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Welcome!

Mindful Decommissioning Workshop

A Data-Driven Tool for Strategic and Equitable Decommissioning of Gas Assets for the California Energy Commission

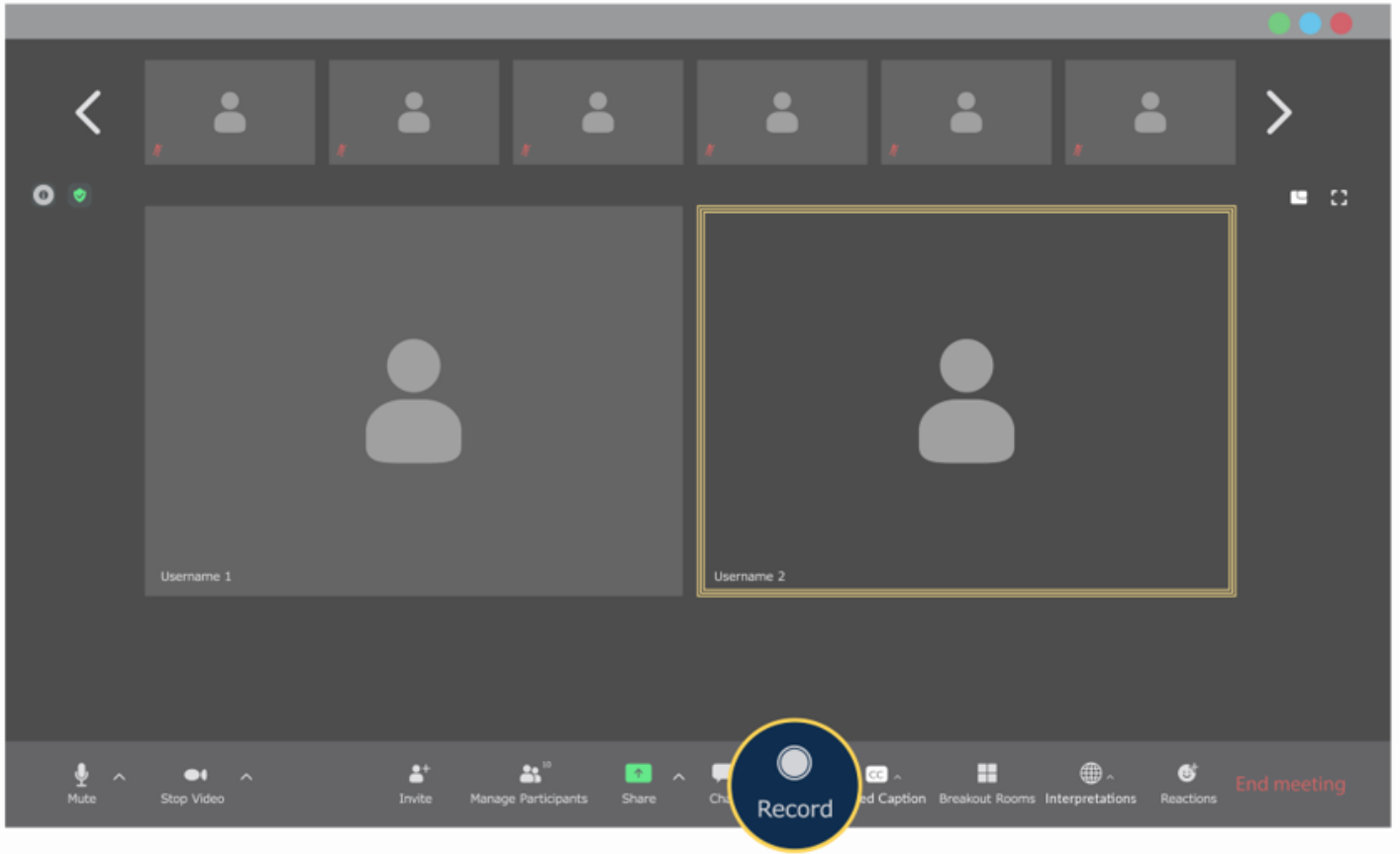
Mindful Decommissioning

30 October 2023

INTRODUCTION

Meeting Recording

The meeting will automatically be recorded and our team will turn it on.



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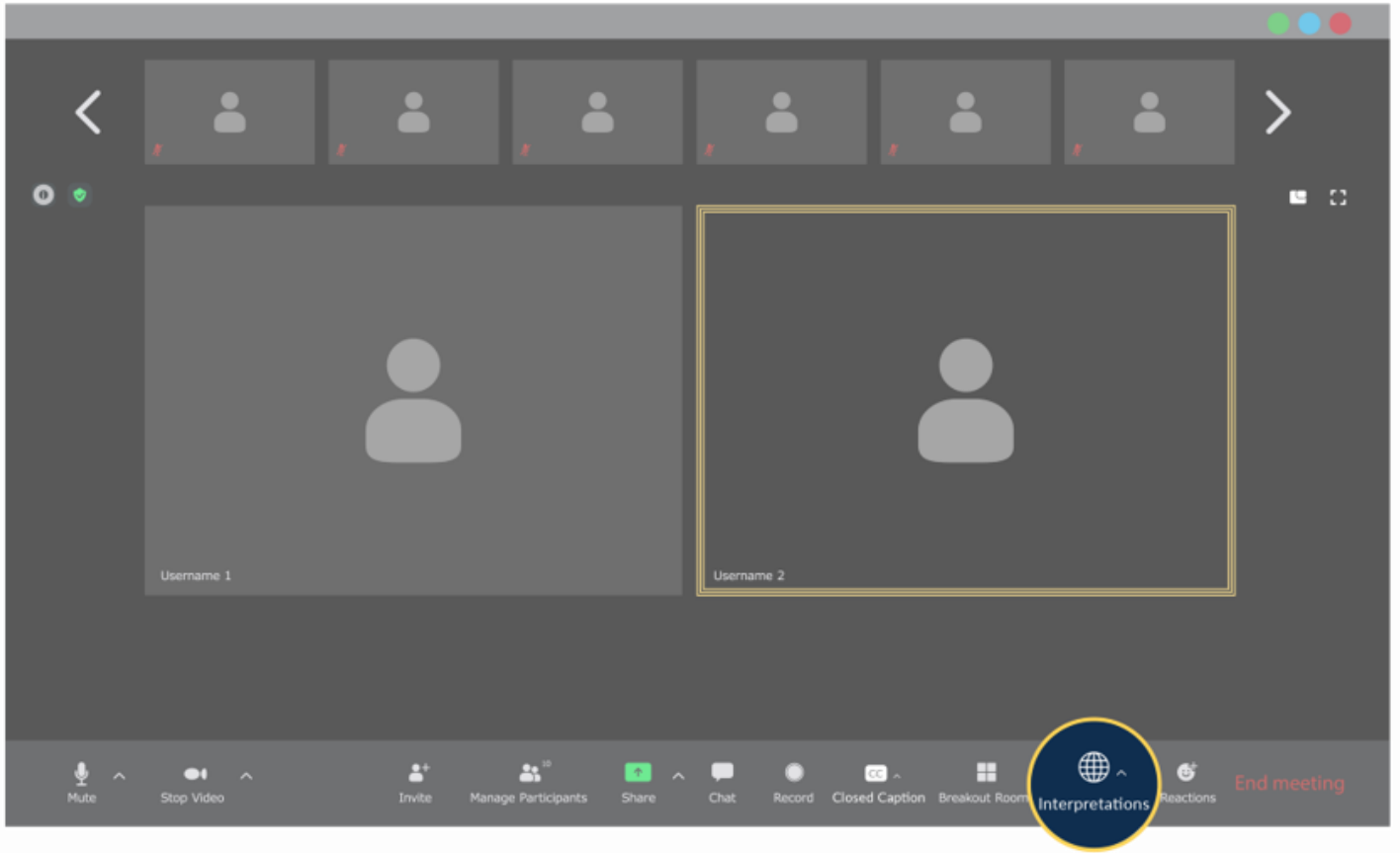
Interpretation Assistance

Interpretation is available in Spanish.



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Closed Captioning

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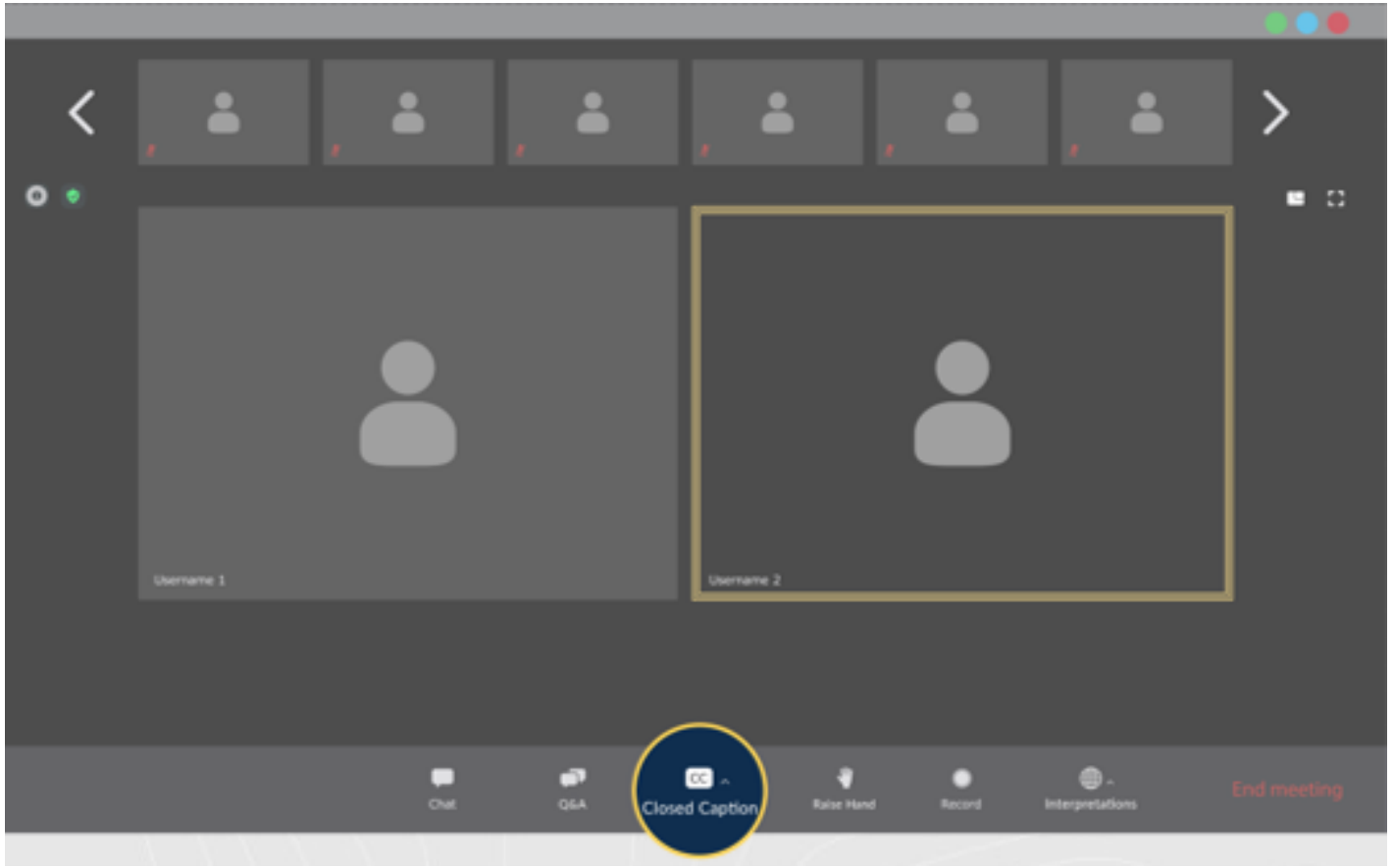

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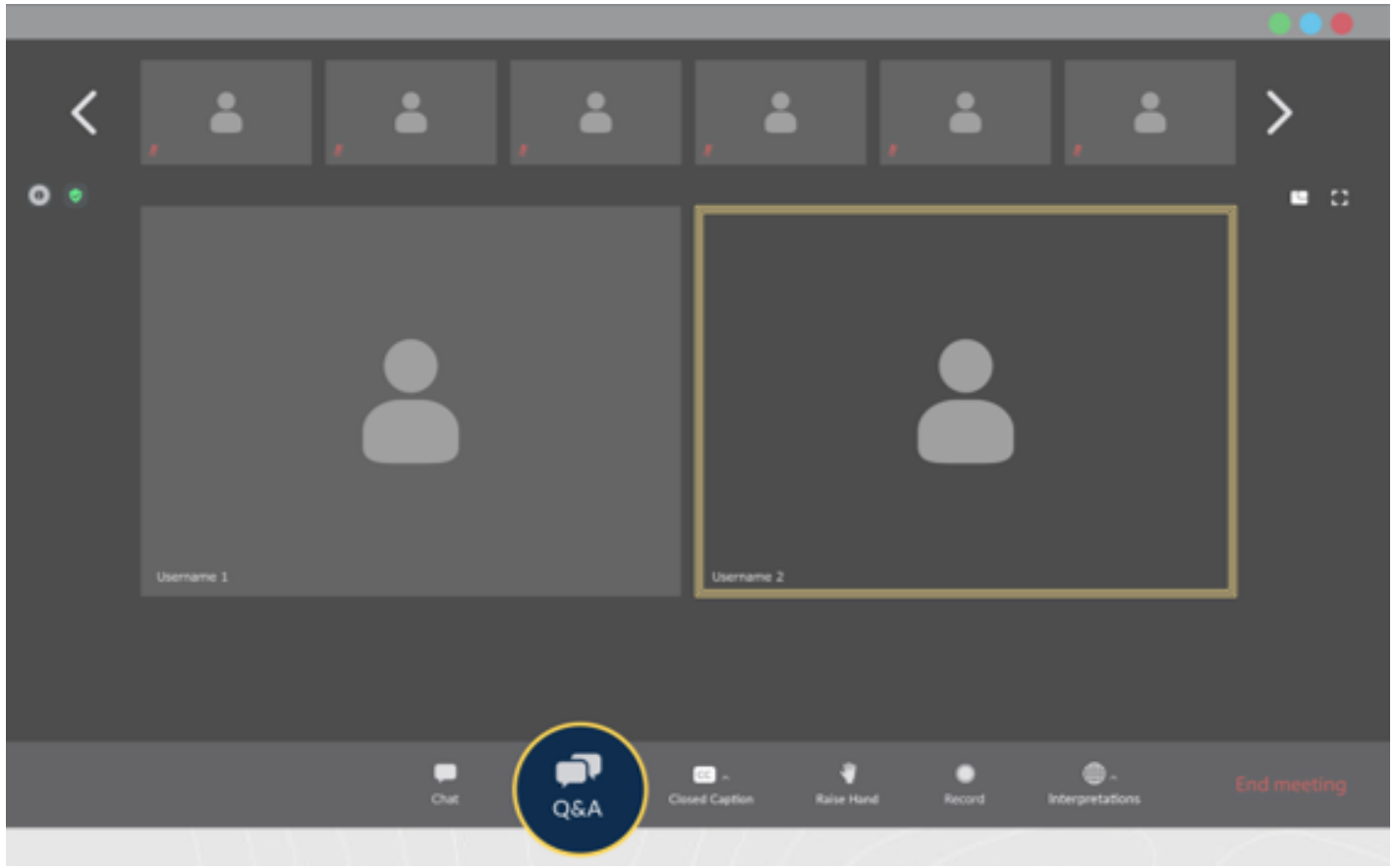
How to Participate

You can ask a question using the Q&A function on your Zoom taskbar.

Dial-in users, please raise your hand by dialing *9.

Questions will be answered during a dedicated Q&A section following today's presentations



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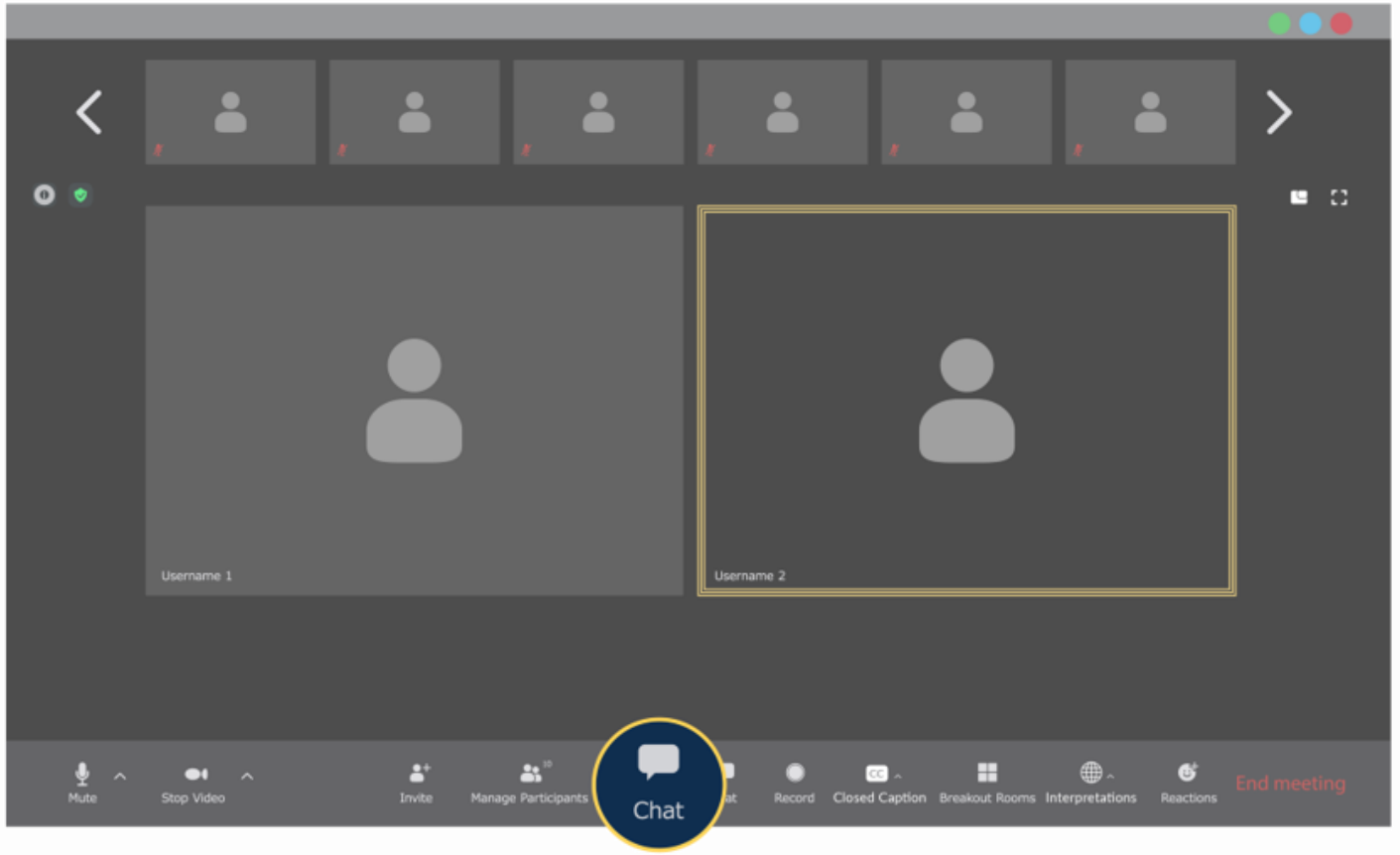
How to Participate

We will share relevant links through the "chat" feature.

Please use the chat only for requests for technical assistance.



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Land Acknowledgement

Val Lopez
Chair, Ohlone-Costanoan Tribal Affiliation and Amah Mutsun Land Trust

Mindful Decommissioning

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Workshop Objectives

- Hear introduction to project scope, objectives, and expected outcomes.
- Learn about gas decommissioning and potential impacts on local communities.
- Provide input to inform metrics being considered for identifying priority locations for equitable, safe, intentional and cost-effective gas decommissioning.
- Discuss gas decommissioning in different contexts and provide feedback.

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Workshop Agenda

1. Agenda Review, Land Acknowledgement and Opening Remarks
2. Gas Decommissioning: What Does It Mean to Communities?
3. Overview of the CEC Mindful Decommissioning Project
   - Question & Answer
4. Small Group Discussion Activity
   - Breakout 1: Informational Session on Gas Decommissioning
   - Breakout 2: Community Impacts and Equity Metrics
   - Breakout 3: Developing a Data-Driven Tool
5. Meeting Recap and Next Steps

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Introductions:
Project Team & Speakers

Mindful Decommissioning

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Poll: Who is in the Room?

Please respond to the Zoom Poll on your screen

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INTRODUCTION

Community Agreements

- Please be respectful.
- Please be courteous and allow everyone a chance to share.
- Together, we know a lot.
- Lessons leave, stories stay.

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Opening Remarks

Dr. Martine Schmidt-Poolman
California Energy Commission

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Gas Decommissioning: What does it mean to communities?

Dr. Christopher Taylor, DNV
Dr. Eric Fournier, UCLA, The California Center for Sustainable Communities

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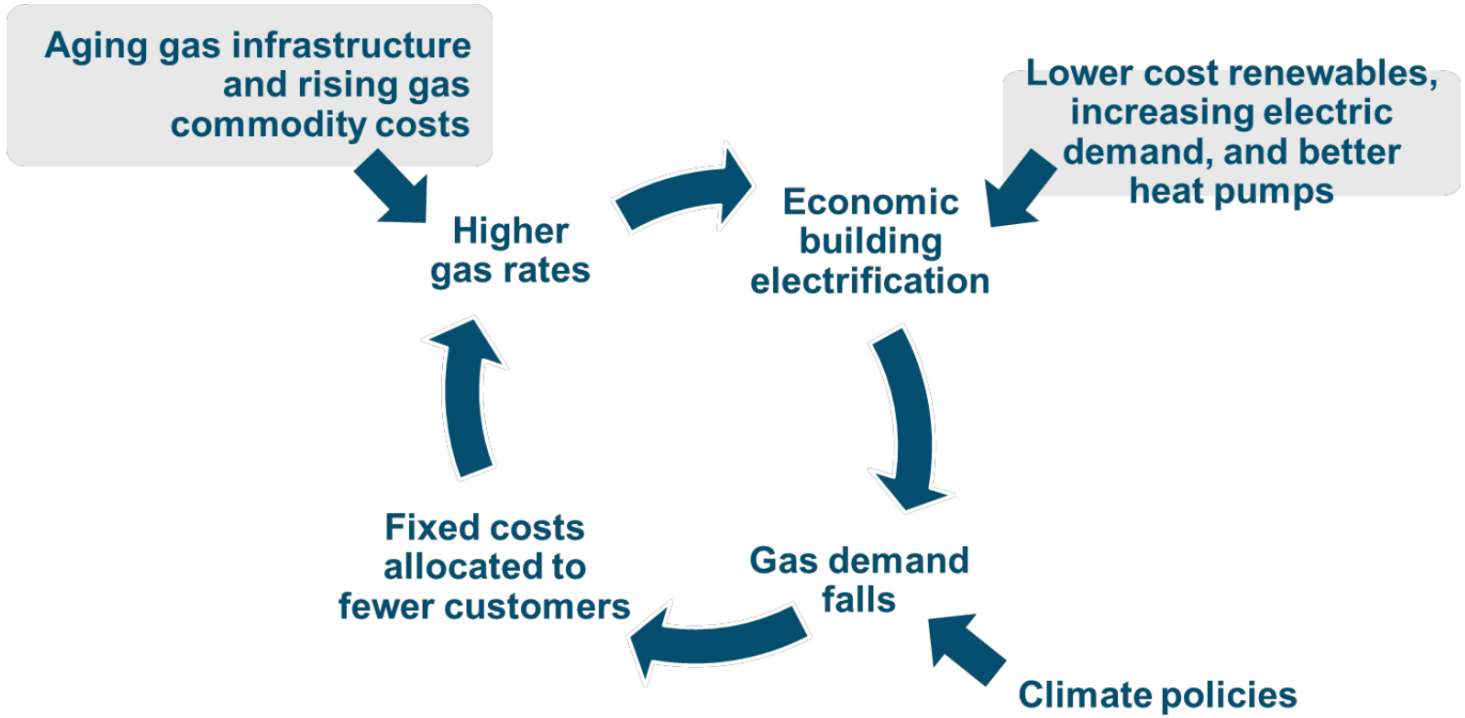
Gas Decommissioning Objectives

The goal of gas decommissioning to avoid a negative feedback loop that could result in runaway gas service cost increases for a shrinking base of customers.

State climate policies and the increasingly favorable economics building electrification could combine to dramatically reduce tl volume of gas sold in the future.



Source: E3

The purpose of targeted gas decommissioning projects would therefore be to incrementally reduce the amount of gas distribution infrastructure that must be maintained if and when this happens.

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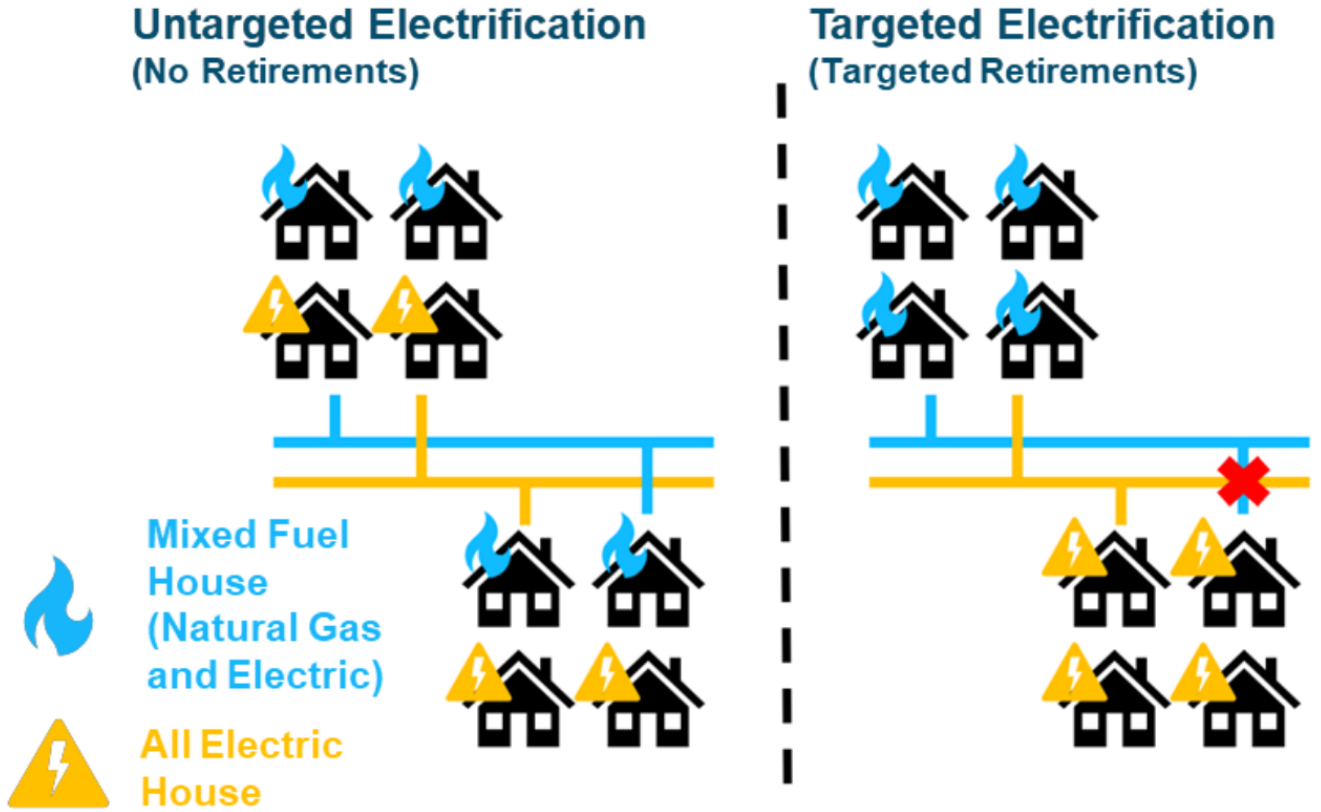
The Relationship Between Gas Decommissioning & Electrification

Gas decommissioning involves eliminating the possibility of gas servi within a particular location – by eithe disconnecting or physically removing the distribution infrastructure that wa previously in use.

Electrification represents one potenti approach to providing the same energ services that gas was previously used for. However, there are also other options that may make more or less sense depending upon the context.



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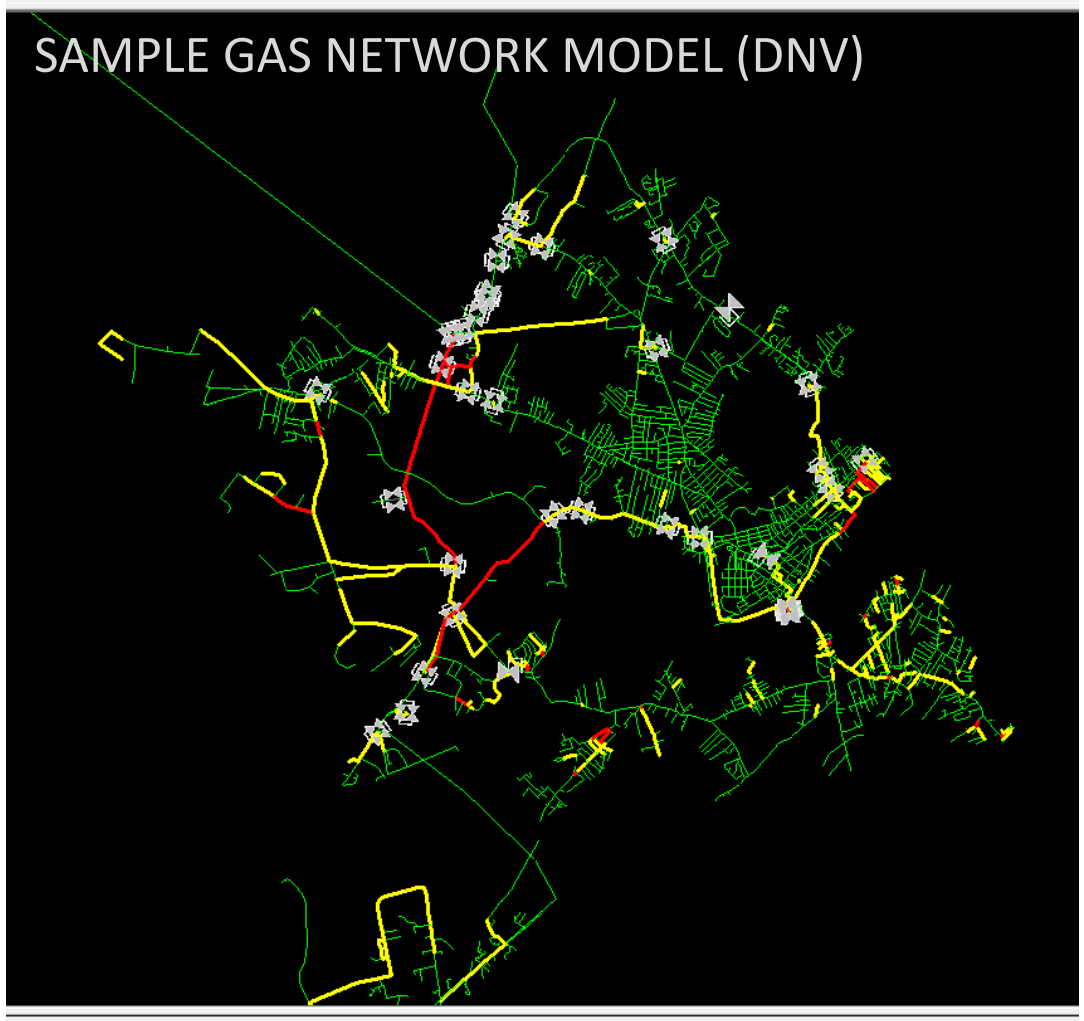
Gas Networks are Complex and Interdependent



- The underlying structure of the gas network will have a strong impact on how decommissioning should be performed
  - Meet critical gas needs of customers still on the system
  - Presence of pressure control devices (regulators)
  - Age and material of construction
  - Interconnectivity
  - Net miles of pipeline supported by rate-paying customers
  - Critical gas infrastructure
  - Pipeline repair program schedules
  - Pipeline threats

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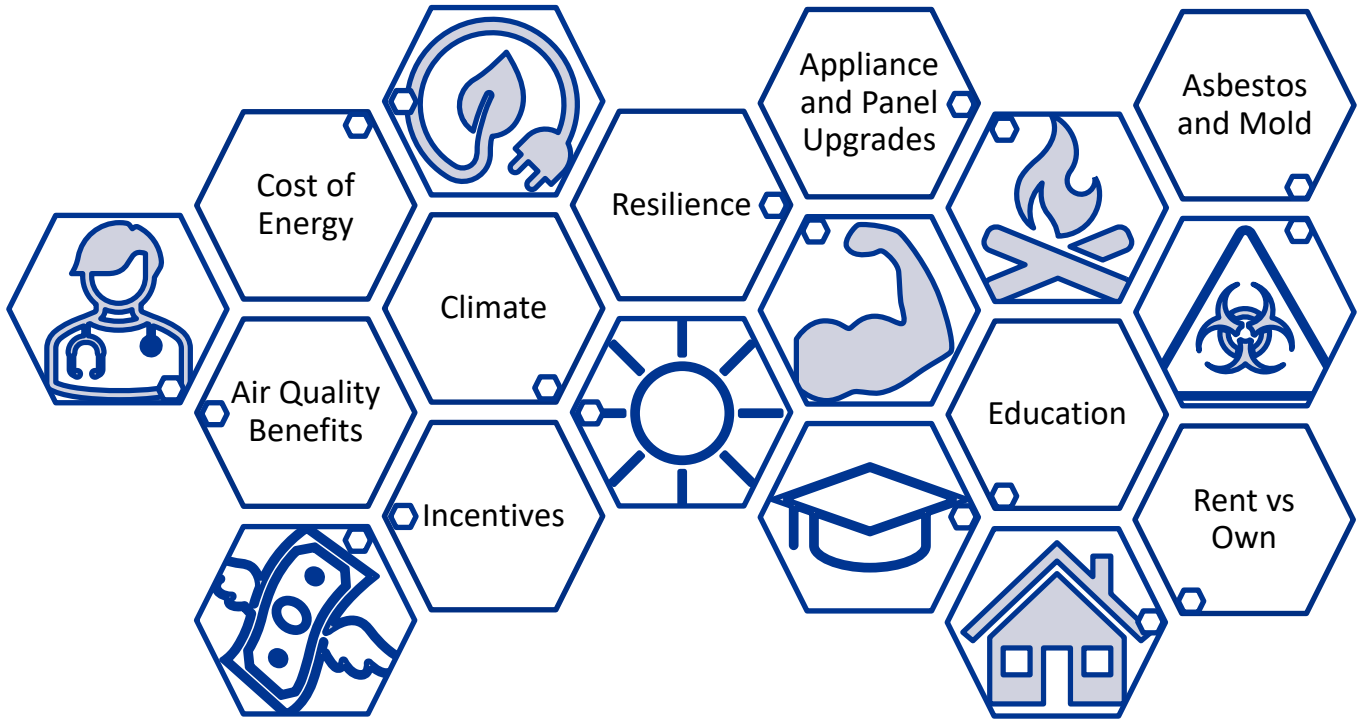
Exploring Impacts



Just a few examples – we are here to brainstorm and to learn

- Gas Decommissioning may have far-reaching effects
- Day-to-day changes
  - Use of appliances
- Monthly changes
  - Utility bills
- Long-term effects
  - Health impacts
  - Economic impacts
  - Climate change
- Occasional or disruptive events
  - New appliances, upgrades
  - Pipeline safety events

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Mindful Decommissioning: Purpose and Strategy

- Purpose of these Workshops
  - Incorporate community voices regarding gas decommissioning
  - Collectively work with communities in California to develop an understanding of the scale and relative importance of different impacts of decommissioning (good, bad, or otherwise)
  - Identify the right metrics to be used to inform future research and decision-making regarding gas decommissioning
- Strategy
  - Canvas from a wide set of metrics used to represent energy equity and environmental justice
  - Workshops to begin this conversation with community representatives and fine-tune these metrics or develop new ones
  - Capture those in a decision-making tool alongside engineering assessments and energy resilience metrics
  - Present, document, and refine

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Overview: Mindful Decommissioning Project

Dr. Christopher Taylor, DNV

Mindful Decommissioning

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Why the Mindful Decommissioning Project?

Decarbonization of Energy by 2045 requires strategic decommissioning of gas infrastructure

Gas transmission and distribution extends to >11M meters and 100k miles

Decommissioning must be:

- Safe
- Intentional
- Environmentally just
- Cost effective

To achieve these goals decision makers face challenges such as:

- Interconnection of gas with other energy systems
- The data needed to help understand the problem is spread across different owners and sources
- Need to talk to a lot of people and experts
- Bringing all the variables together

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Technical Activities for Mindful Decommissioning

Identify the key variables

Collect data from public sources and requests to gas companies

Create an exploratory process for CEC researchers using geospatial metrics

Keep track of what we don't know, or don't yet know how to measure

Research efforts to span three categories of:

Gas assets

Decommissioning readiness

Community impacts

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How Mindful Decommissioning can help

Prioritize and prepare for future decarbonization activities by highlighting how different areas in the state may differently be affected by decommissioning (both the benefits but also possible problems)

Conducting workshops with communities to shape the selection of metrics used in the tool

Identify most economical and impactful segments of gas assets to decommission based on operating vs. decommissioning cost, GHG reductions and community benefits

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Goals for the Data-Driven tool

Data-driven tool will help make state-wide assessments

Accommodate data sets from any sources and at different levels of resolution (census tract, region, or gas network models)

Plan for the tool to be updatable given new or updated data

Different Dimensions of Gas Decommissioning

- Gas Assets (Pipelines)
- Energy Infrastructure Effects
- Community Impacts

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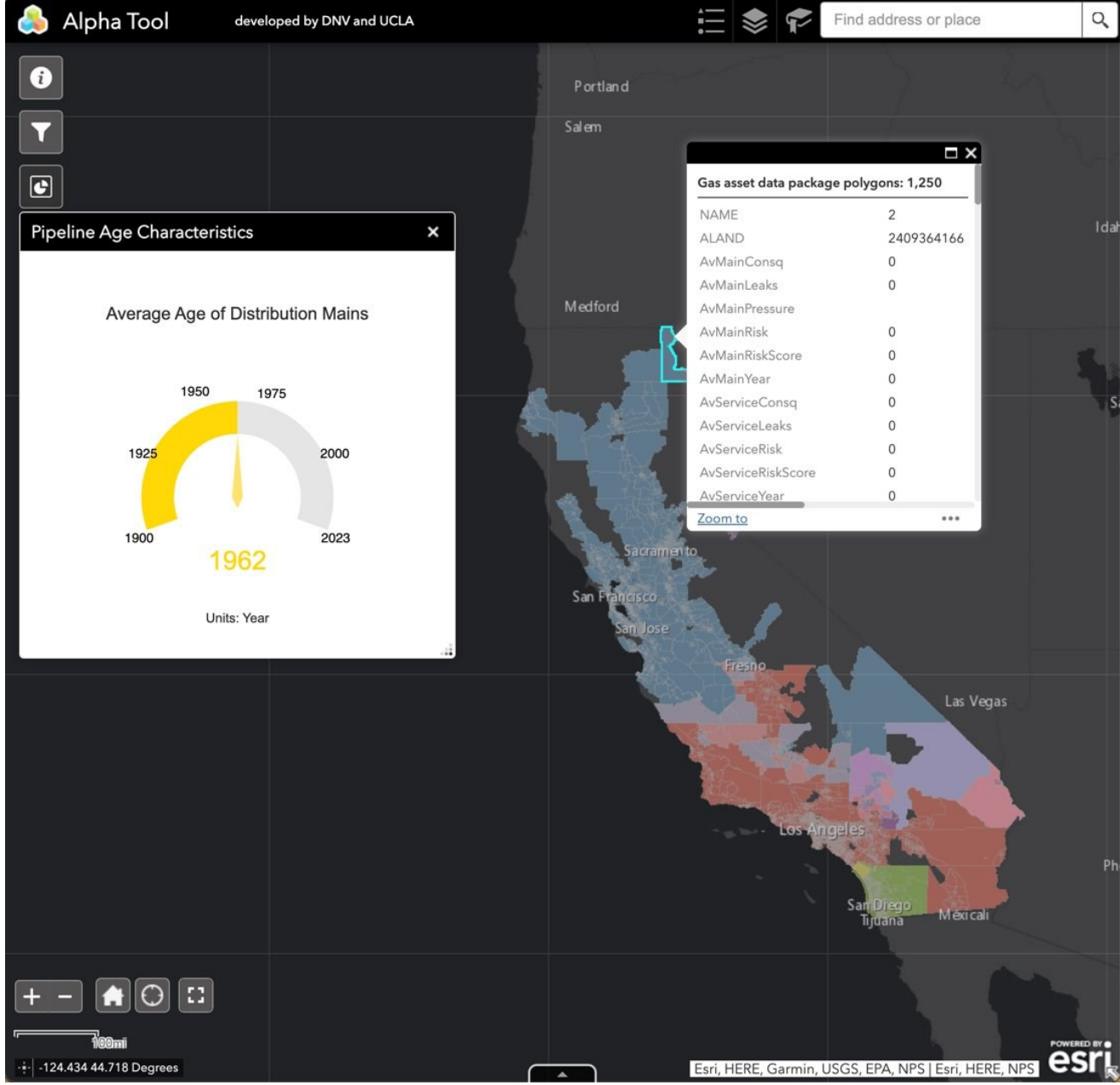
Turning Data Sets into Maps

- Each factor impacting decommissioning creates its own map
- Mindful Decommissioning team is using public data sets, data sets provided by utilities to CPUC, and pipeline models to create ‘map layers’
- Goal of this workshop series is to identify the right kind of mapping layers that represent the needs and desires of communities when it comes to gas decommissioning



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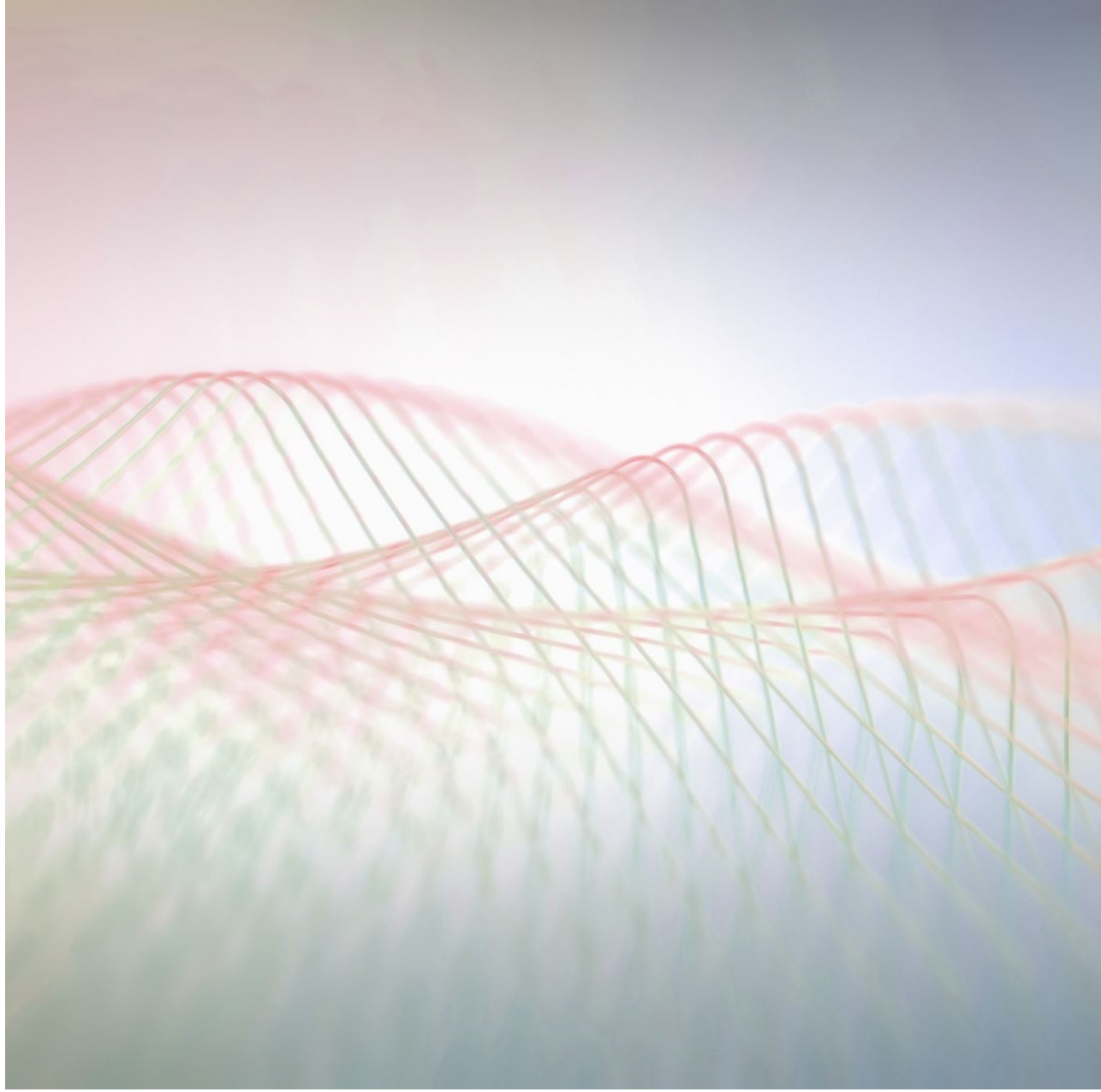
Tool Users

- Primarily for California Energy Commission researchers to plan future research projects and/or pilots for gas decommissioning
- Actual gas decommissioning will require detailed studies and engagement with community areas
- Data-driven tool is for high-level strategy and planning by the state
- Public reports will include some of the mapping layers and methods used to come up with those layers



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Question & Answer

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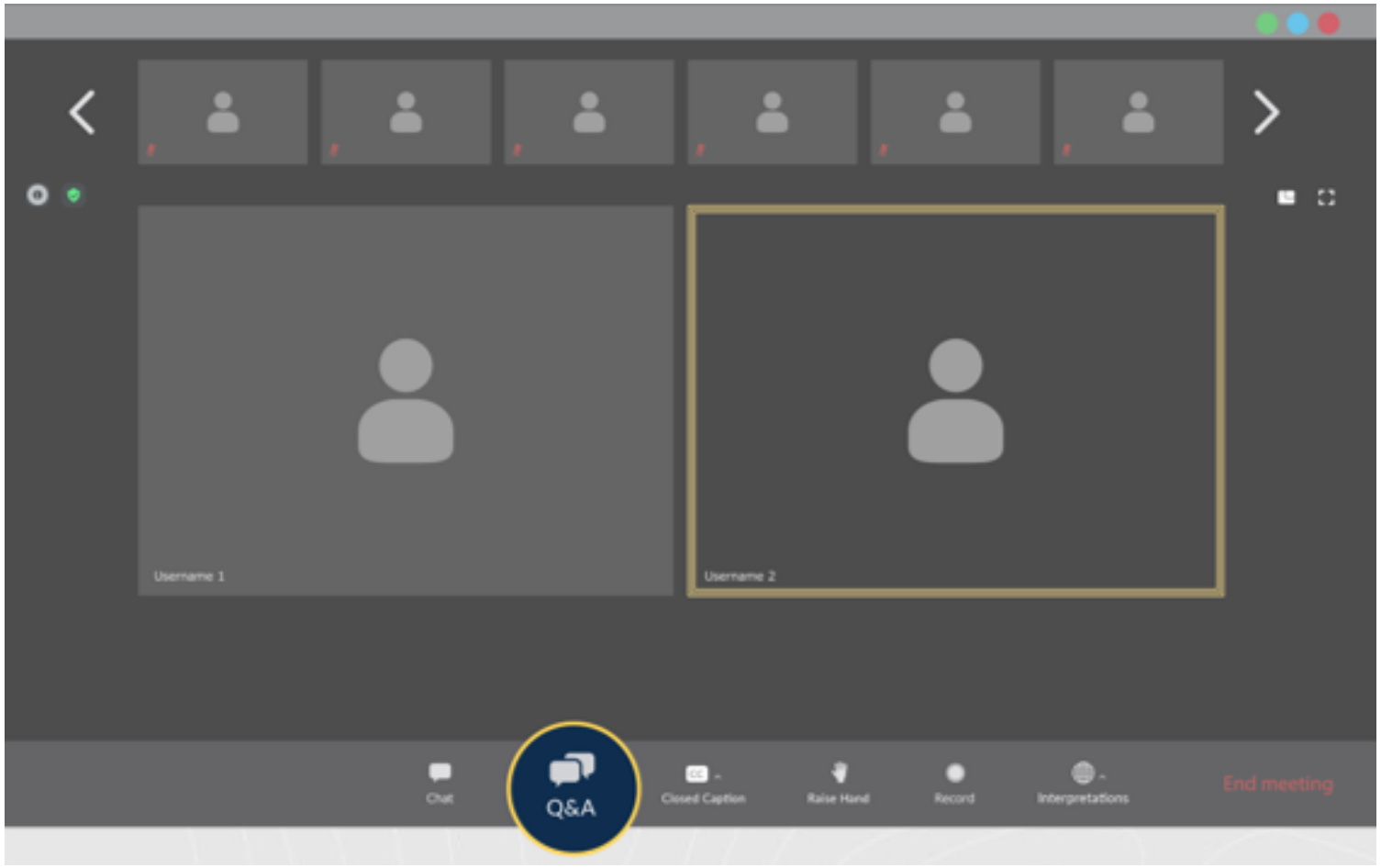

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MINDFUL DECOMMISSIONING

Breakout Groups: Topics, Discussion and Feedback

Breakout Room 1

Information Session on Gas Decommissioning

Attendees will meet with the project team and understand what gas decommissioning is and how it could benefit and/or impact communities

Breakout Room 2

Community Impacts and Equity Metrics

Provide initial feedback on community impacts being considered for identifying priority locations for equitable, safe, intentional, and cost-effective gas decommissioning

Breakout Room 3

Developing a Data-Driven Tool

Attendees will meet with subject-matter experts to learn about and provide initial feedback on the data-driven tool

Breakout Room 4

Spanish: All Topics

Attendees will meet with the Spanish Facilitation Team to learn about all topics and provide initial feedback

BREAKOUT 1

Information Session on Gas Decommissioning

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Natural Gas = Fossil Gas = Methane Gas

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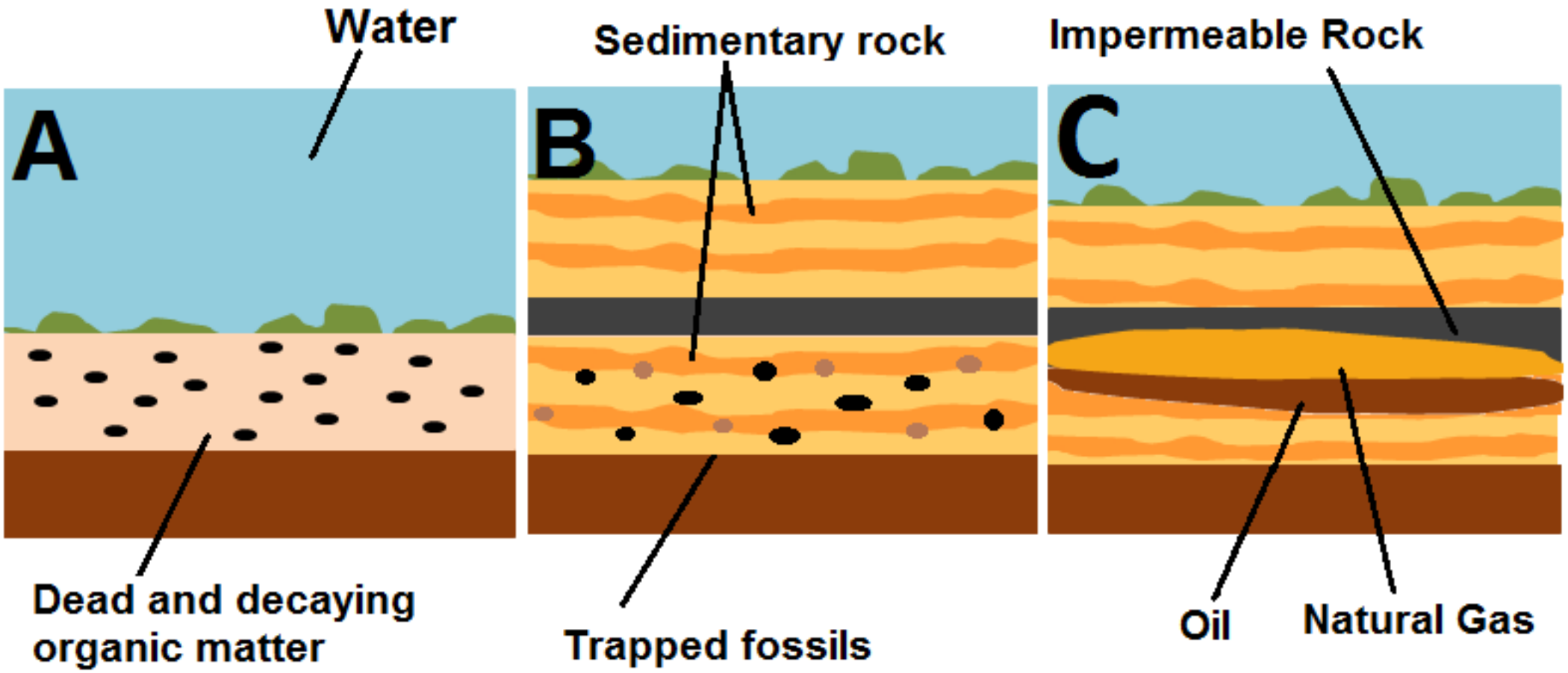

65–541 million years

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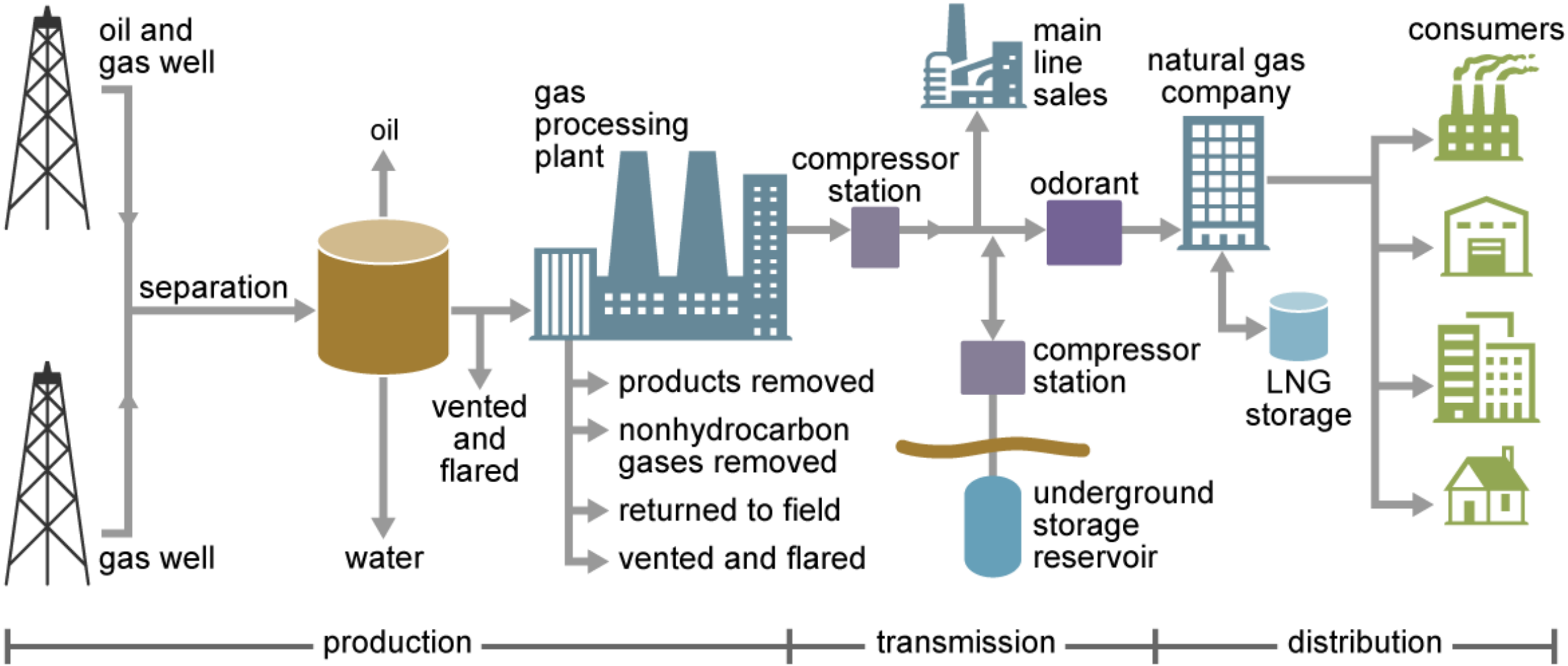
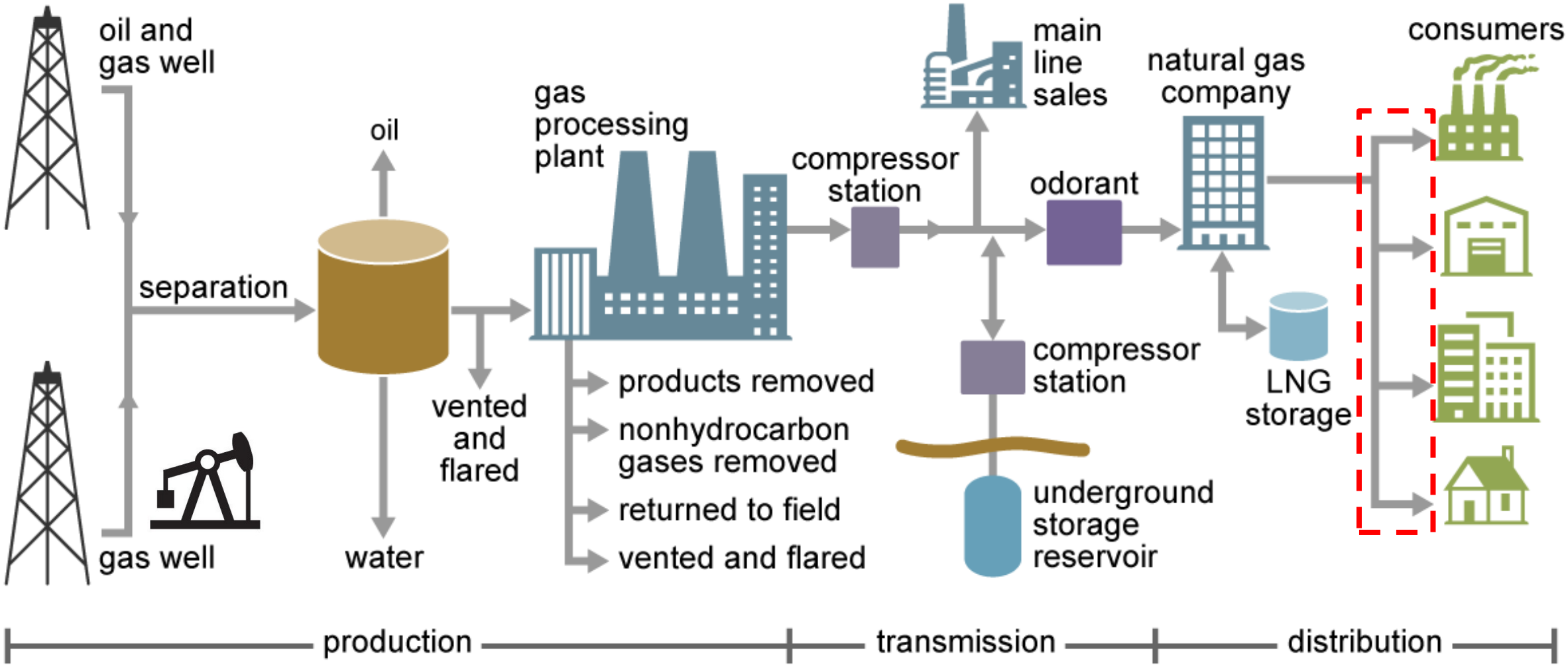
Natural gas production and delivery



Source: U.S. Energy Information Administration

Mindful Decommissioning Study



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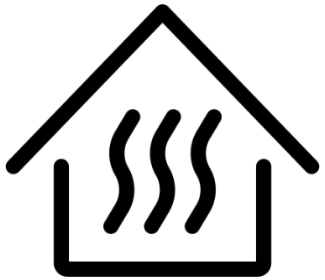
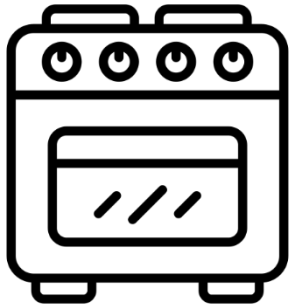
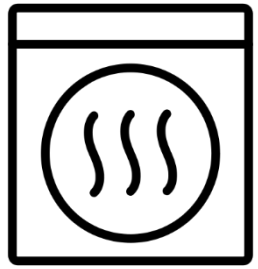


Heating/Cooling

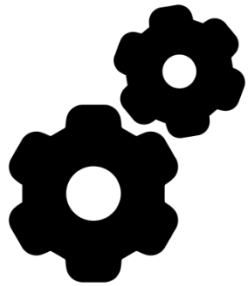


Cooking

Water Heating



Clothes Dryer



Commercial Processes

Natural Gas in Residential and Commercial Buildings

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Why is decommissioning happening?

We are using less gas and will continue to use even less.

Aging gas pipelines need to be replaced or decommissioned because there is a high risk of hazardous leaks.

Using natural gas has local and global health and environmental impacts. Natural gas appliances release methane, nitrogen oxides, carbon monoxide, carbon dioxide, particulate matter, and other pollutants.

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Decommissioning: Retirement of infrastructure

The CPUC has not determined whether the retired infrastructure must be removed or if it can be retired in place, or what procedures may be necessary to make that safe.

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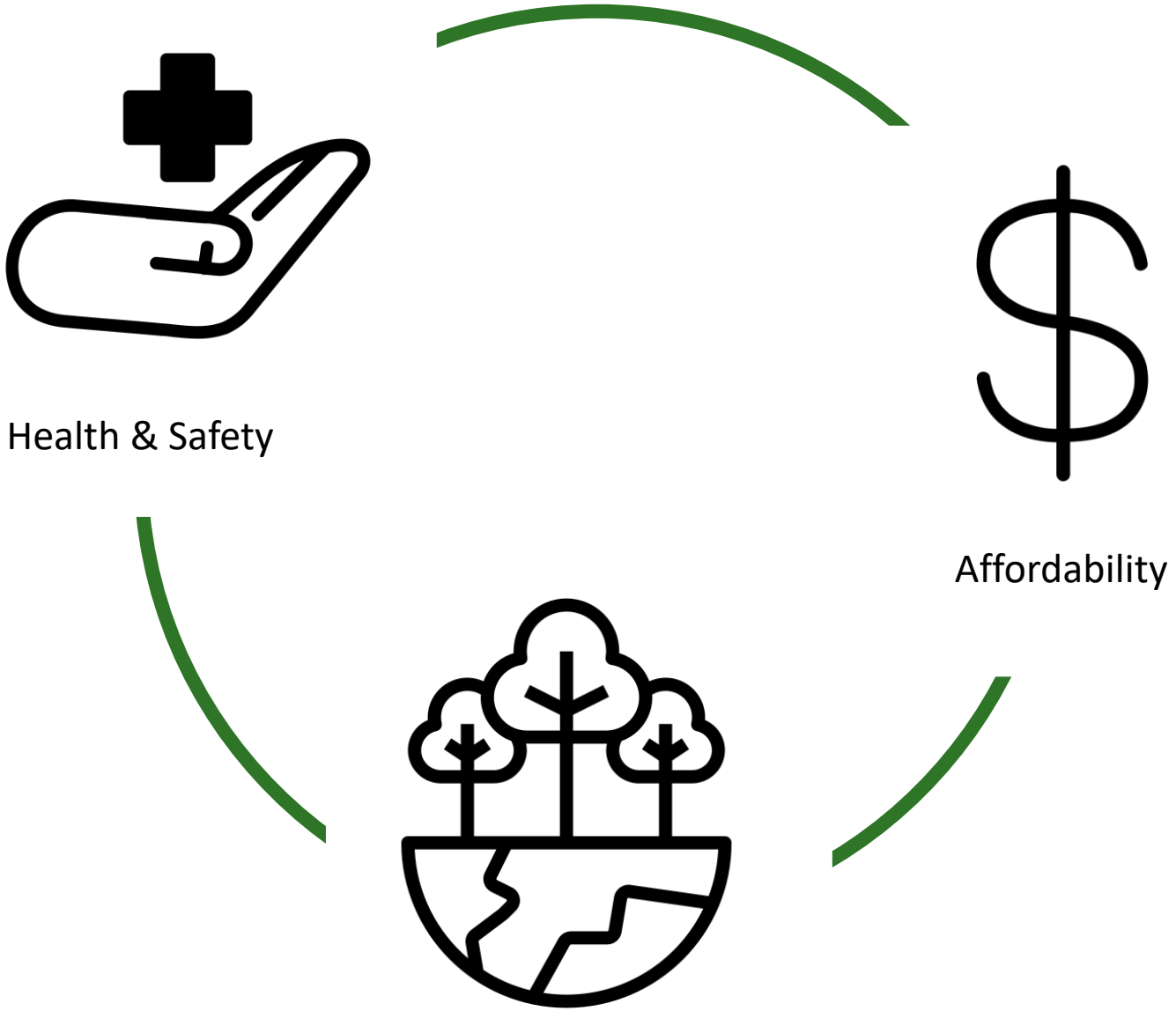

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How would you be affected if distribution pipelines near your home or work were decommissioned?

You could no longer use appliances that use natural gas.

→ Gas appliances must be replaced, and alternatives may require investments in your home's electricity infrastructure.

→ Replacement appliances would improve indoor and outdoor air quality.

→ Replacement appliances may have other trade-offs.

You would no longer receive or buy natural gas.

→ Your electricity bill might change since you will likely be using more electricity.

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How would you be affected if distribution pipelines were decommissioned but not where you work or live?

You could continue to use natural gas appliances.

Your natural gas bill might change.

→ Your natural gas bill uses rates regulated by the California Public Utility Commission. One component of this rate is the cost of natural gas delivery. You will be sharing the cost of maintaining natural gas infrastructure.

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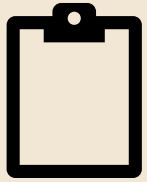
BREAKOUT 2

Community Impacts and Equity Metrics

1. Context: Equity Metrics Identification
2. Feedback Exercise: What are the barriers, impacts, and/or benefits of decommissioning for your community?
3. Behind-the-Scenes Look: Preliminary mapping of community impacts (equity indicators)
4. Feedback Exercise:
   - Rank community impacts
   - What other community impacts should we consider? (if time)
5. Q&A and Next Steps



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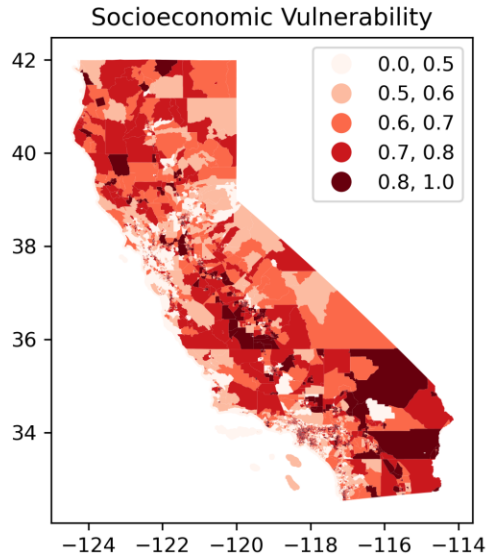
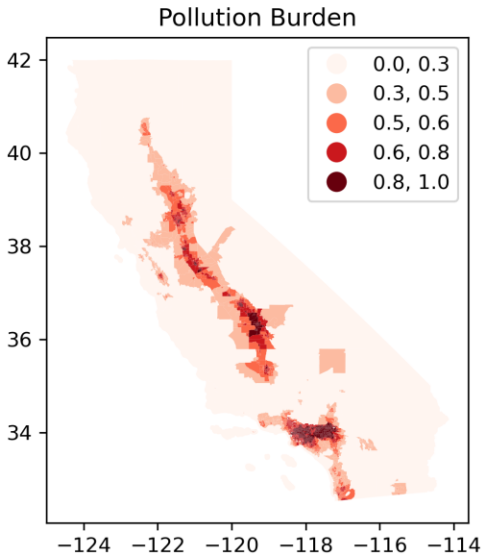
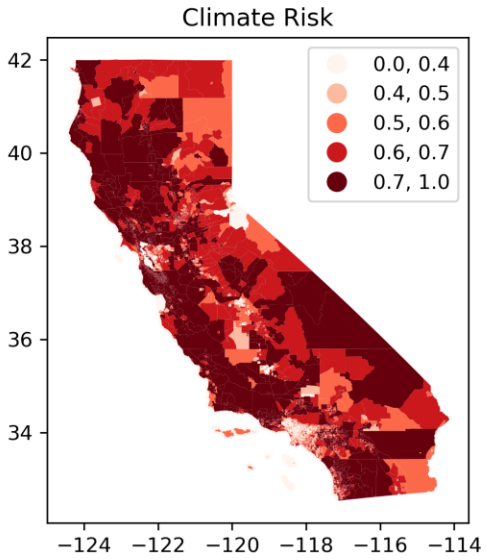
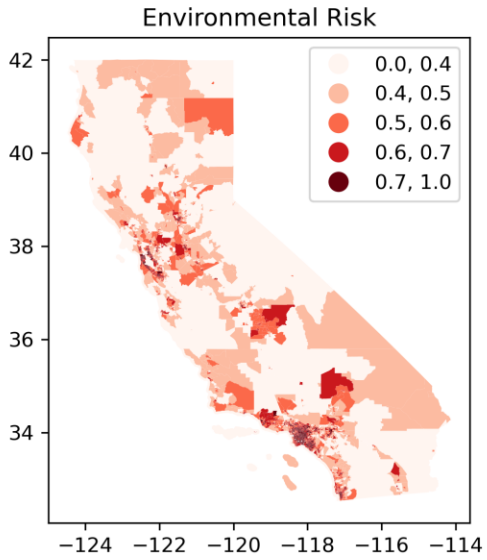
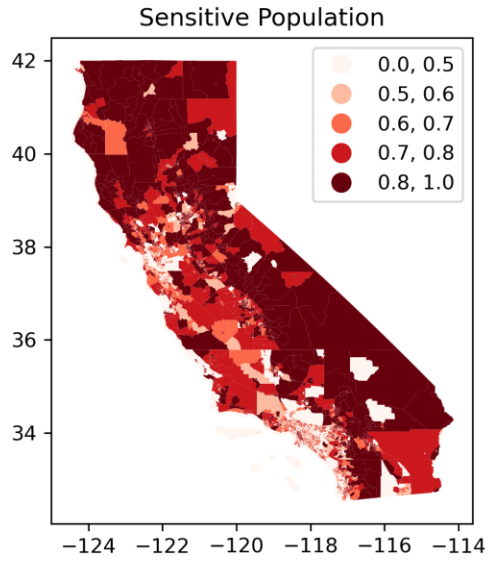
Mapping of Equity Indicators

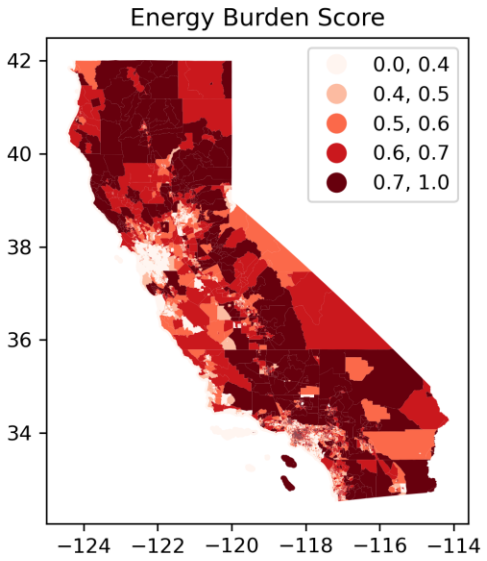


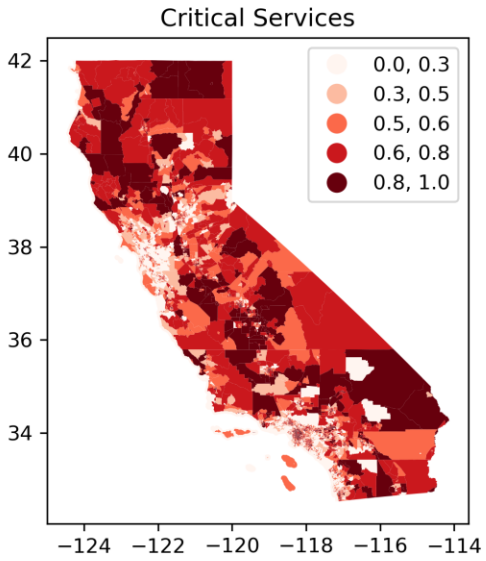












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BREAKOUT 3

Developing a Data-Driven Tool

- GIS Oriented Workflow
- GIS Multi-Criteria Decision Analysis (MCDA)
- Primary, Secondary, & Tertiary Layers
- Weights & Scoring

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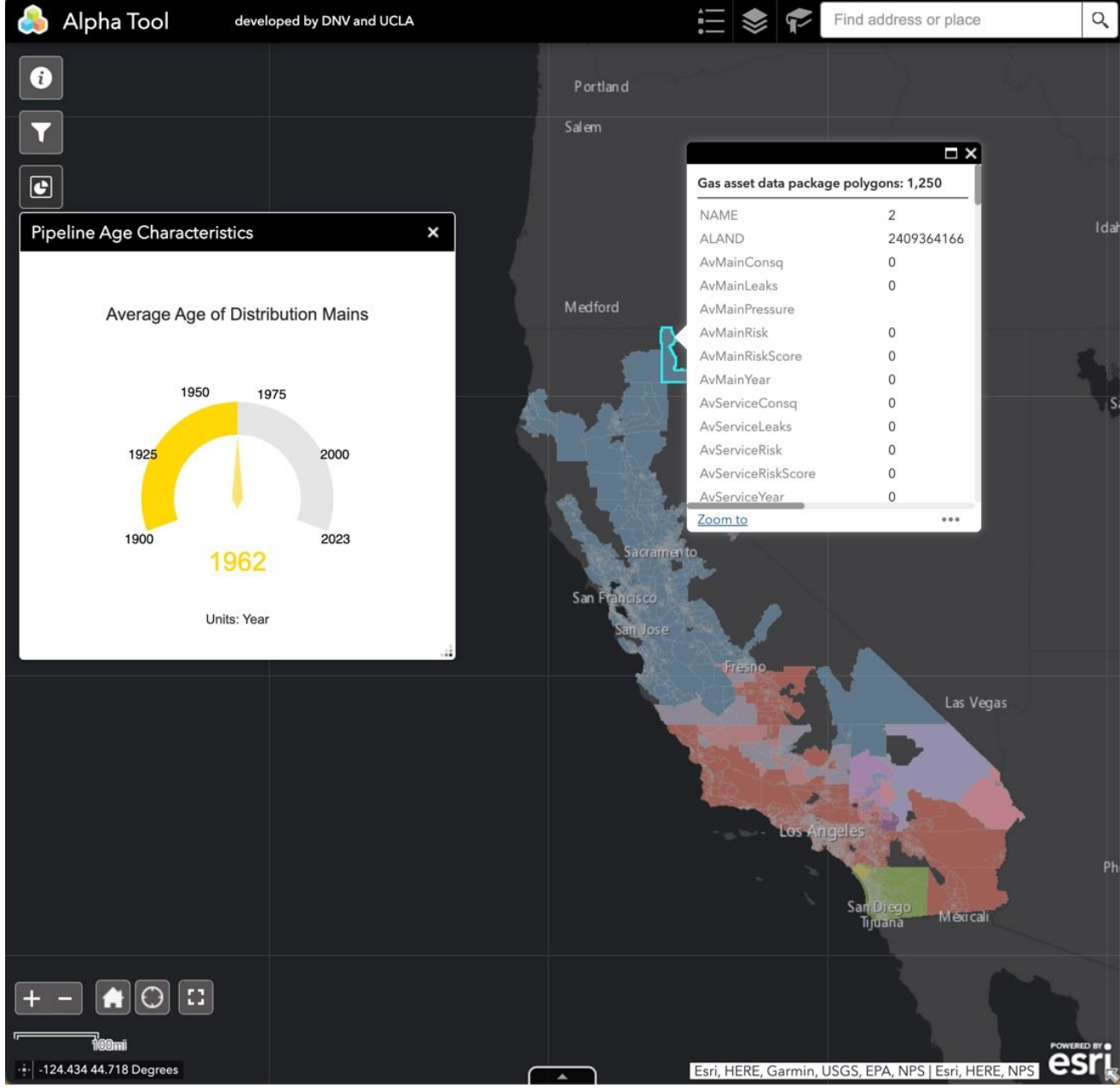
GIS Oriented Workflow

- Our vision for this tool is a "map first" interface that supports dynamic interactions with spatial data resources including
  - Composite attribute-based filtering
  - Responsive charts and infographics
  - User adjustable weights for prioritization criteria
- We are targeting ArcGIS Online (AGOL) as our development platform:
  - Excellent tooling for access control and collaboration support (DNV <-> UCLA <-> CEC)
  - Mature toolkits for developing high performance and feature rich web-map applications
  - Strong ecosystem of "real-time" hosted data assets for contextual enrichment



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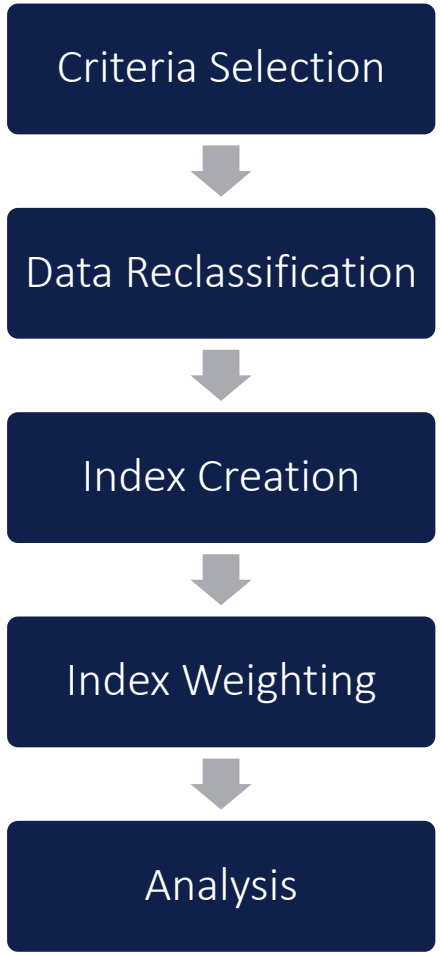
GIS Multi-Criteria Decision Analysis (MCDA)

- MCDA is an analytical framework that is used to combine different component criteria to inform a complex decision-making process.
- Geographic Information System (GIS) based MCDA processes simply involve criteria that are fundamentally spatial in nature.
- The MCDA process allow for the integration of disparate criteria that are measured in different units.
- It also provides a mechanism to evaluate different alternative outcomes, that are derived from the application of different weights to different component criteria/indices.



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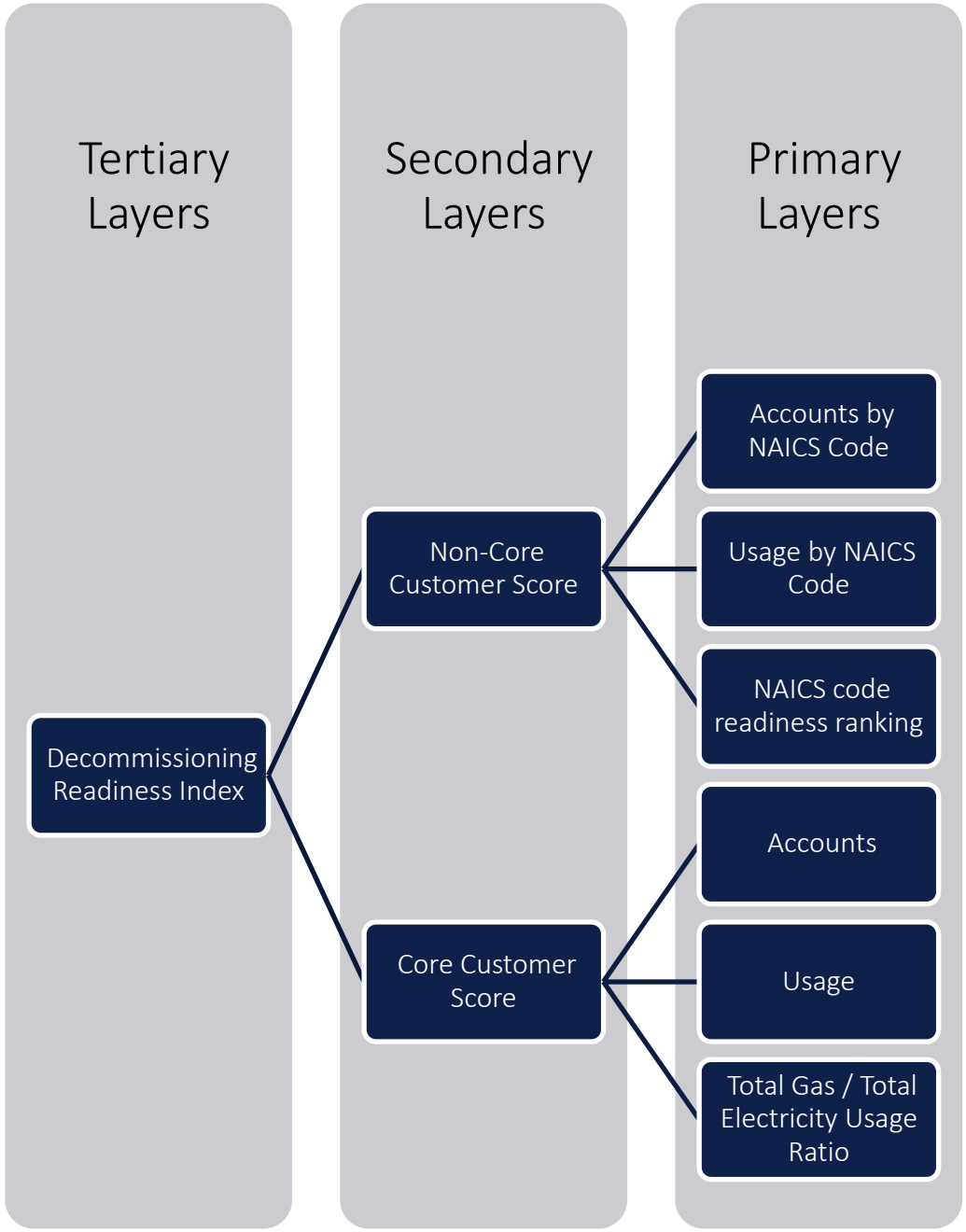
Primary, Secondary, and Tertiary Layers

- Within the GIS-MCDA framework, raw data layers are iteratively assembled and combined into a hierarchy of information.
- Primary layers are as close to "raw data" as possible. They provide the metrics for each discrete criteria that will enter into the prioritization decision.
- Secondary layers reflect the combination of related groups of primary layers. These are typically transformed into a numerical score that has a bounded range (i.e., 1-10 or 1-100).
- Tertiary layers are constructed through the combination of secondary layers.



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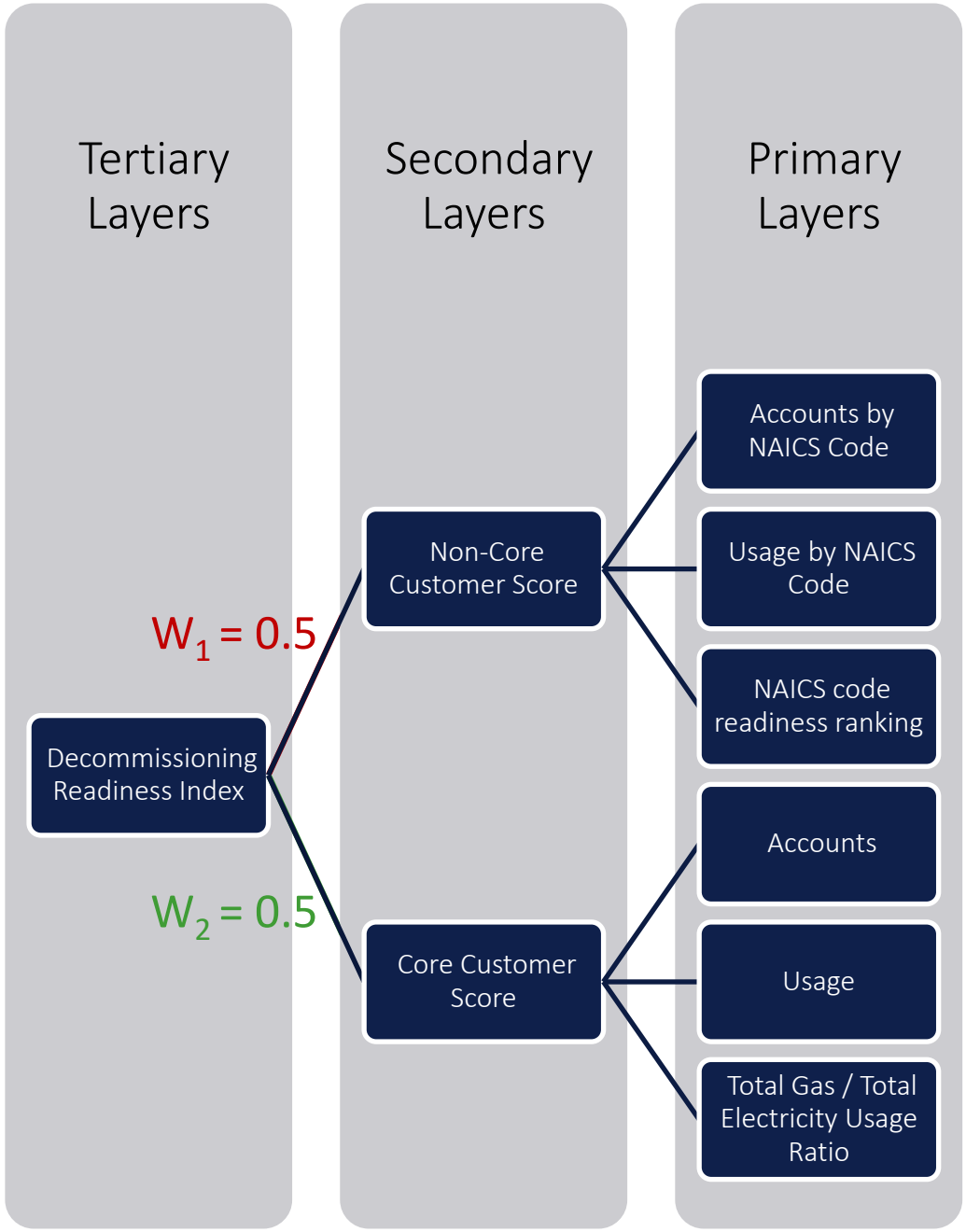
Weights & Scoring

- Weights can be applied at different stages of this process and must sum to one across all the inputs.
- The creation of tertiary layers involves assigning component weights to each secondary layer.
- Also, if a final "composite index" is desired – one which provides one number that represents the combination of all component criteria at once – weights will also have to be applied to each tertiary layer.
- One of our design objectives is to allow for some of these weights to be user adjustable. However, at which level this should be done, as to not be overwhelming for the user, is a matter of discussion.



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Poll: Prioritizing Gas Assets

Please take a moment to rank the following factors for decommissioning gas pipelines based on your perspective of their significance, with '1' being the most important and '5' being the least important.

We encourage you to also please assign only a single ranking to each factor.

- **Safety:** reducing the risks of pipeline related hazards (e.g. leaks) in surroundings and communities
- **Environment:** improving environmental quality (e.g. GHG emissions and air quality effects)
- **Costs:** optimize decommissioning strategy to have the least costs to rate-payers
- **Regulatory Compliance:** replacement of aging pipelines & materials
- **Demand:** strategize the decommissioning process based on current and future demand of gas supply

Thank you for your participation and valuable insights

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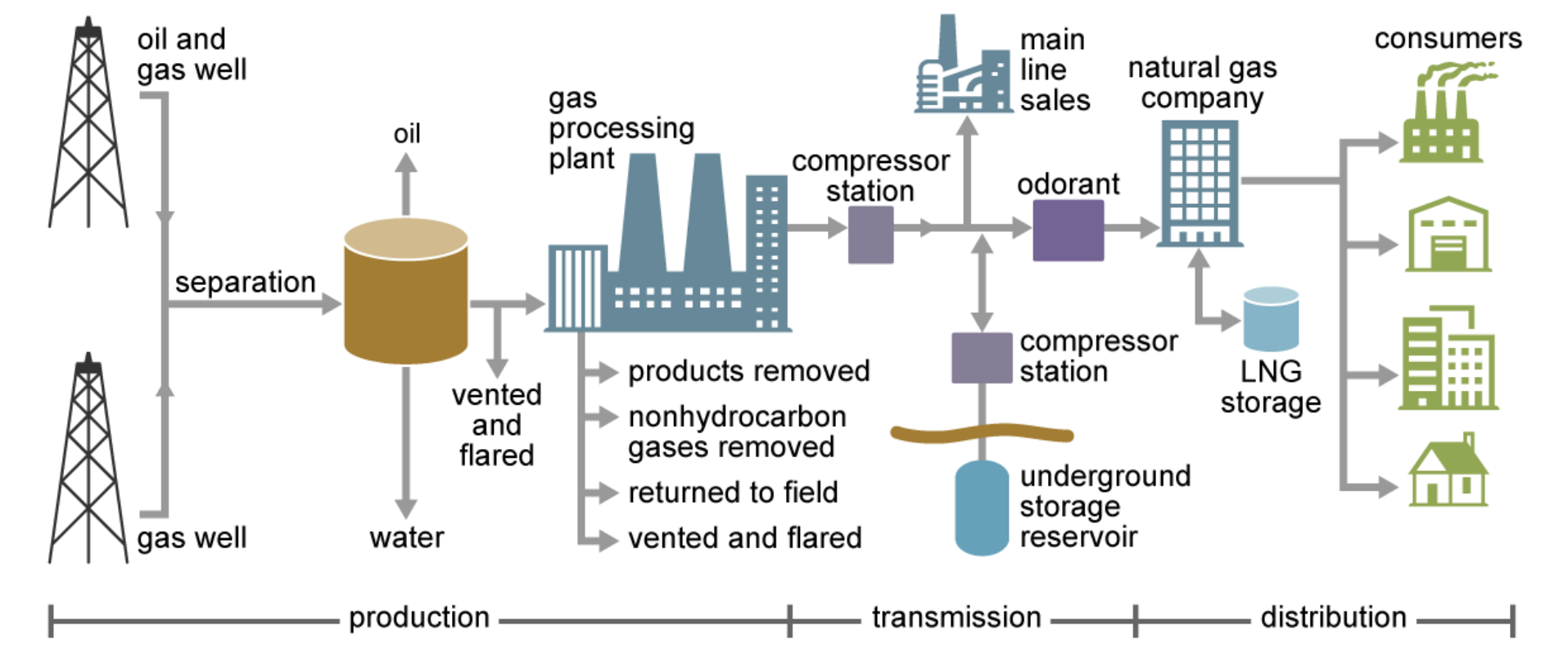
BREAKOUT 4

Spanish Breakout Room: All Topics

Mindful Decommissioning Study



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Why is decommissioning happening?

- We are using less gas and will continue to use even less.
- Some pipelines need to be replaced or decommissioned because they are old and have a high risk of hazardous leaks.
- Using natural gas has *local* health and environmental impacts.

How would you be affected if distribution pipelines near your home or work were decommissioned?

- You could no longer use appliances that use natural gas.
- New appliances might need to be purchased.
- New appliances may have trade-offs.
- Different appliances would likely be better for your health.
- You would no longer receive or buy natural gas.
- Your electricity bill might change since you will likely be using more electricity.

How would you be affected if distribution pipelines were decommissioned but not where you work or live?

- You could continue to use natural gas appliances.
- Your natural gas bill might change.
- Your natural gas bill uses rates regulated by the California Public Utility Commission. One component of this rate is the cost of natural gas delivery. You will be sharing the cost of maintaining natural gas infrastructure.

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BREAKOUT 1

Information Session on Gas Decommissioning

- What do you want to know more about to help you make informed suggestions for this project?
- What questions do you have?
- What community impacts stand out to you?

Affordability

Health & Safety

Environment

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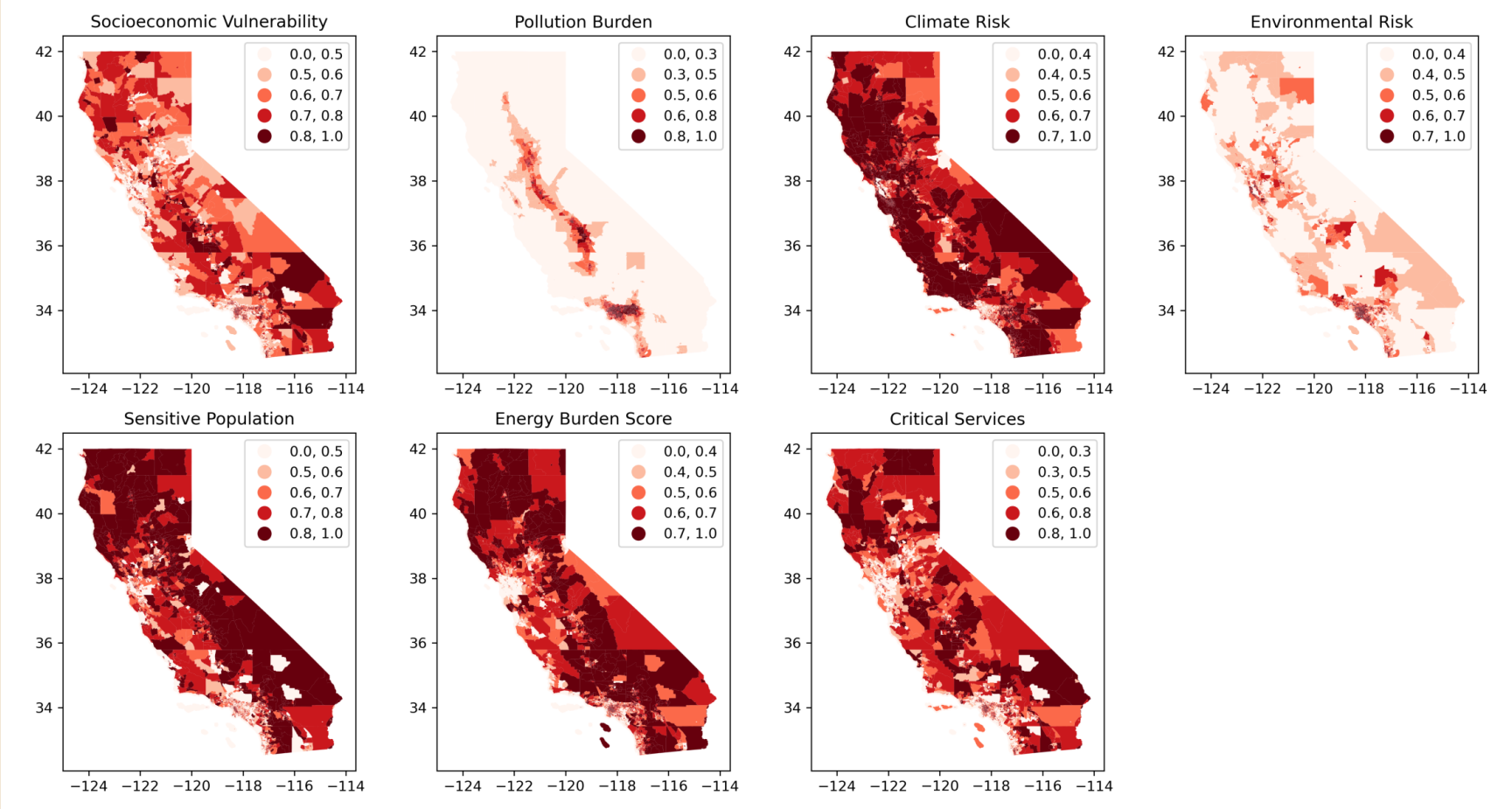
BREAKOUT 2

Community Impacts and Equity Metrics

- What are barriers to decommissioning for your community?
- What are impacts from decommissioning for your community?
- What are benefits to decommissioning for your community?
- What factors should the tool consider when assigning a "priority" designation?



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BREAKOUT 3

Developing a Data-Driven Tool

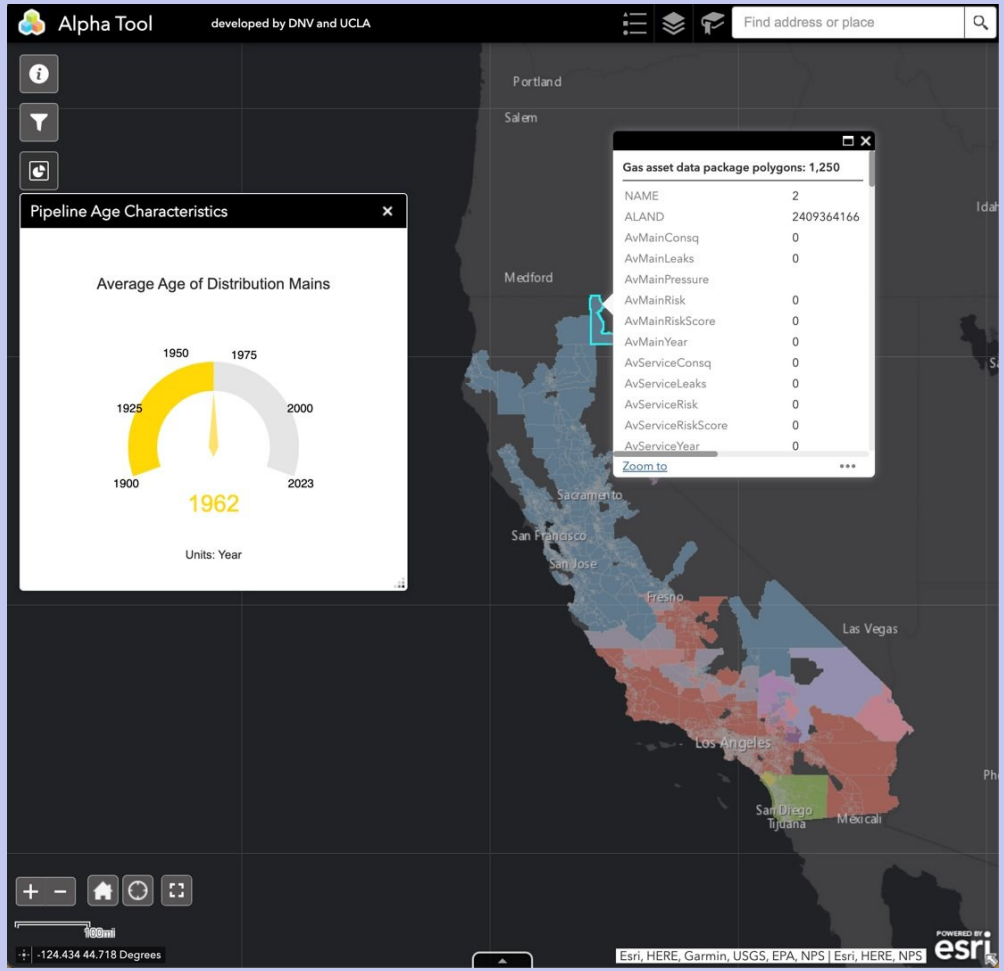
GIS Oriented Workflow

Our vision for this tool is a "map first" interface that supports dynamic interactions with spatial data resources including

- Composite attribute-based filtering
- Responsive charts and infographics
- User adjustable weights for prioritization criteria

We are targeting ArcGIS Online (AGOL) as our development platform:

- Excellent tooling for access control and collaboration support (DNV <-> UCLA <-> CEC)
- Mature toolkits for developing high performance and feature rich web-map applications
- Strong ecosystem of "real-time" hosted data assets for contextual enrichment



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BREAKOUT 3

Developing a Data-Driven Tool

Please take a moment to rank the following factors for decommissioning gas pipelines based on your perspective of their significance, with ‘1’ being the most important and ‘5’ being the least important.

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MINDFUL DECOMMISSIONING

Meeting Recap

Group Discussion Share-outs

- Group 1: Informational Session on Gas Decommissioning
- Group 2: Community Impacts and Equity Metrics
- Group 3: Developing a Data-Driven Tool
- Group 4: Spanish language of all topics

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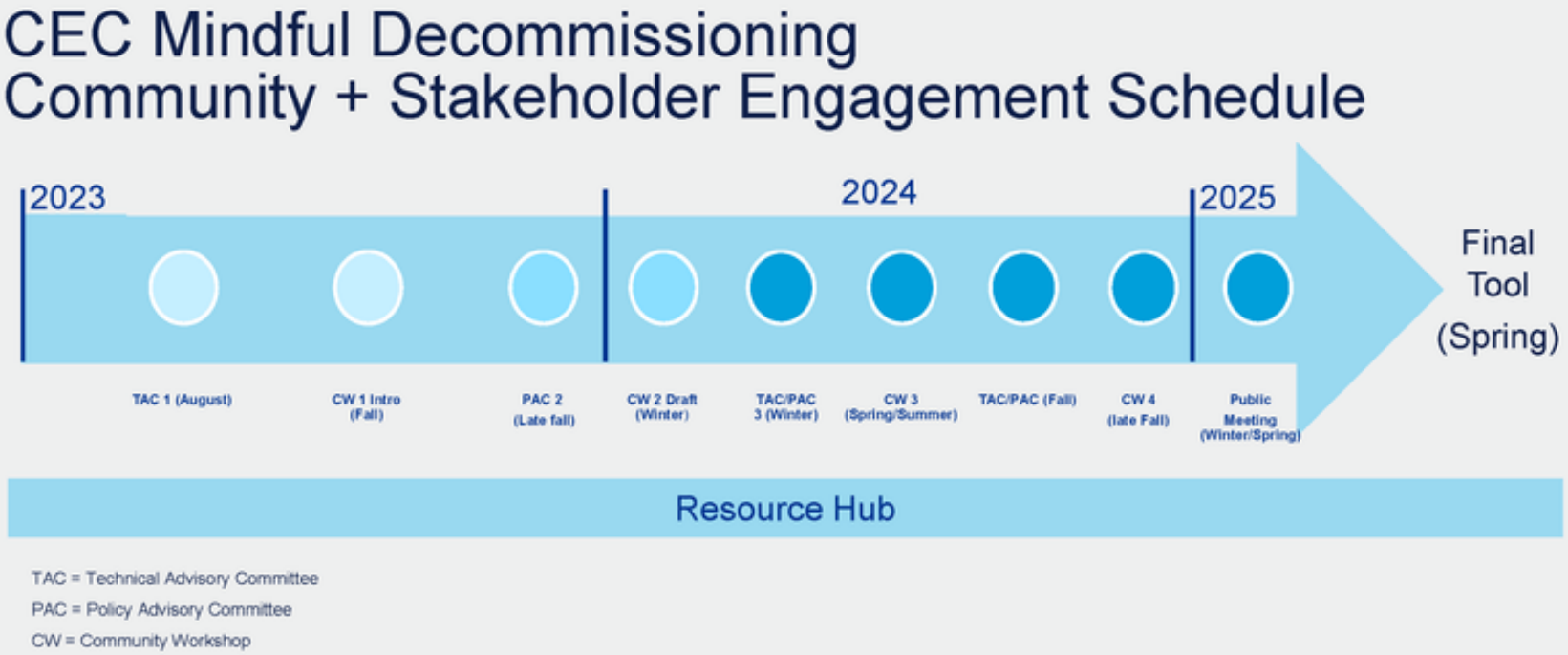
MINDFUL DECOMMISSIONING

Next Steps



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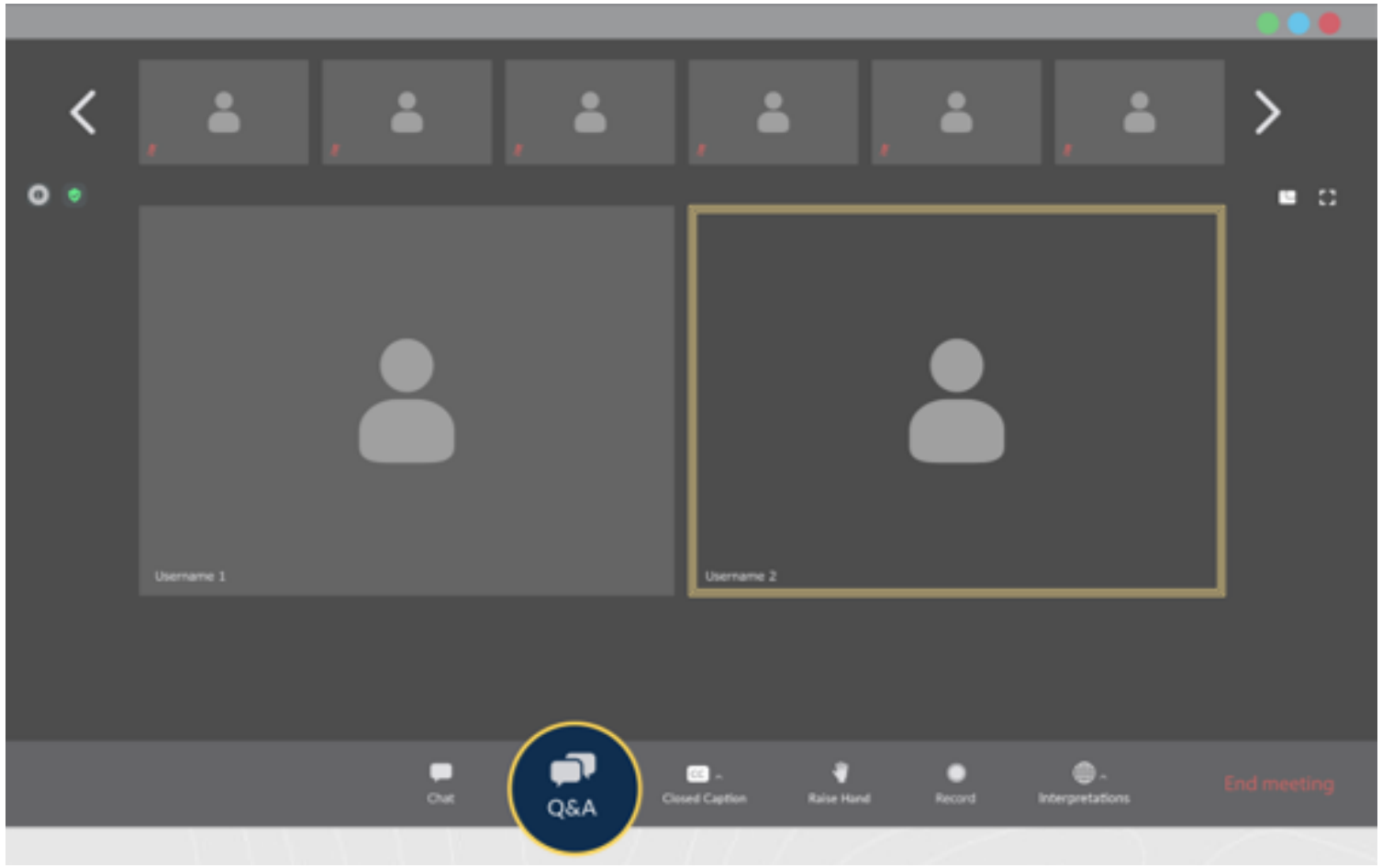
MINDFUL DECOMMISSIONING

Question & Answer

You can ask a question using the Q&A function on your Zoom taskbar.

Dial-in users, please raise your hand by dialing *9.

Comments can be submitted via the Resource Hub (link available in chat)



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Closing Remarks

Dr. Martine Schmidt-Poolman
California Energy Commission

Mindful Decommissioning

30 October 2023

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Thank you!

Mindful Decommissioning Workshop

A Data-Driven Tool for Strategic and Equitable Decommissioning of Gas Assets for the California Energy Commission

Mindful Decommissioning

30 October 2023