

# **GeoZone Community Meeting**

*Developing Principles for New Geothermal*

September 18, 2023

Cloverdale, CA



# Today: Pre-Project Planning

Bring SCP's monthly planning work on local renewable power to Cloverdale.

- Meet Sonoma Clean Power
- Learn about California's mandate to build more geothermal energy
- Collect local community input to inform SCP's Community Advisory Committee and ultimately create a set of principles for new geothermal development

## Future Input

Ongoing monthly Community Advisory Committee meetings online and in Santa Rosa.  
[www.sonomacleanpower.org/meetings](http://www.sonomacleanpower.org/meetings)

Email to [geozone@sonomacleanpower.org](mailto:geozone@sonomacleanpower.org)

Track GeoZone activities: [www.sonomacleanpower.org/geozone](http://www.sonomacleanpower.org/geozone)

# Introductions

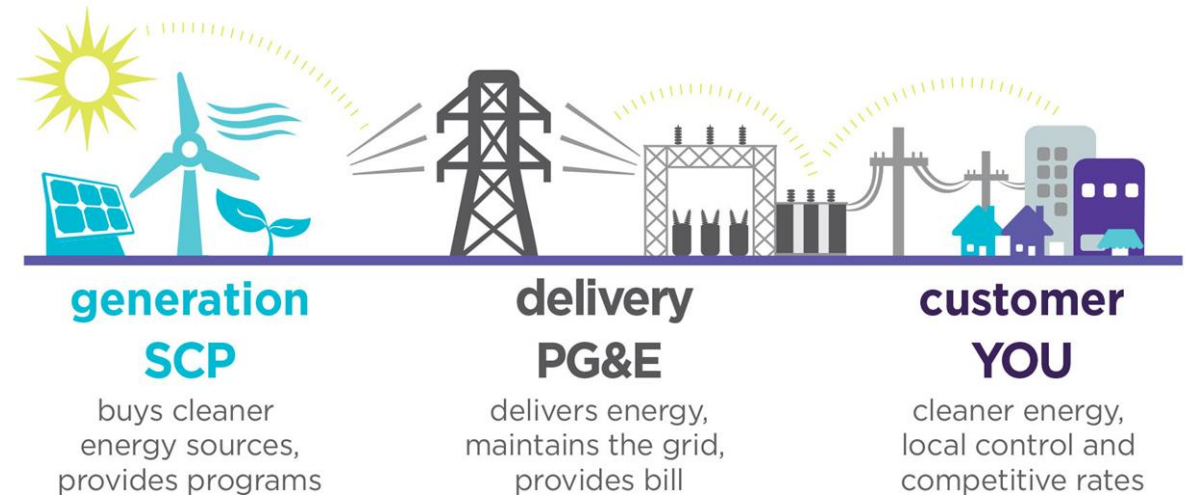
# Sonoma Clean Power

Community-owned electricity provider for Sonoma and Mendocino Counties. Governed by 11 elected officials from the cities and counties.

Purpose is to accelerate solutions to the climate crisis.

Default generator of electricity for the last 9 years.

Customers still pay bills to PG&E, and PG&E still maintains all poles wires and substations.



# GeoZone Partners

Selected through competitive solicitation and comprehensive selection process to contribute expertise, technology, and investment to grow local geothermal capacity.

Cooperation agreements commit partners to project development milestones, stakeholder engagement, and compatibility with community values in exchange for SCP agreeing to buy geothermal energy.



**new energies**



**Cyrq**  
energy

The Eavor logo, featuring a stylized orange circle with a white center, followed by the text "Eavor" and a trademark symbol.  
**Eavor™**

**Background**

# SB 100

Senate Bill 100 established a requirement that 100% of electricity sales are sourced by renewable or carbon-free sources by 2045.

But planned retirement of “once-through cooling” power plants in disadvantaged communities are getting delayed.

Regulators are learning:

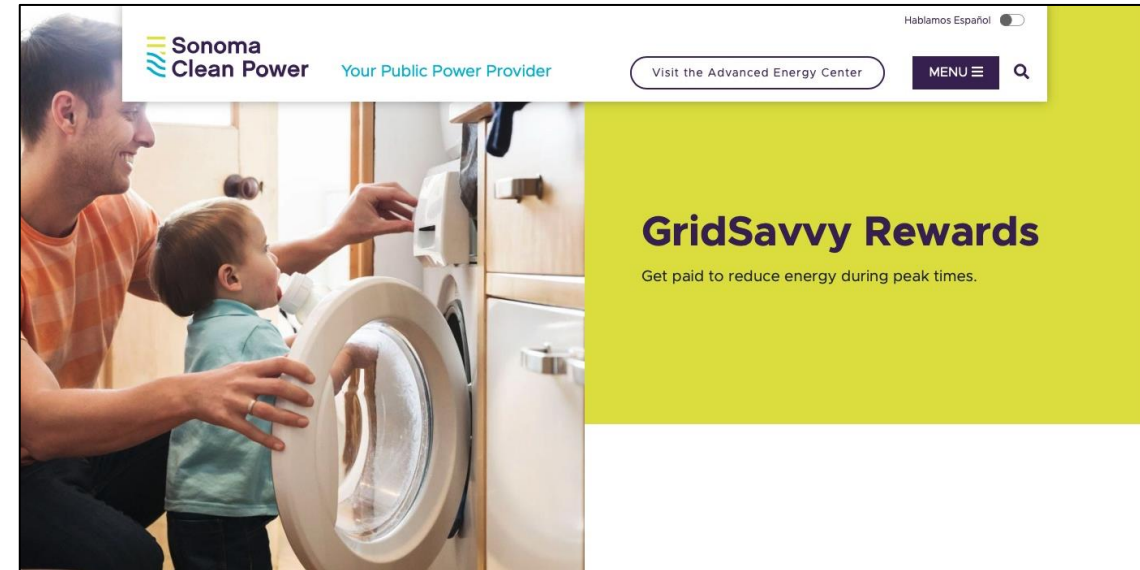
- Clean energy is easy
- Clean reliability is hard



# Clean Reliability

Increasing electric demand from EVs, building electrification and industry combined with state goals to cut dependency on natural gas power will require:

- Flexible loads – SCP GridSavvy Rewards
- Timed loads - Workplace EV charging
- Timed solar output - Rooftop solar with batteries
- Utility-scale energy storage - batteries
- Diverse technologies
- “Clean firm” resources that produce in summer evenings AND throughout winter and nighttime





# California's "Clean Firm" Energy Plans

Governor Newsom's Energy Trailer Bill creates mechanism for the State to construct large-scale offshore wind

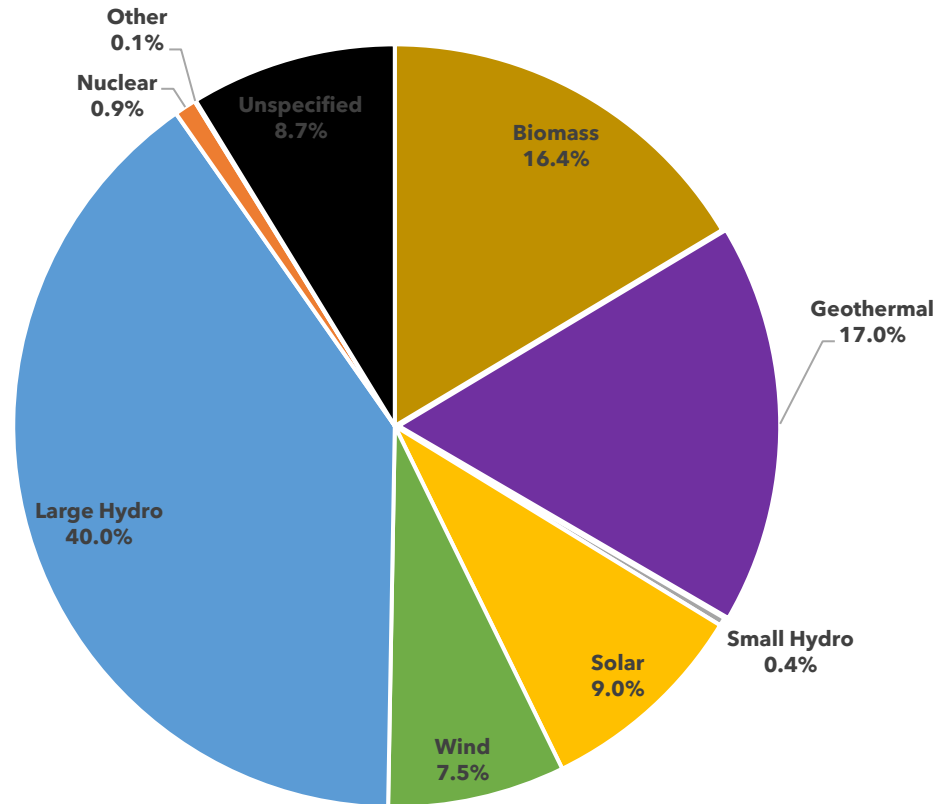
CPUC ordered 1,000 MW of new geothermal by 2028

Proposals for Wyoming wind, large-scale pumped hydro, mid-size regional pumped hydro, expansion of Salton Sea geothermal



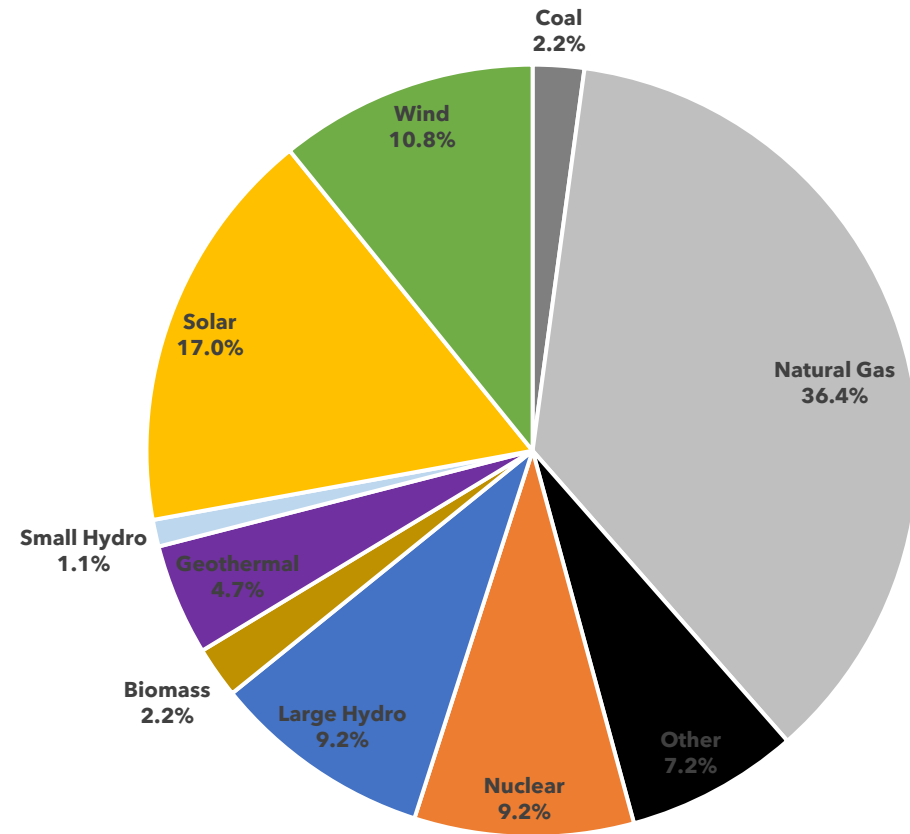
# SCP's Energy Mix (2022)

## SCP Default Service



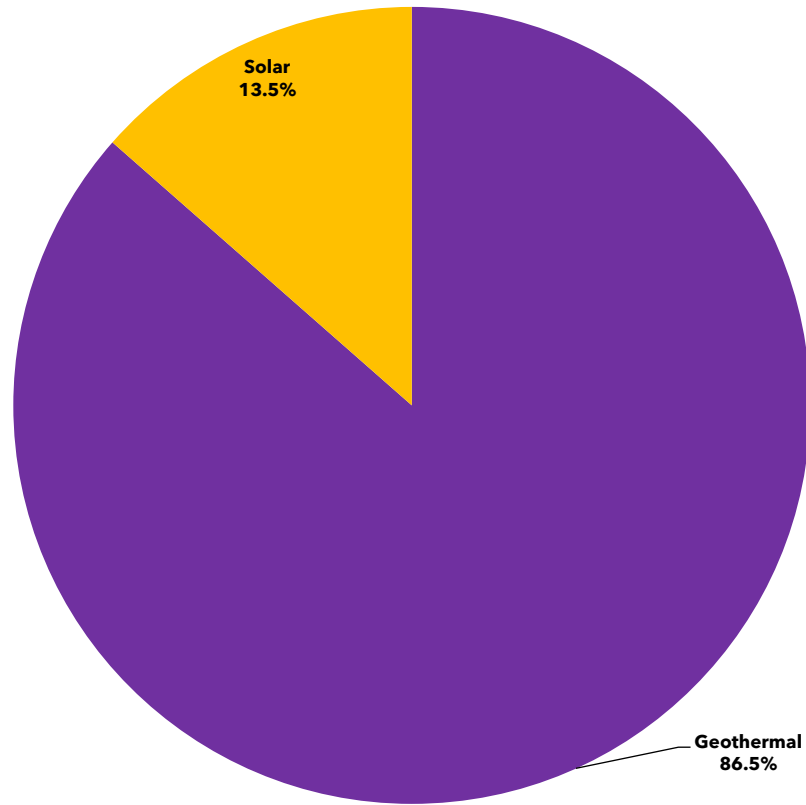
91% Renewable or Hydro

## California Power Mix



45% Renewable or Hydro + 9% Nuclear

### SCP's Premium EverGreen Service



## EverGreen

Optional 100% renewable service exclusively from sources in Sonoma and Mendocino Counties.

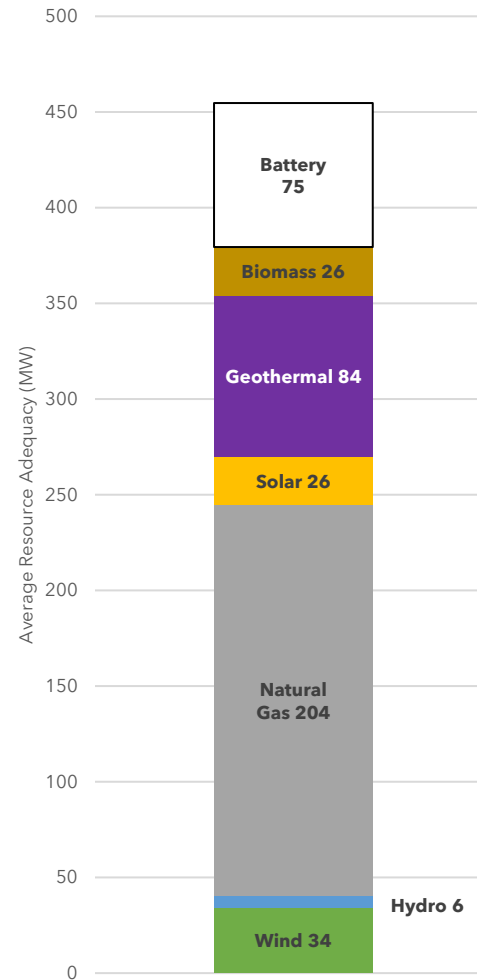
Premium cost of 2.5 cents per kWh.

Service to nearly all local government accounts in SCP territory.

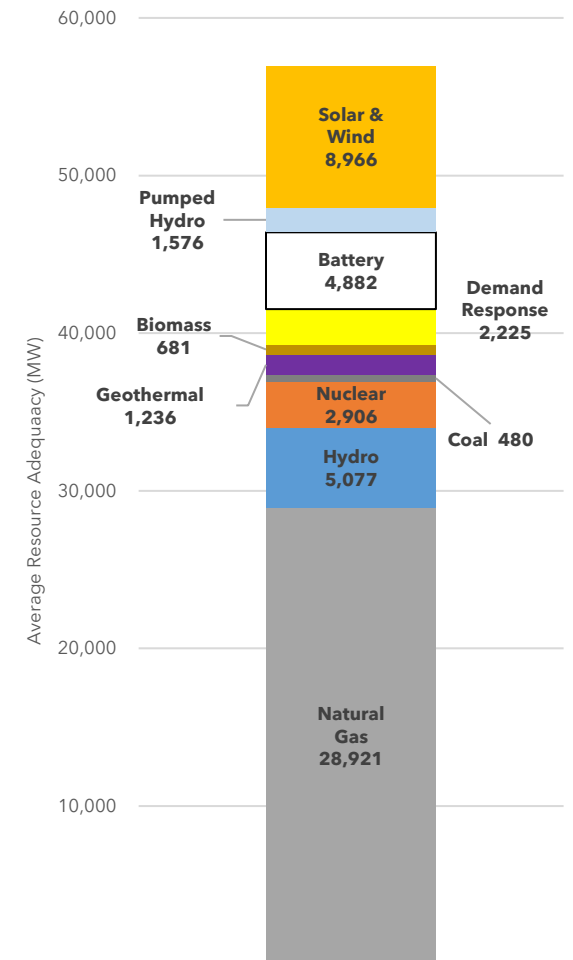
# Reliability Looks Different

Resource adequacy or “RA” is the standby generation electric service providers must procure to maintain grid reliability.

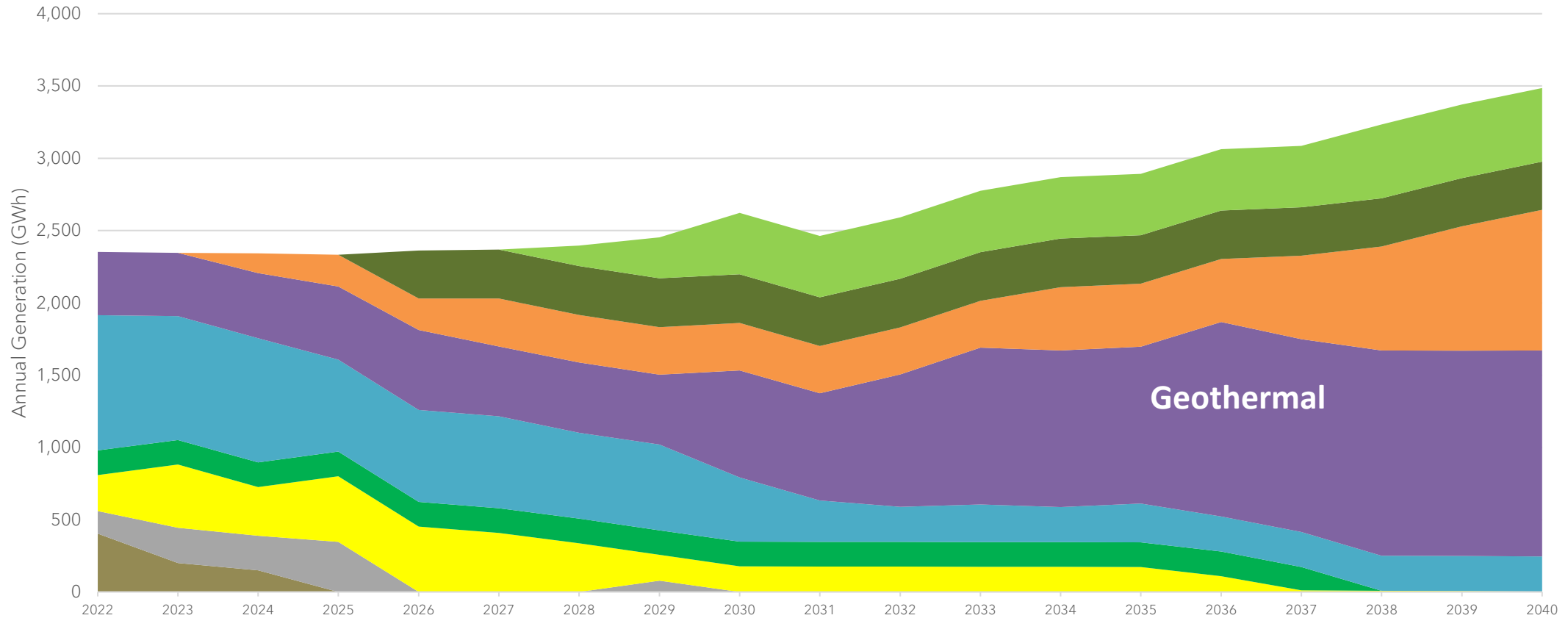
### SCP RA by Technology



### CAISO RA by Technology



# Electrification & Decarbonization



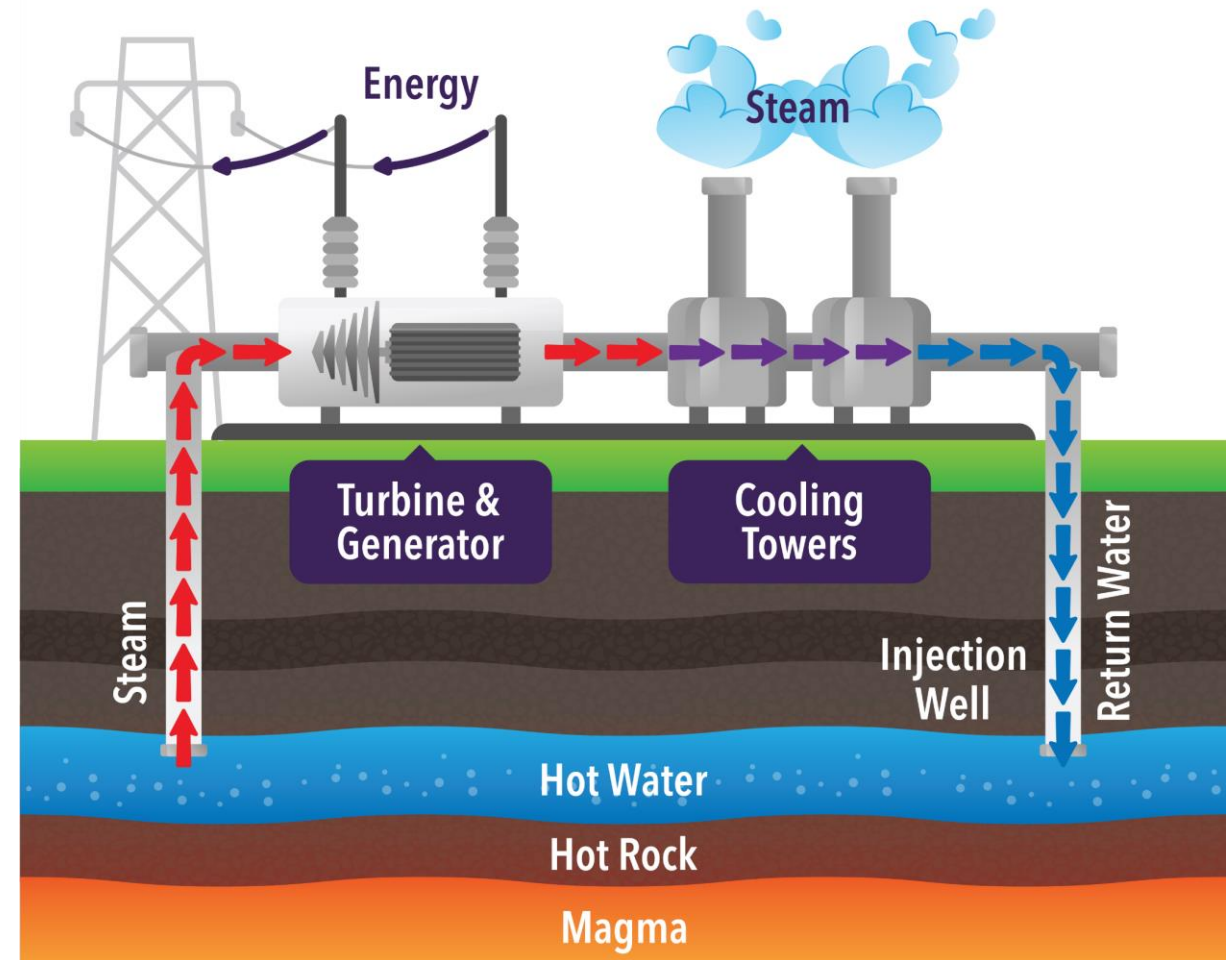
- Biomass
- System Power
- Existing Solar
- Existing Wind
- Large Hydro
- Geothermal
- New Solar + Storage
- Out-of-State Wind
- New Wind

# Geothermal Power

Earth's core provides a constantly regenerating source of heat.

Hot rock exists particularly close to the surface in the Clear Lake Volcanic Field underlying the GeoZone.

Geothermal power is generated by circulating water to collect heat that drives a turbine.



# GeoZone Progress



# GeoZone Recent History

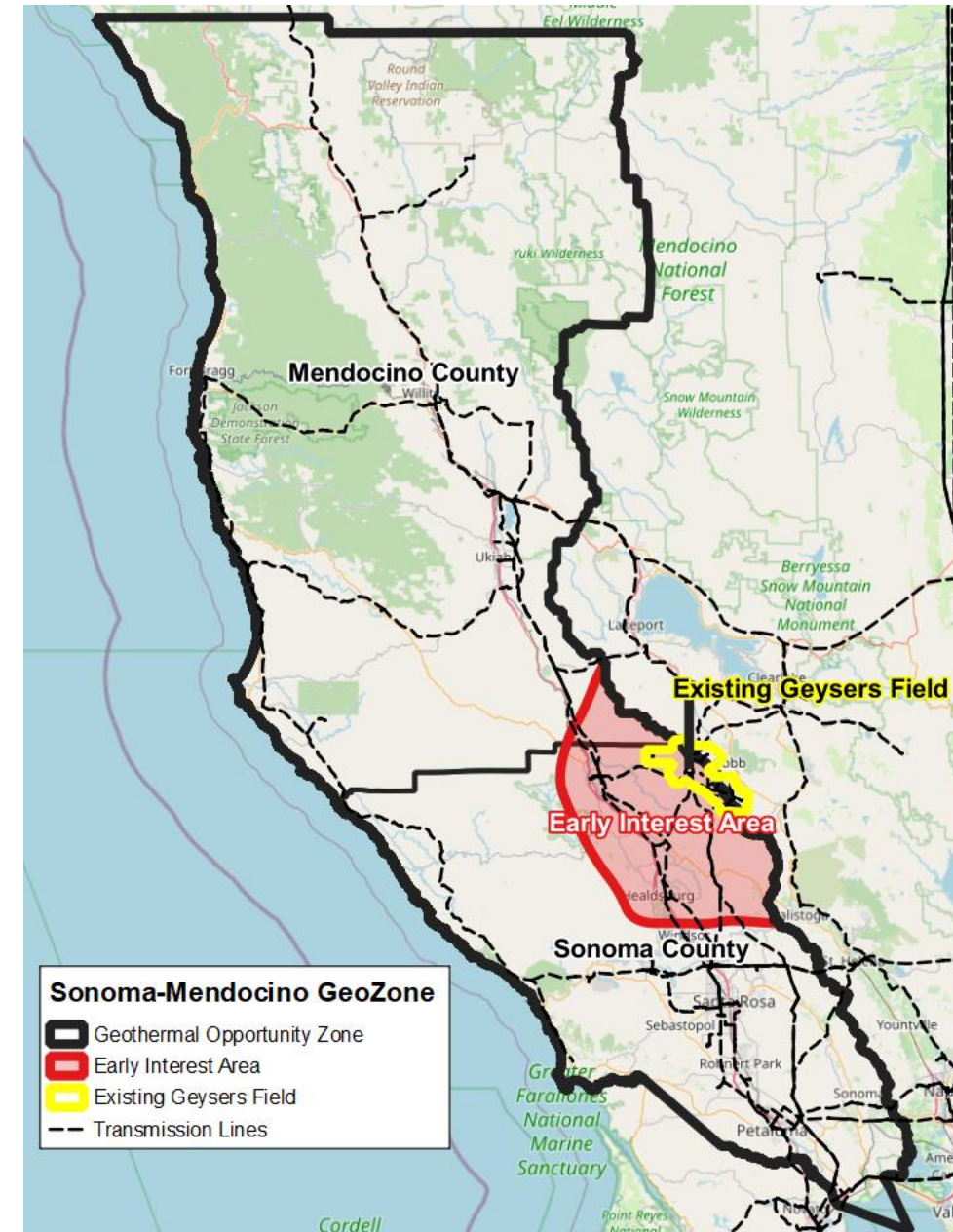
- Oct 2021** SCP Board of Directors created the GeoZone
- Jan 2022** Mendocino and Sonoma Counties joined GeoZone
- Apr 2022** GeoZone added as regular monthly agenda item for Community Advisory Committee + created info sharing site:  
[sonomacleanpower.org/geozone](https://sonomacleanpower.org/geozone)
- Jun 2022** Labor, environmental and health stakeholder vetting of private partners
- Mar 2023** GeoZone Cooperation Agreements approved by SCP Board of Directors



# Sonoma-Mendocino GeoZone

Created to steer geothermal development with local input and encourage use skilled labor and new technologies with low environmental impacts.

Initial exploration and pilots likely to occur in “Early Interest Area”, where elevated temperatures are expected to be present at shallower depth and nearby existing transmission infrastructure.



# Cooperation Agreements

*Partners have agreed to:*

- Minimize environmental effects
- Support local workforce
- Cost-effectively scale to 200 MW
- Involve frequent stakeholder engagement
- Support resource sustainability
- Provide local economic benefits

## Early Project Obligations

Partners agree to complete regional assessments, confirm site control, obtain well permits, and secure grid interconnection rights for pilot projects

Partner	Early Project Development Completion Date
Chevron New Energies	March 2026
Cyrq Energy	May 2025
Eavor Inc.	June 2025



Chevron

human energy®

# Sonoma Clean Power Community Engagement Meeting

Chevron New Energies

Sept. 18. 2023

# Chevron New Energies

We believe the **future of energy is lower carbon**, and that energy is essential to enabling human progress.

Chevron intends to **leverage our strengths to deliver lower carbon energy to a growing world.**

## our objective



accelerating lower carbon solutions

## our strategy



leverage our strengths to deliver lower carbon energy

## our commitment

# \$10B

in lower carbon capital by 2028

## Grow lower carbon businesses



Renewable fuels & products



Geothermal



Offsets



Hydrogen\*



Carbon capture, utilization & storage

\* Partially grey, blue and green.

# Chevron is well-positioned to scale novel geothermal

Building upon our capabilities, assets and customers



## Technical expertise

Deep transferable technical expertise from O&G business and a long history of **advancing and adopting external innovation**



## Operational experience

Bring strong operational experience and a proven **track record** of geothermal projects as largest geothermal operator in 2010–16



## Building relationships

Early strategic investments and **partnerships** to advance novel technologies that enable geothermal development at scale



## Scale geothermal

Leverage a phased “**pilots-to-projects**” development approach to **test multiple novel technologies** and maximize geothermal resource



# Chevron New Energies

Our goal is to be a partner and neighbor of choice

Chevron's commitment is to **enable human progress** while **benefiting the populations where we work**. We protect the **environment, empower people, and get results the right way** – both environmentally & socially.

## community engagement



youth & public safety

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community outreach

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workforce development

## sustainability



water conservation

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protecting environment

## broad partnerships



academia

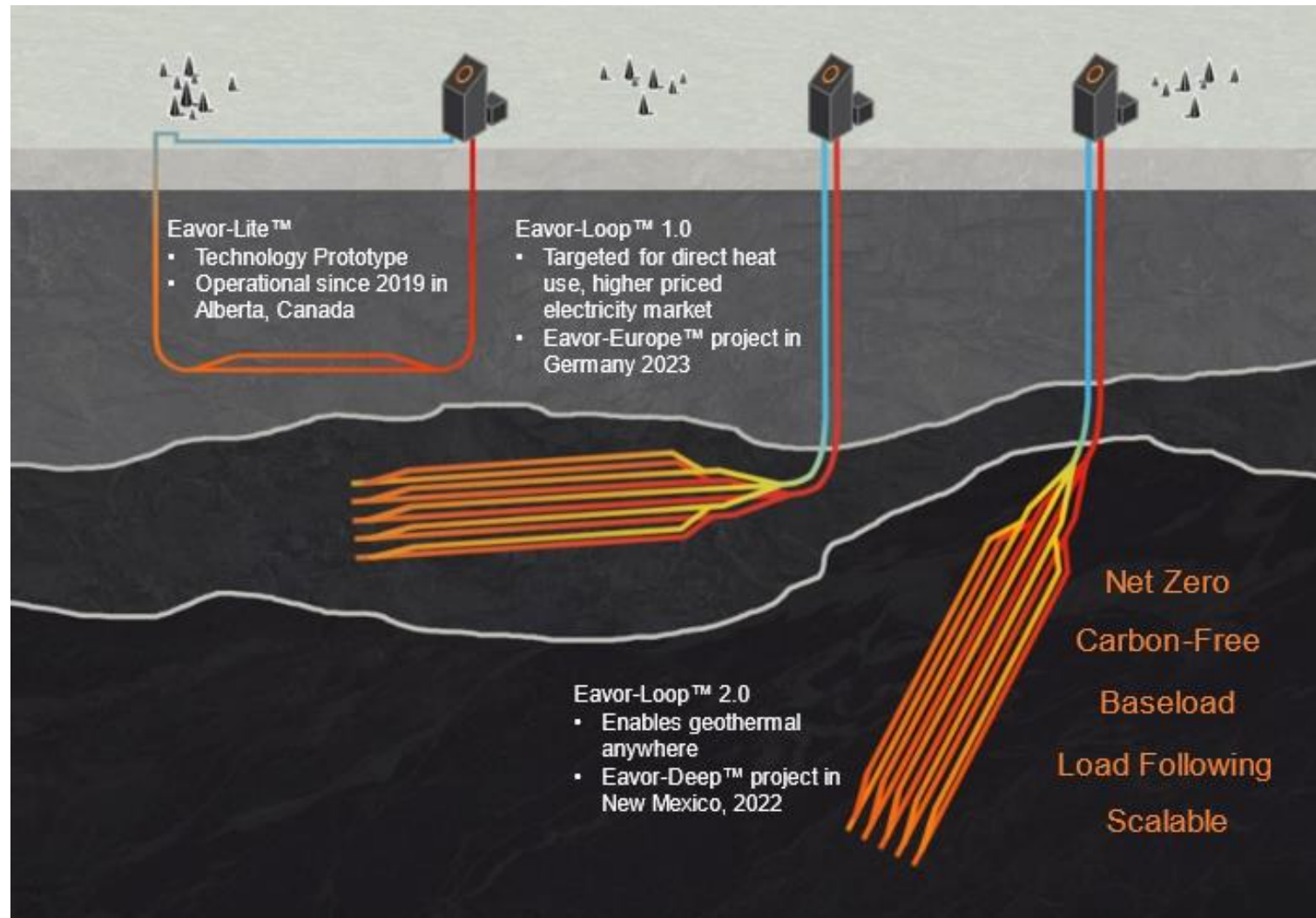
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industry R&D

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government policy

# Eavor Advanced Geothermal System (AGS)

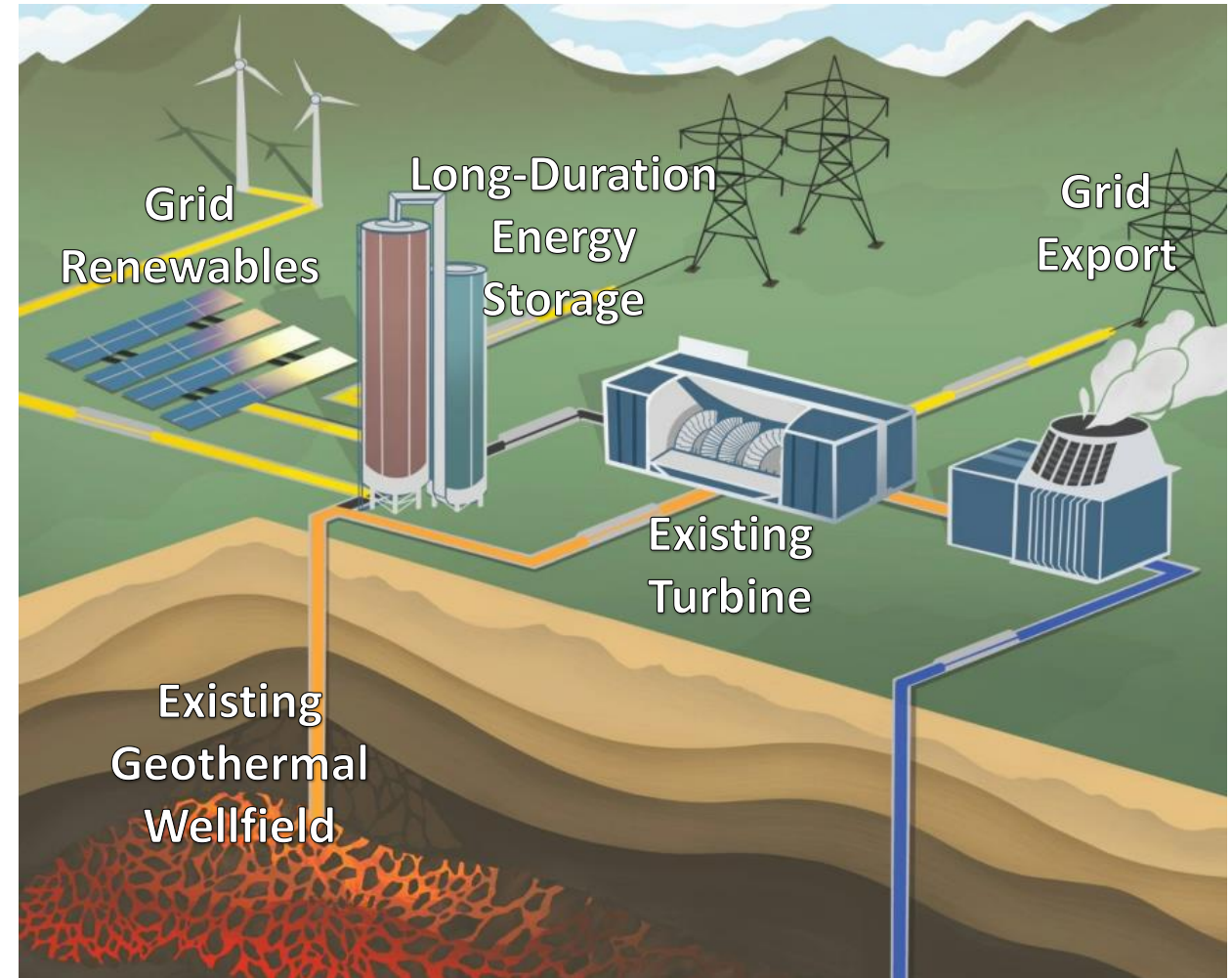


# Cyrq Superheat Long Duration Energy Storage

Thermal Long Duration Energy Storage (LDES) system upstream of existing geothermal power plants.

System rapidly charges when grid renewable energy is abundant and cheap and discharges by superheating steam during high-need hours increasing output by 50%.

Offers advantage over batteries: long durations, domestic materials, higher utilization of local workforce.







# GeoZone Initiative Progression

Site acquisition / leasing

Calibration well permitting – public CEQA process

Grid interconnection applications

Exploration/calibration well drilling

Pilot project permitting – public CEQA process

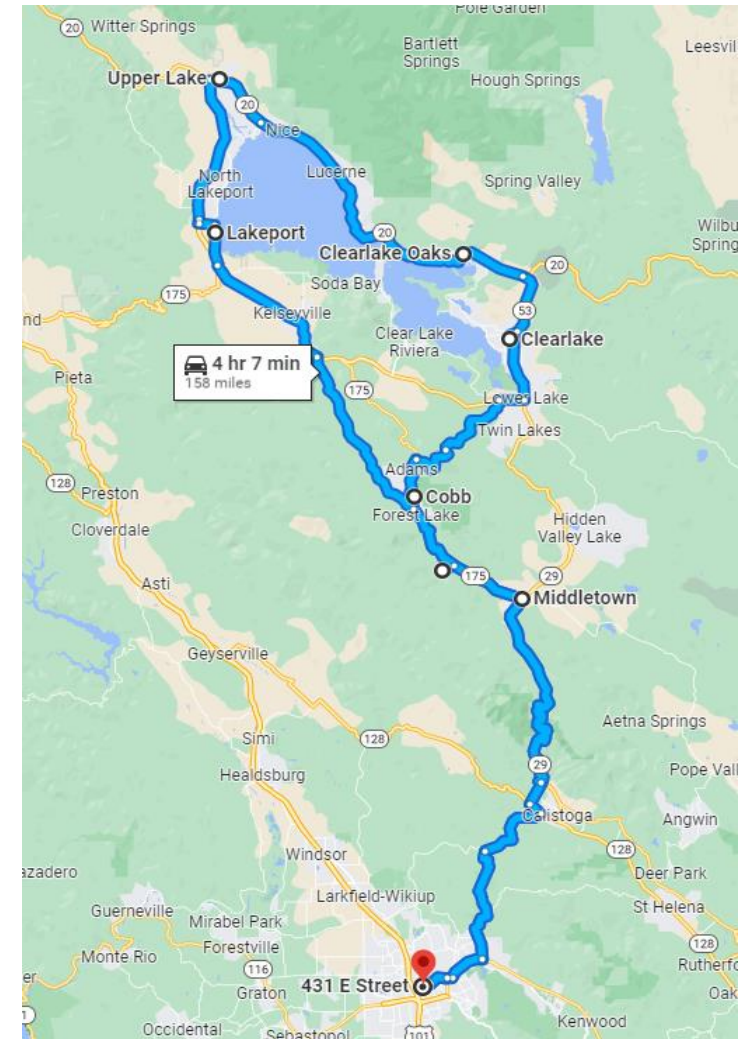
Pilot project construction up to 20 MW each

Scale-up permitting – public CEQA process

# August 2023 SCP Geothermal Listening Tour

*In August, SCP met with community members throughout Lake County to better understand how geothermal energy can impact nearby communities; themes from tour included:*

- Transparency, early engagement and accessibility are critical
- Induced seismicity is a deep concern and projects with hydraulic fracturing will be subject to additional scrutiny
- Water issues are complicated; make early focus
- Impacts to rural areas such as traffic and noise are disruptive
- Skepticism around past claims of tax revenue and job creation benefits





**Break: Principles Discussion is Next**

# Principles Discussion



# Principles Discussion

We don't have a project or location yet.

We understand everything is easier to evaluate when a specific project location and technology are proposed.

Therefore:

Our goal for today is to begin the process of collecting local community input to inform our partners and help them propose better projects, and acknowledge more input will come.



# Early Community Engagement

We've heard:

- Ensure project developer is known and accessible
- Develop robust stakeholder list for communication
- Hold meetings in accessible places
- Educate – provide good summaries and details



# Energy Equity Concerns

We've heard:

- Sonoma and Mendocino Counties should stop exporting our air and water pollution to poor regions elsewhere in California
- Regions with new geothermal power should have access to using that energy
- SCP should focus on keeping energy costs low during transition to 100 percent carbon-free power



# Impacts on Close Neighbors

We've heard:

- Induced seismicity (earthquakes) is major concern
- Noise and traffic can be problematic
- Protection of air and water quality is critical





# Impacts on Region

We've heard:

- Projects are never evaluated in isolation.  
What is the entire impact on the region?  
Do the positives outweigh the negatives?
- Local economy and good paying skilled jobs are important.  
To what extent can local people be trained to get them?  
What are realistic tax benefits?
- Protection of air and water quality is critical.  
Water needs should be addressed early and will be difficult.



# Community Concerns

We've heard:

- Use of hydraulic fracturing (fracking) would be met with deep skepticism and concern
- No recent new geothermal in the region, so not a lot of community expertise  
– need more education



# Community Aspirations

We've heard:

- Any new geothermal project should be paired with other kinds of local energy projects – not in isolation
- Local people should have access to 100% renewable power 24/7
- Eliminating reliance on distant natural gas power plants is a priority
- Energy costs are already too high / need alternatives to high-cost solutions

## Next Steps



## Next Steps

- SCP will be accepting written comments sent to [geozone@sonomacleanpower.org](mailto:geozone@sonomacleanpower.org). Messages sent by October 2, 2023 will be included in the minutes for this workshop.
- A meeting summary including a participant list, meeting minutes, and comments received during and after the workshop will be posted on the GeoZone webpage ([sonomacleanpower.org/geozone](http://sonomacleanpower.org/geozone)) by October 16, 2023.
- Stakeholders are encouraged to attend SCP's monthly Community Advisory Committee meetings to hear project updates and provide project feedback.