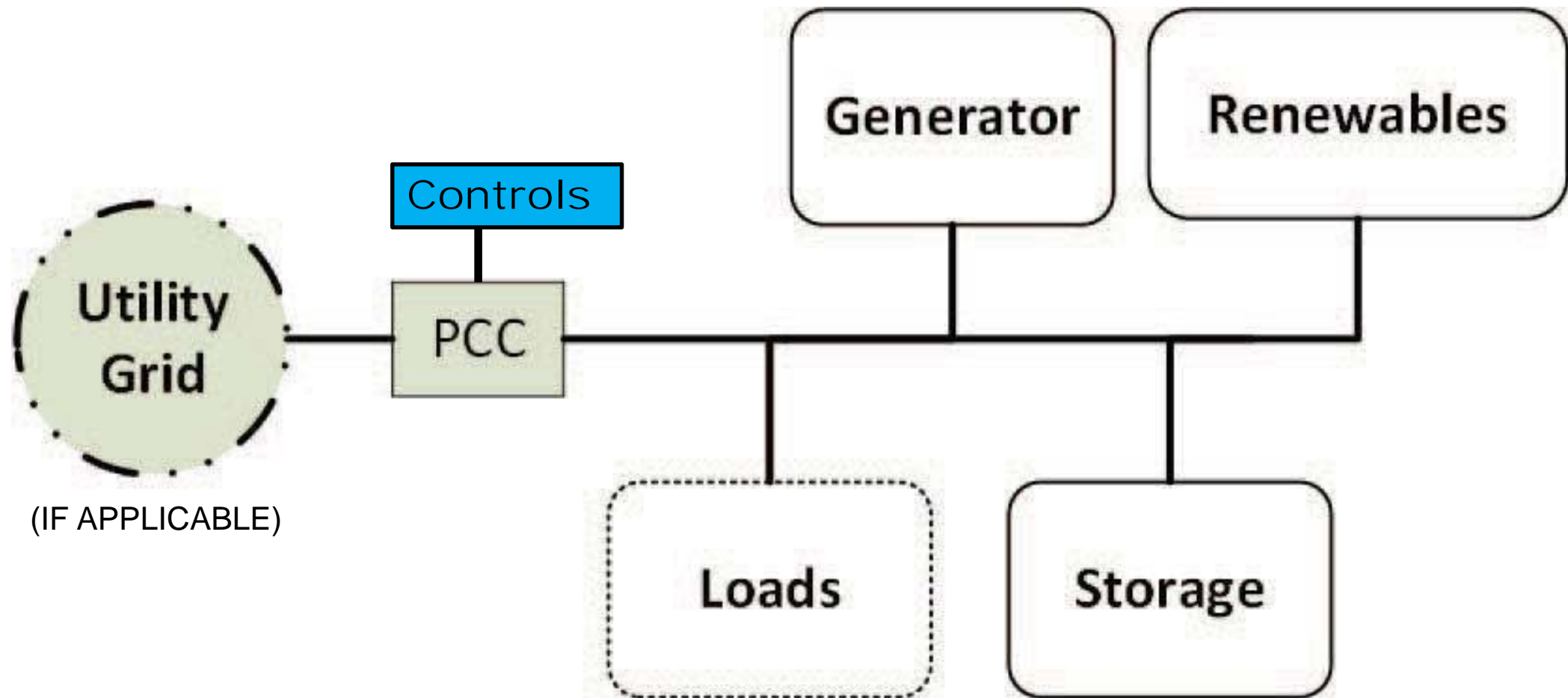
Microgrid Basics

➤ Microgrid Definition

- A group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode.

➤ Microgrid Components and Technologies

➤ Microgrid Applications



SOURCE: Bani-Ahmed, Salam & Weber, Luke & Nasiri, Adel & Hosseini, Hossein. (2015). Microgrid communications: State of the art and future trends. 3rd International Conference on Renewable Energy Research and Applications, ICRERA 2014. 780-785. 10.1109/ICRERA.2014.7016491.

"Controls" figure and "IF APPLICABLE" added.

Energy Resilience & Adaptation Planning

Example Threats

- Extreme heat (brownouts)
- Extreme events (storms, wildfire)
- De-energization due to high winds

Example Impacts

- Health facilities and services
- Emergency response services
- Shelters and cooling centers
- Evacuation and relocation
- Water and wastewater systems

Potential Strategies

- Local power and/or fuel
- Backup generators
- Microgrid systems

Do you need a microgrid?

- What are your power supply threats?
- Do you experience power outages?
- How long and how frequent are your outages?
- What community facilities are essential/critical?
- What community facilities need power during outages?
- Do these facilities have backup power?
- What is the capacity and duration of the backup power?

San Pasqual Microgrid Project

San Pasqual Band of Mission Indians Trust and Fee Lands

 Trust Land (1,990 US Acres)
 Fee Land (1,153 US Acres)
[3,143 Total US Acres]


Valley
Center
Middle

Woods Valley
Golf Club

San Pasqual
Reservation



Date Created: 4/20/2018

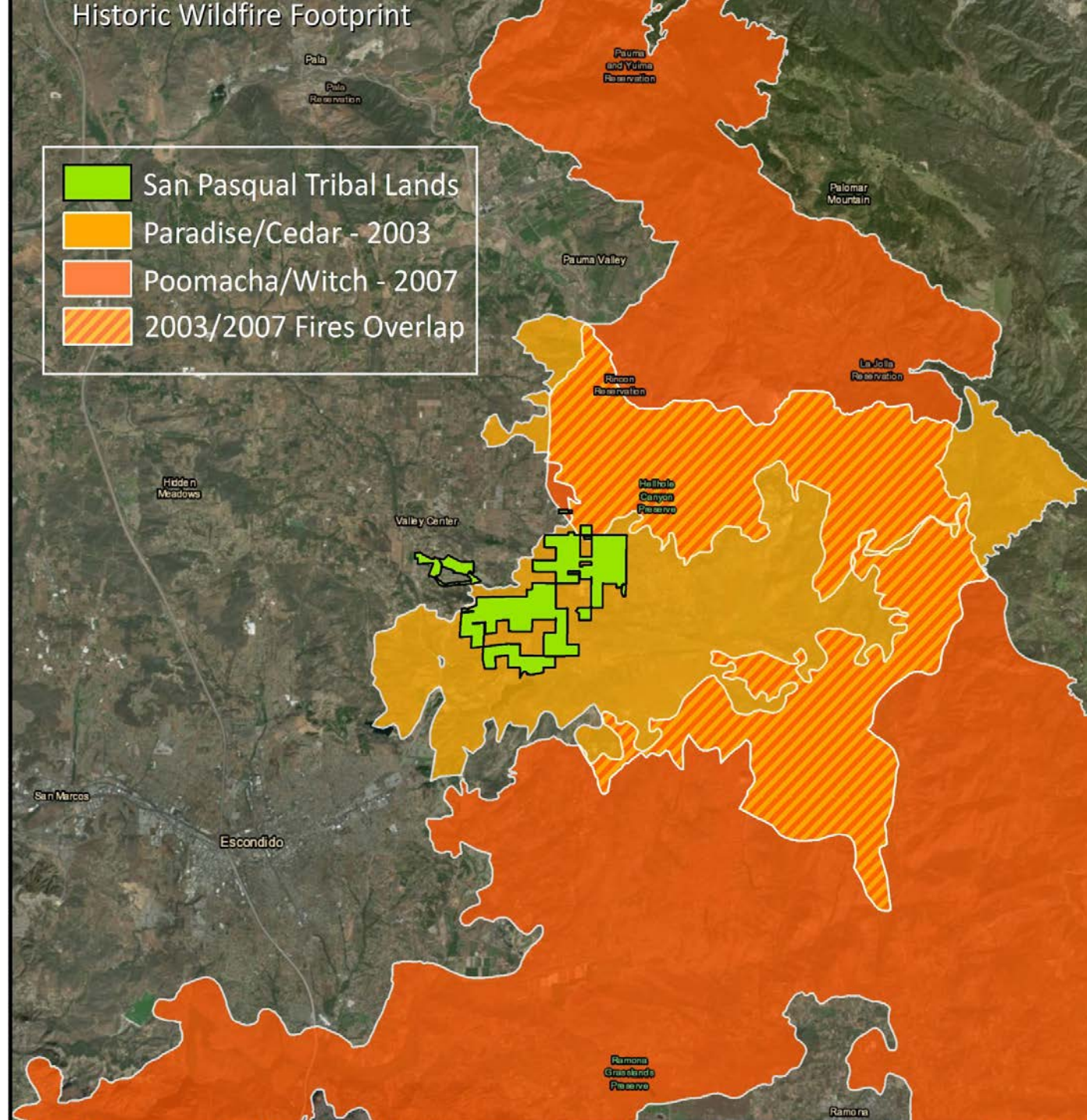
Source: San Pasqual Band of Mission
Indians Environmental Department



0 0.5 1 2 Miles

Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

San Pasqual and Wildfire



San Pasqual Tribal Community Power Supply Threats & Impacts

THREATS

- Wildfire
 - Paradise/Cedar Fires (2003)
 - Poomacha/Witch Fires (2007)
- High winds
- De-energization
- Storms
- Planned outages
- Accidents

IMPACTS

- 20+ hour outage in 2017
- Lost Productivity/Revenues
- Equipment Damage
- Inability to Use Facilities
 - Including for alternate purposes


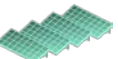

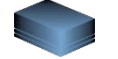






SPBMI Microgrid Project Goals

- Resilience: Maintain electric power during outages
- Economic: Reduce electricity costs
- Environmental:
 - Achieve 100% Renewable Energy (net zero)
 - Reduce GHG and other air pollutant emissions

Priority/Critical Electricity Loads

Facility	Emergency Purpose	Critical Electric Loads
Tribal Administration	Red Cross evacuation center; emergency public shelter; tribal command and control; first aid	HVAC, lighting, telecom/IT, food storage, food service
Housing & Security	First response (police); public safety and security monitoring	Telecom/IT, security camera monitoring, lighting, HVAC
Fire Department	First response (residential fire station); 911 emergency dispatch; Hand held radios	Telecom/IT, lighting, overhead door operation; food storage, HVAC
Education Building	Emergency public shelter	HVAC, food storage, food service, lighting
Preschool	Emergency public shelter	HVAC, lighting
Wastewater Treatment Plant	Wastewater treatment for complex	Full load

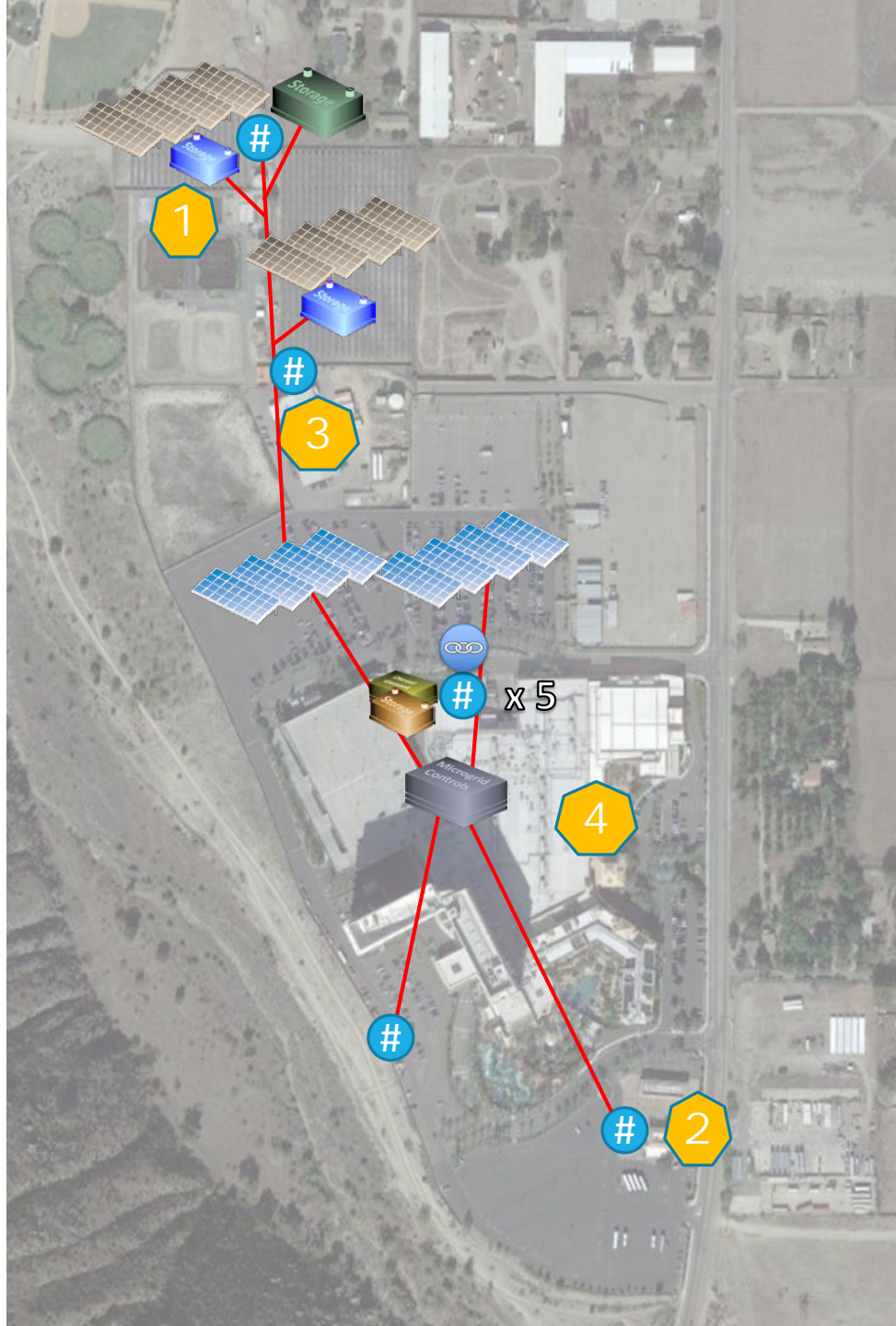
San Pasqual Tribal Government Complex Microgrid Project CONCEPTUAL DESIGN

- # Master Meter
- # Existing/Sub Meter
-  New Solar PV Site
-  Existing Solar PV System
-  BESS Location
-  LP Genset Location
-  Point of Interconnection
-  Structure to be removed
-  Underground Cable Run
-  Building Cable Run
-  Existing Propane Tank
-  New Propane Tank



Rincon Microgrid Projects

Updated HRSC Microgrid Project



1

Wastewater Treatment Plant (1)

2

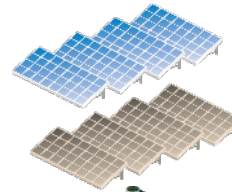
Travel Center Gas Station and C-Store (2)

3

Butler Building (3)

4

Harrah's Resort (4) *6 meters*



2 MW AC Solar PV System (new)

1 MW Solar PV System (existing)



4.8 MWh Flow Battery System (new)



4.8 MWh Flywheel Energy Storage System (new)



Lithium Ion Batteries (0.6-1 MWh new,
420 kW / 680 kWh existing)



Diesel Generators (1 MW new, 2 MW existing)



Microgrid Controls (new)



Point of Interconnection (new)



Meters (existing)



Microgrid Underground Bus (new)

Fire Station Microgrid



100 kW Solar PV System



132 kWh Battery
Energy Storage System



Microgrid and BMS Controls



Diesel Generator

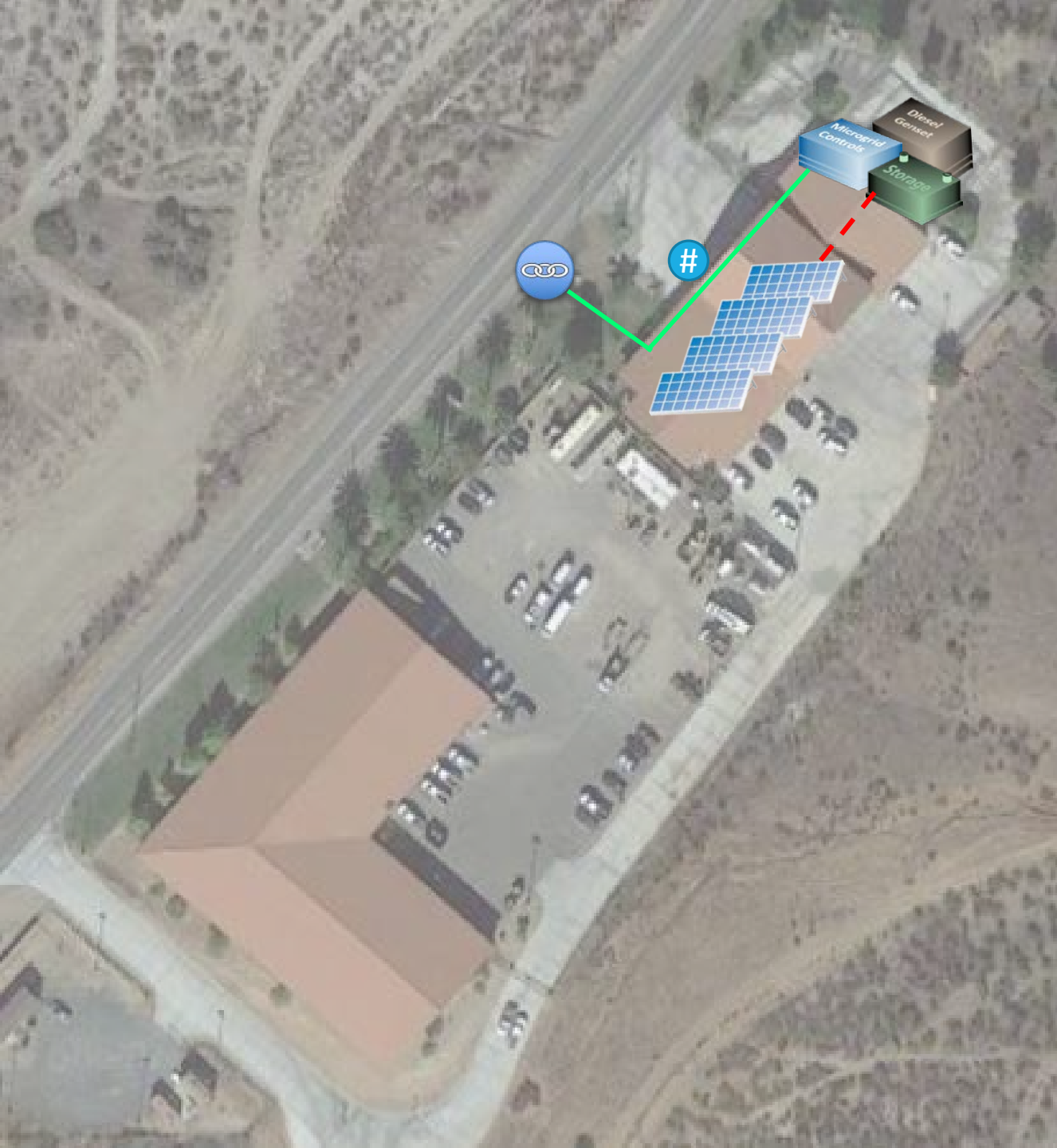


Point of Interconnection









Meter

*Grey icons are existing DER components to be integrated into microgrid system





- # Building Electric Meter
- # Controls and Service Panel
-  PV Site (New)
-  BESS Location (New)
-  Diesel Genset (Existing)
-  EV Charger (Existing)
-  Point of Interconnection
-  Microgrid Bus (New)

#	Resource	Capacity
1	PV Rooftop 1	79.9 kW
2	PV Rooftop 2	11 kW
3	PV Canopy	199.3 kW
4	BESS	140-175 kW 696 kWh
5	Diesel Genset	150 kW
6	Controls	-

Funding, Technical Assistance, and Other Resources

- DOE Tribal Energy Program Grants – Planning, Implementation
- DOE Technical Assistance
- DOE Loan Guarantee Program
- BIA EMDP Grants – Planning
- BIA Technical Assistance
- BIA Loan Guarantee Program
- California Energy Commission EPIC Grants – Implementation
- **California Self Generation Incentive Program Rebates**
 - <https://prospersustainably.com/swell-tribal-battery-rebate-program/>
- **Other grants? State, Federal, etc.**
 - FEMA, BOR, CalOES
 - USDA Grants, Loans, and TA

Thank You!!
Questions?

Wrapping Up

Thank you for being part of our training community!

Suggested reading (complete before next webinar)

- [Tribal Climate Adaptation Menu](#)

Next webinar:

July 21, 2020 (10 AM PDT / 1 EDT)

Adaptation Plans Part 2

Questions?