Since Last Webinar

Suggested Reading

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

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
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

**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

**Companion Tools**
- Resource Clearinghouse
- Input Gathering templates
- **Exposures, Impacts, and Strategies Inventory (EISI) tool**
- Report templates
- Resolution Templates
Adaptation Planning

**Steps**

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.
Assessing Health Vulnerabilities

Steps
1. Determine Objectives and Scope
2. Engage the Community
3. Identify Key Indicators
4. Gather and Analyze Information
5. Prioritize Vulnerabilities
6. Synthesize and Present Results

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

**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?
Adaptation Planning

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)

Steps
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Operations and Management

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Secondary Exposure</th>
<th>Impact Type</th>
<th>Adaptation Strategy Options</th>
<th>Adaptation Strategy Type</th>
<th>Status</th>
<th>Evaluate Strategies</th>
<th>Planning Details</th>
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Social Environment

Built Environment

Health

Natural Environment

9
Tribal Examples of Health Adaptation Strategies

Steps
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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
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
“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]
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

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

1. Underground Cable Run
2. Building Cable Run
3. Master Meter
4. Existing/Sub Meter
5. New Solar PV Site
6. Existing Solar PV System
7. BESS Location
8. LP Genset Location
9. Point of Interconnection
10. Structure to be removed
11. Existing Propane Tank
12. 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*
### Resource Capacity

<table>
<thead>
<tr>
<th>#</th>
<th>Resource</th>
<th>Capacity</th>
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<tbody>
<tr>
<td>1</td>
<td>PV Rooftop 1</td>
<td>79.9 kW</td>
</tr>
<tr>
<td>2</td>
<td>PV Rooftop 2</td>
<td>11 kW</td>
</tr>
<tr>
<td>3</td>
<td>PV Canopy</td>
<td>199.3 kW</td>
</tr>
<tr>
<td>4</td>
<td>BESS</td>
<td>140-175 kW</td>
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<tr>
<td></td>
<td></td>
<td>696 kWh</td>
</tr>
<tr>
<td>5</td>
<td>Diesel Genset</td>
<td>150 kW</td>
</tr>
<tr>
<td>6</td>
<td>Controls</td>
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</table>
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/](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?