



**WATER
AGENCY**

Energy Master Plan Baseline Assessment Informational Update

Regular Board Meeting
January 17, 2024

Topics

- **Background**
- **Baseline Energy Assessment**
- **Next Steps**

Background

- **Alignment with Zone 7 2020-2024 5-Year Strategic Plan**

GOAL E

Effective Operations

Provide the Agency with effective leadership, administration, and governance.

Initiative 16

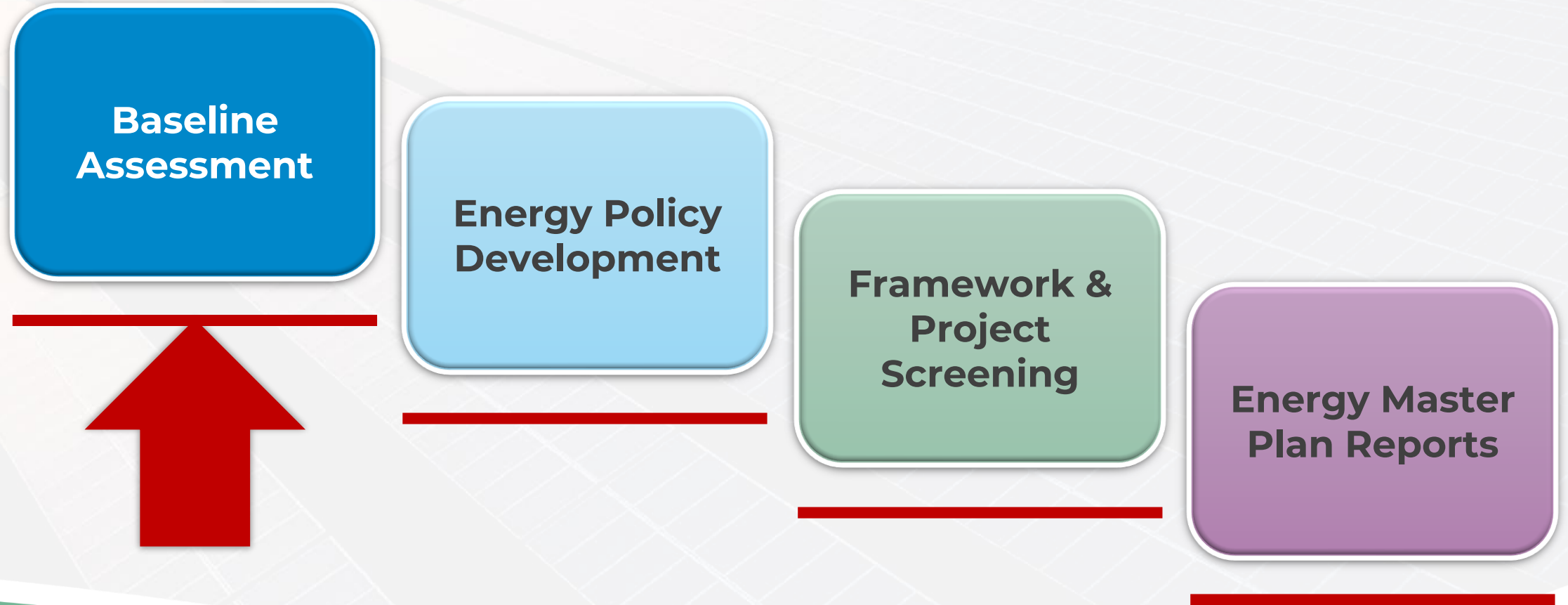
Develop and implement an energy strategy

Background


- **Need for Energy Master Plan**
- **Contract with Carollo Engineers**
- **Study began fall 2023**
- **Targeting completion in 2024**



Plan Components



Baseline Energy Assessment

- 
- Brief History
 - Basis of assessment
 - Electricity use
 - GHG emissions inventory
 - Summary of key findings

Baseline Energy Assessment



Brief History



Basis of assessment



Electricity use



GHG emissions inventory




Summary of key findings

Zone 7's Recent History with Energy

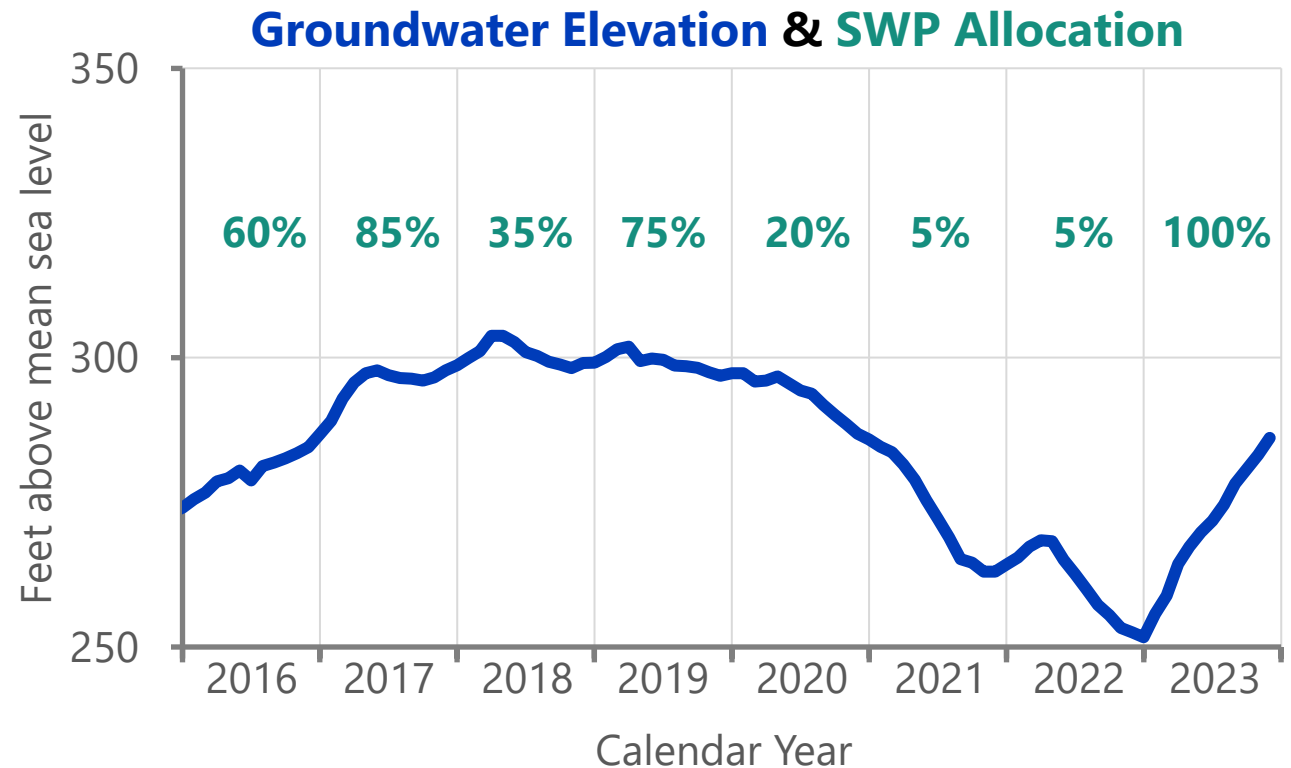


Baseline Energy Assessment

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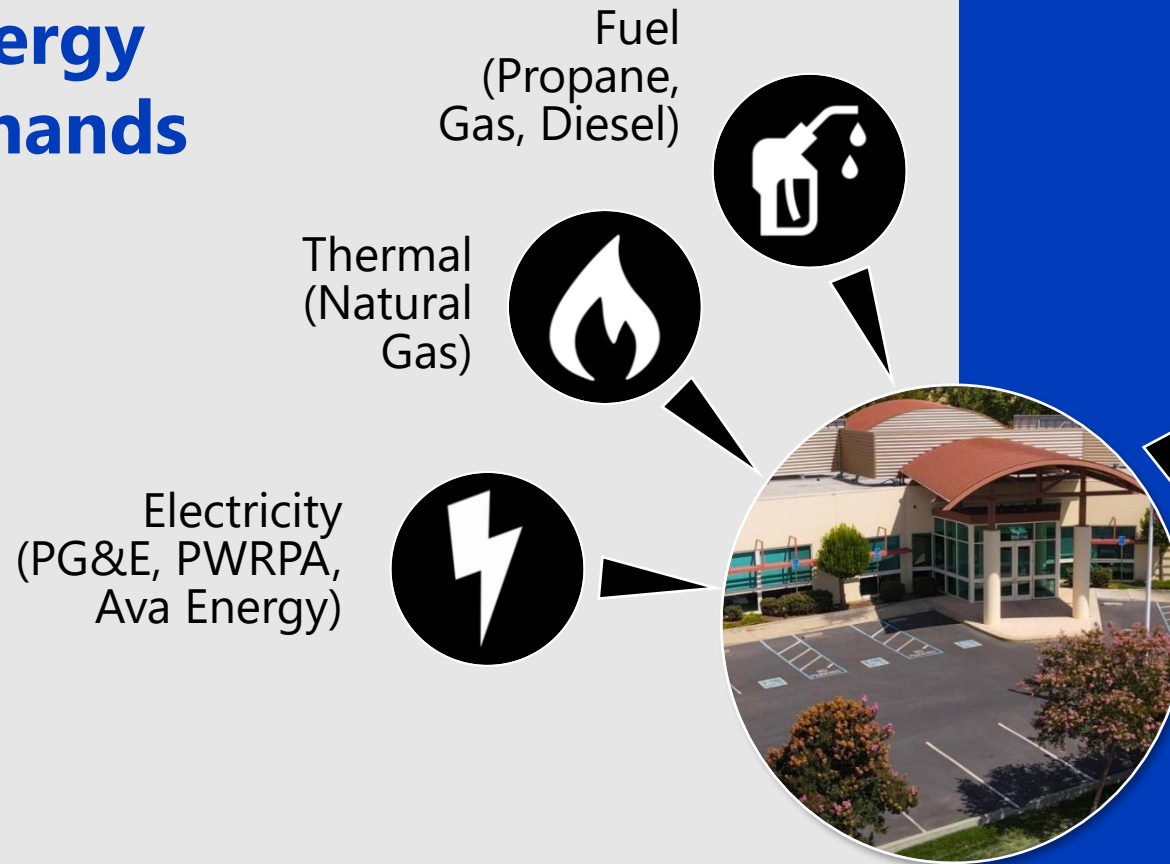
Basis of Assessment

- Data back through 2017 to capture range of wet and dry years.
- Energy projections based on 2020 UWMP demand forecast
- Planning period 2023–2045 aligns with UWMP buildout
- Considered potential future regulatory impacts to energy use (PFAS, Fleet, etc.)



Zone 7's "Energy" Portfolio


Energy Demands



Energy Production

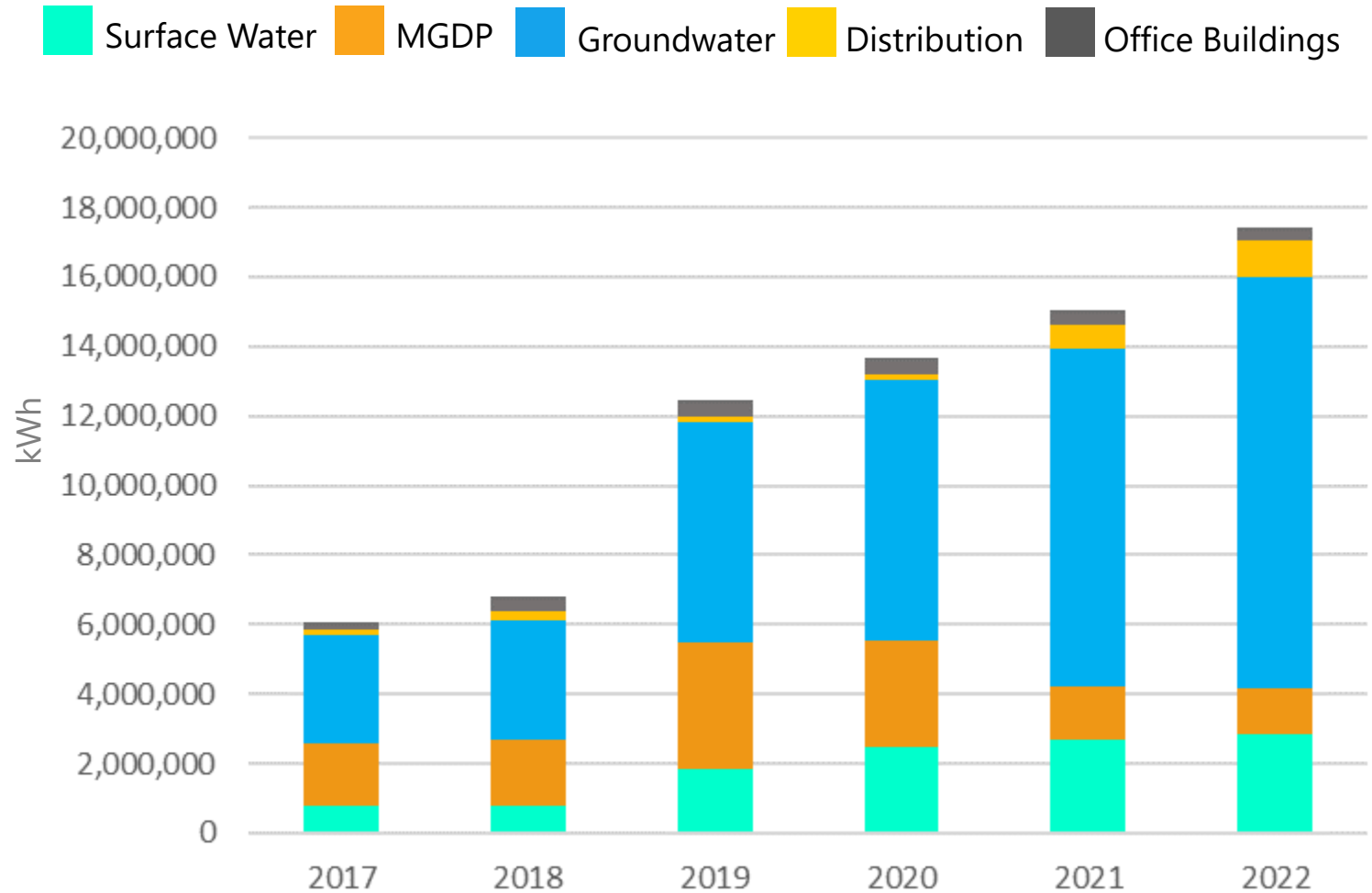


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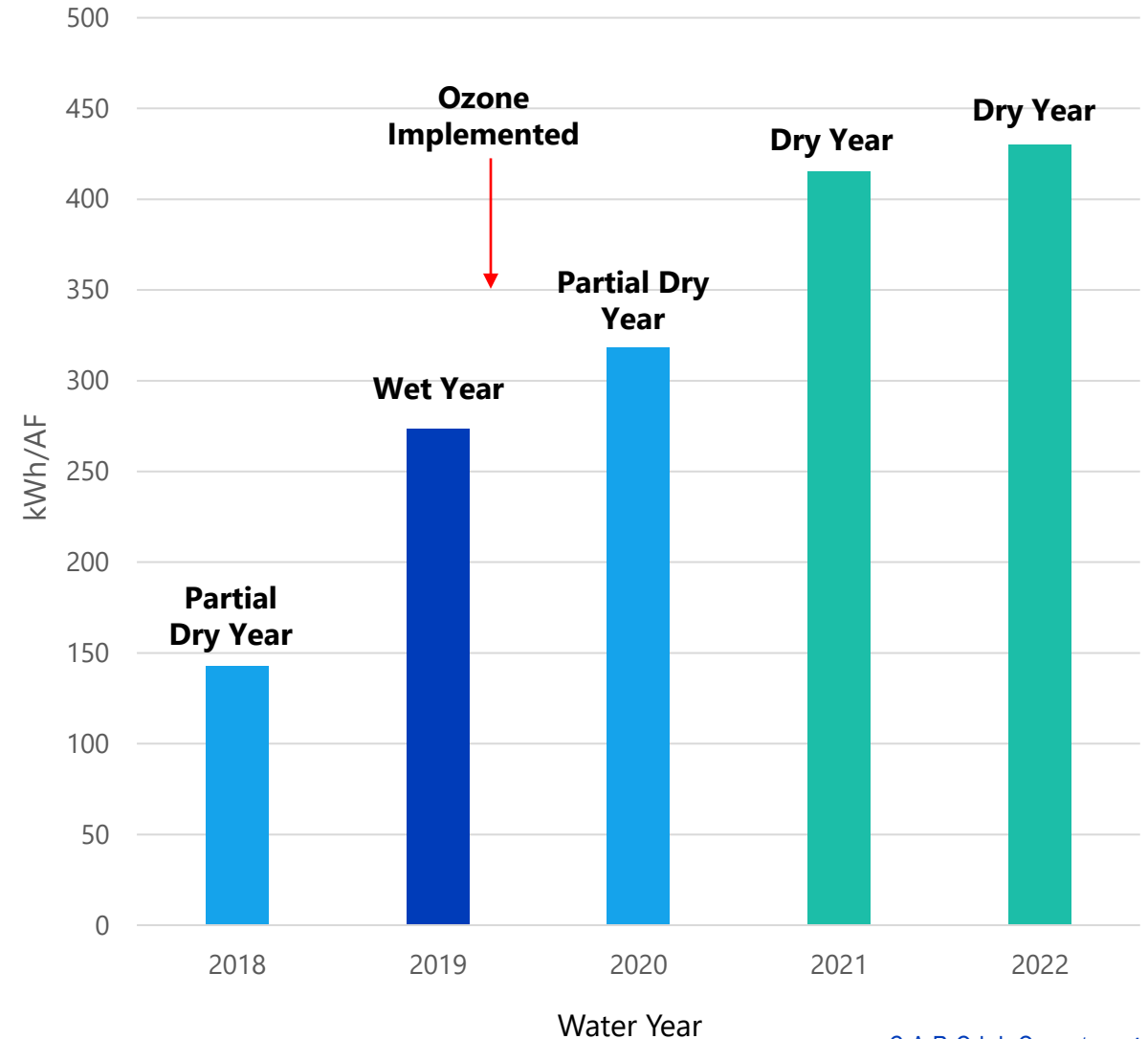
Total Electrical Energy Use (kWh)

- Six years analyzed, including historically wet and dry periods
- Electricity consumption is generally increasing over time
- Proportion of groundwater pumping drives total electricity consumed

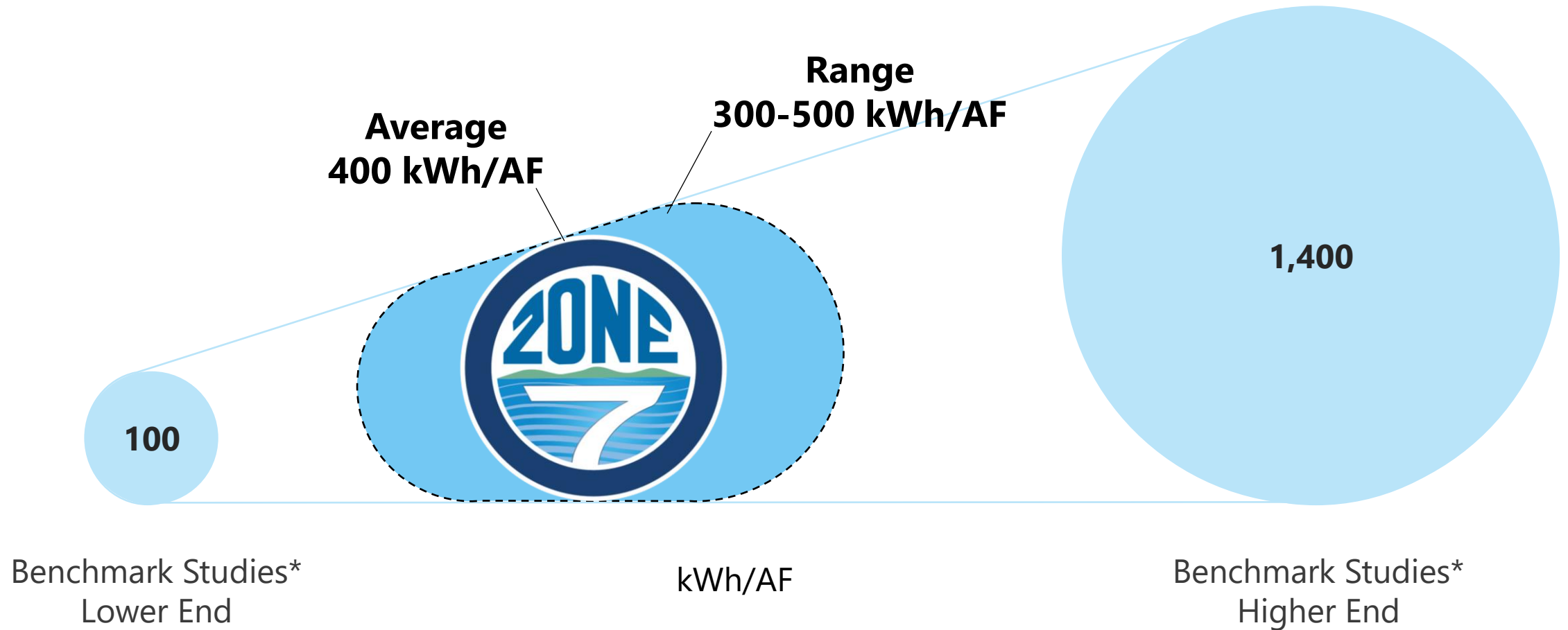


Water Production Energy Intensity (kWh/AF)

- Ozone was implemented in 2019, increasing electricity demand for surface water treatment
- PFAS and other water quality regulatory drivers are anticipated to increase electricity demands in the future
- Lower groundwater levels increase pumping energy consumption



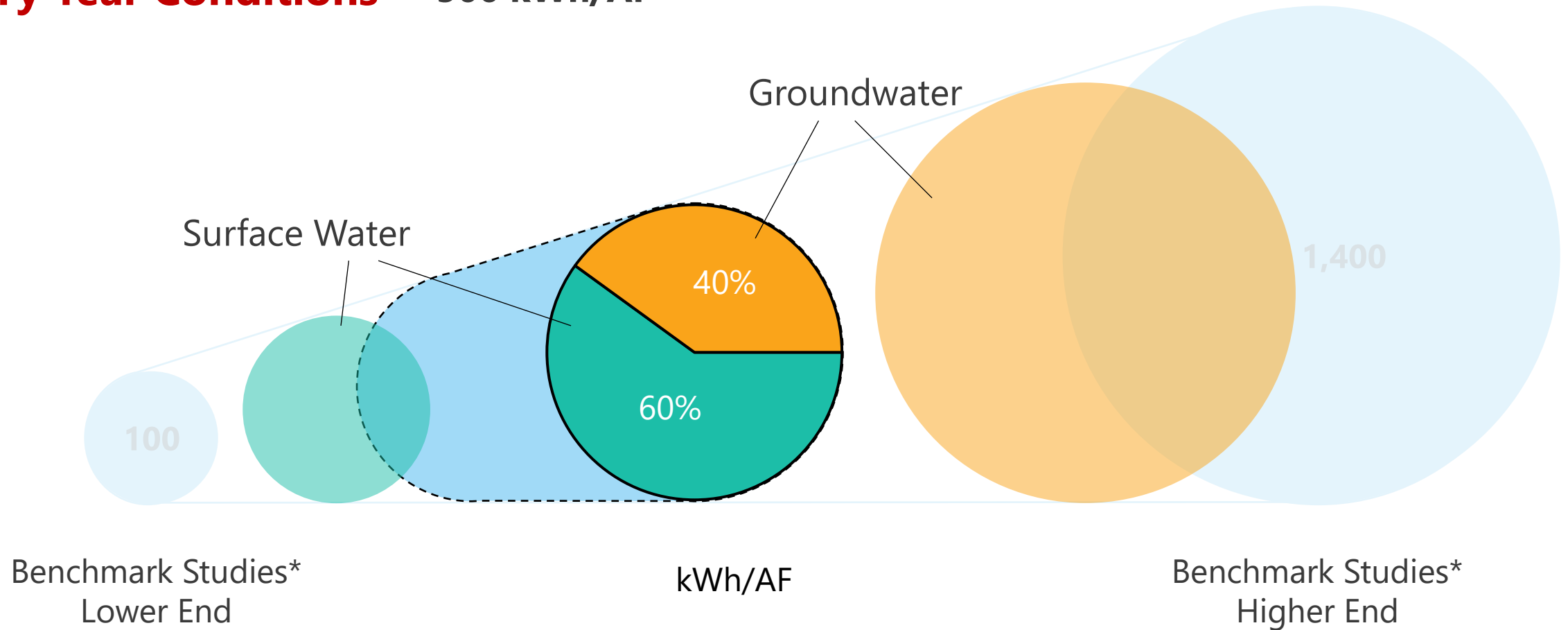
Energy Intensity Benchmarking



*AWWA, NADWUWRF and WRF, Lawrence Berkeley NL, Other similarly sized CA water utilities.

Energy Intensity Benchmarking

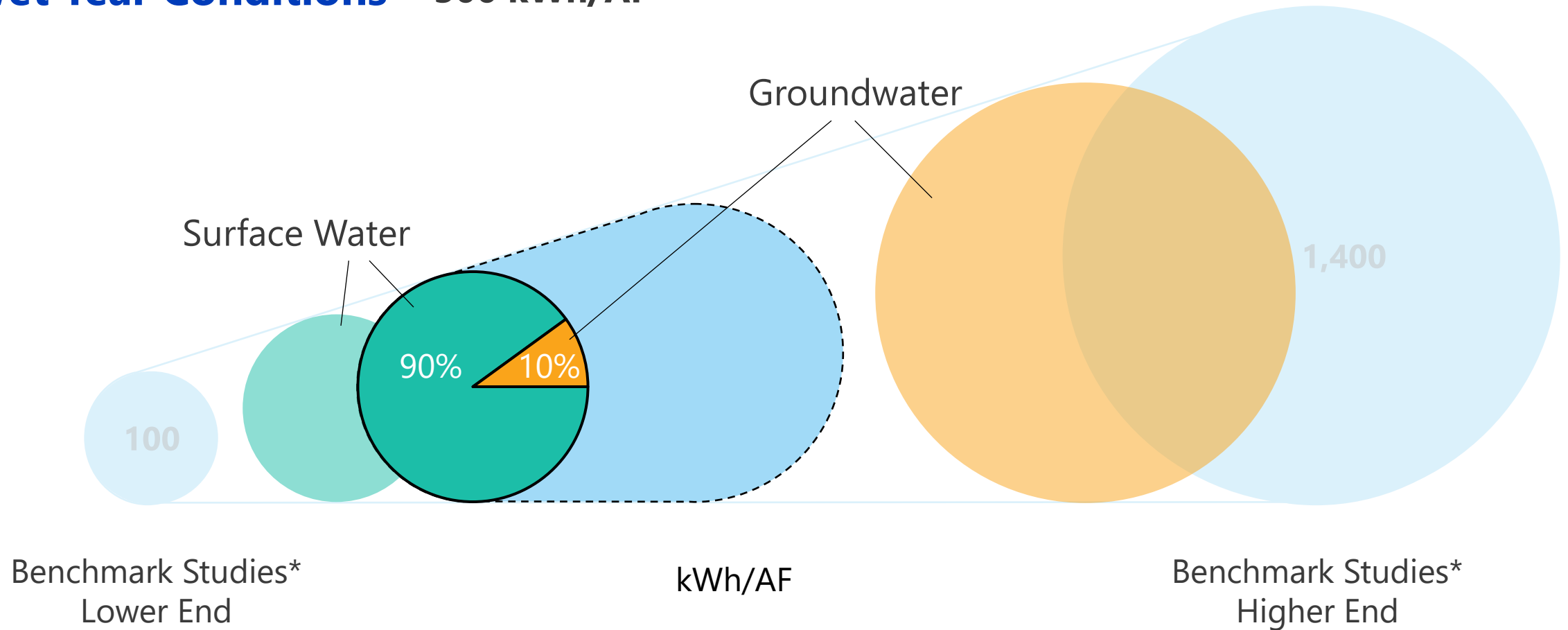
Dry Year Conditions ~500 kWh/AF



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Energy Intensity Benchmarking

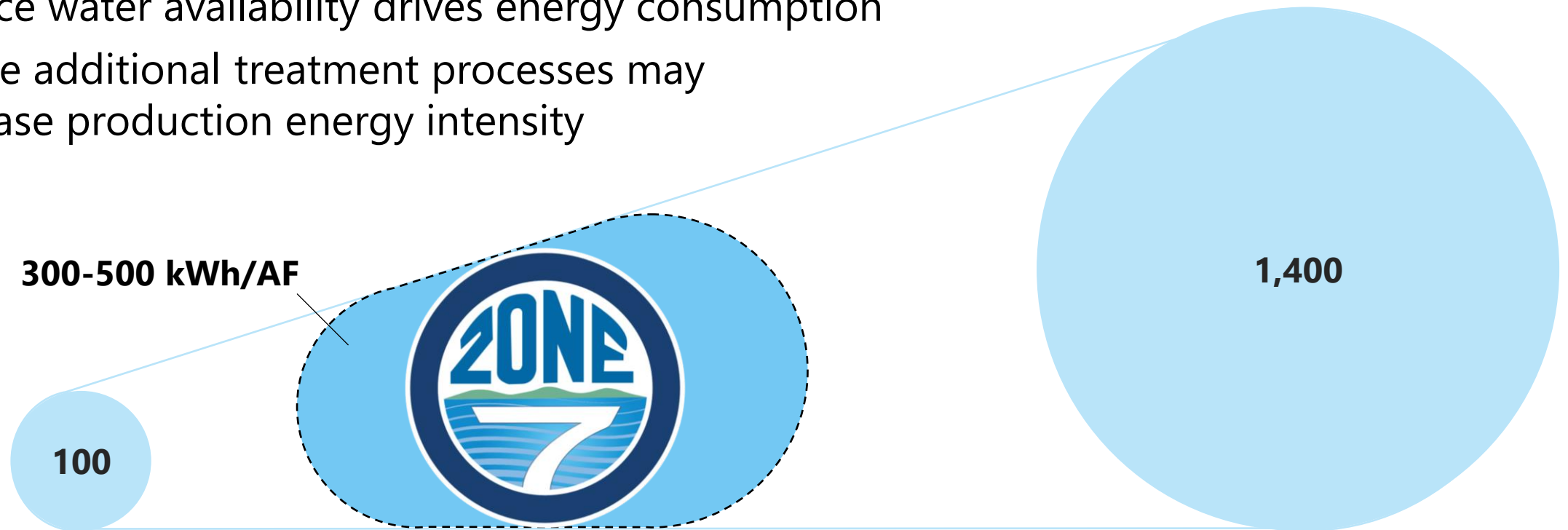
Wet Year Conditions ~300 kWh/AF




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Energy Intensity Benchmarking

- **Summary**
- Groundwater production is much more energy intensive; surface water availability drives energy consumption
- Future additional treatment processes may increase production energy intensity



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Defining “Greenhouse Gas Emissions”

Consumables

Scope 1 - Direct emissions from fuels and natural gas



Scope 2 – Indirect emissions from purchased electricity (zero since 2022)



Scope 3 – Indirect emissions related to operations (chemicals, consumables) and purchased water (not evaluated)



Greenhouse Gas Emissions

Carbon Dioxide (CO₂)

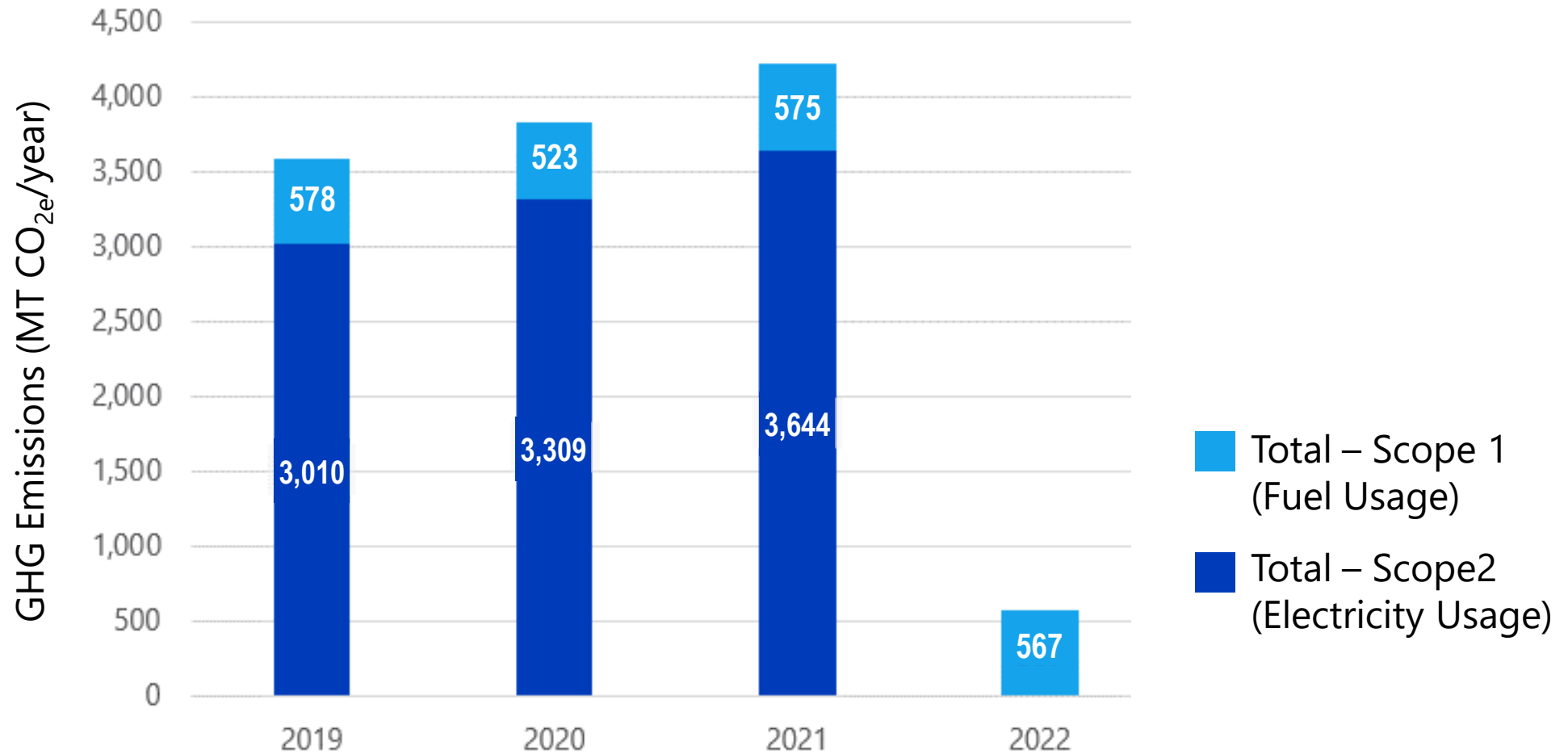
Methane (CH₄)

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Carbon Dioxide Equivalent (CO_{2e})

Nitrous Oxide (N₂O)

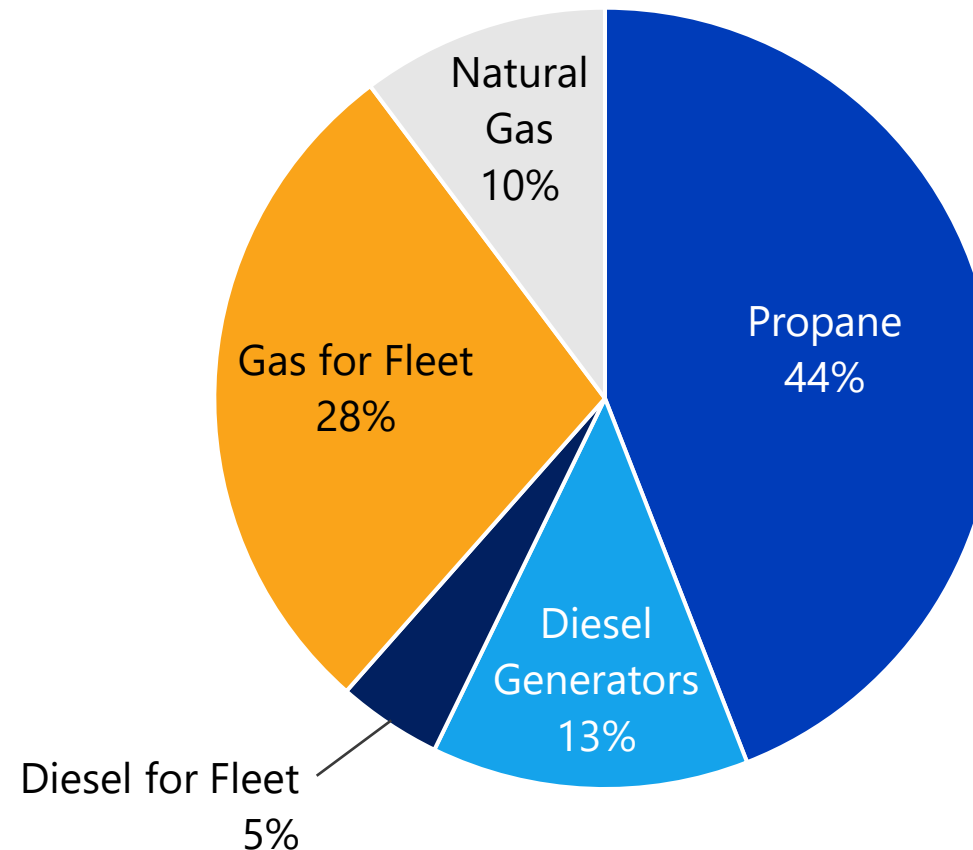
Current GHG Inventory




Zone 7 baseline GHG emissions broken out by scope

Emissions from Fuel Sources for 2022

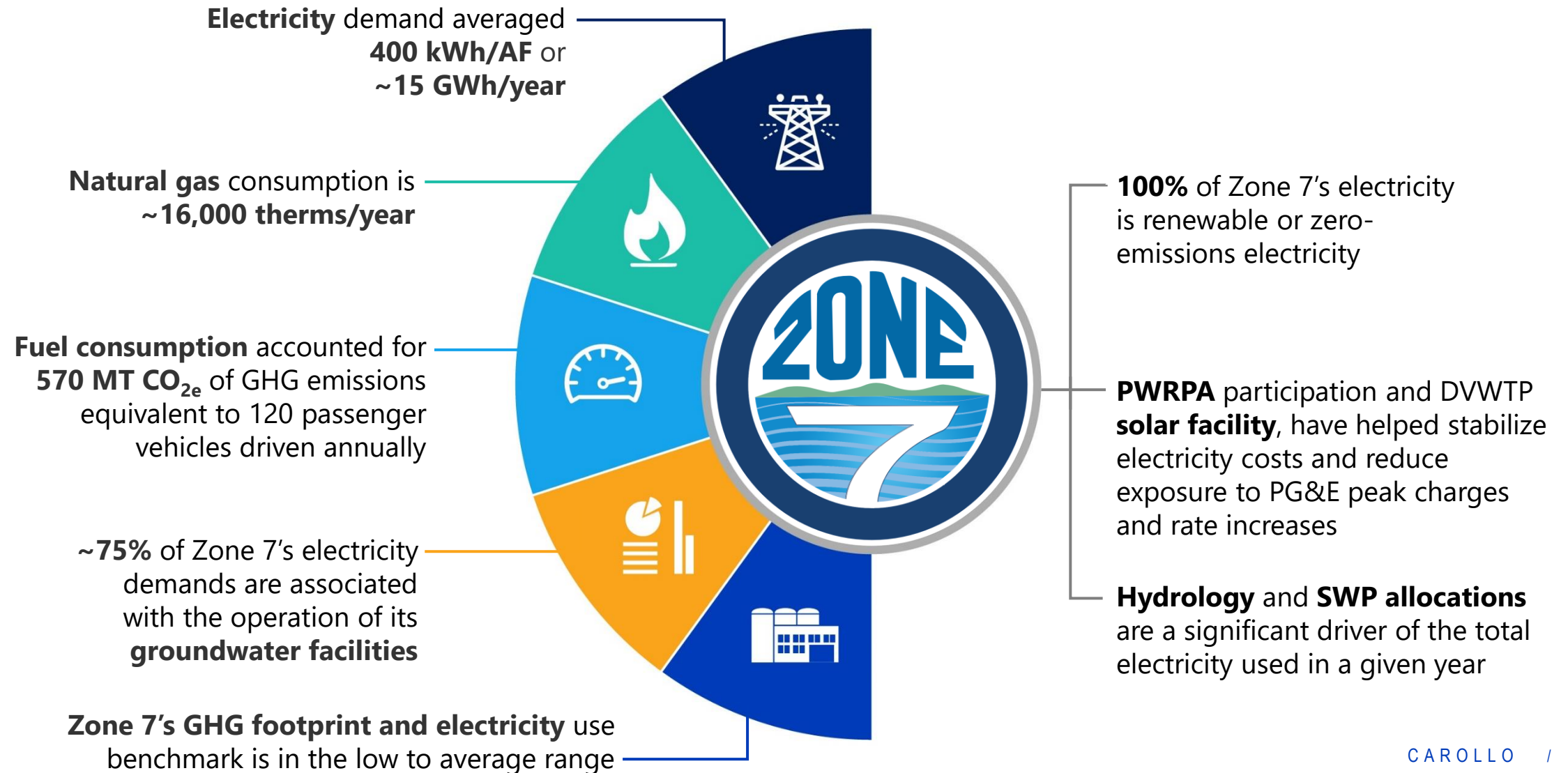
2022 Total GHG Emissions (567 MT CO_{2e}/yr)



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Summary of Baseline Energy Assessment



Next Steps

**Baseline
Assessment**

**Energy Policy
Development**

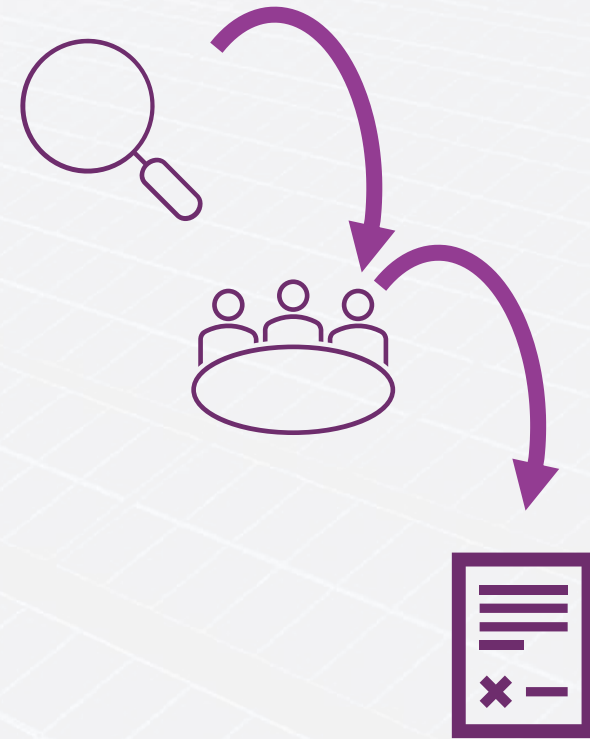
**Framework &
Project
Screening**

**Energy Master
Plan Reports**

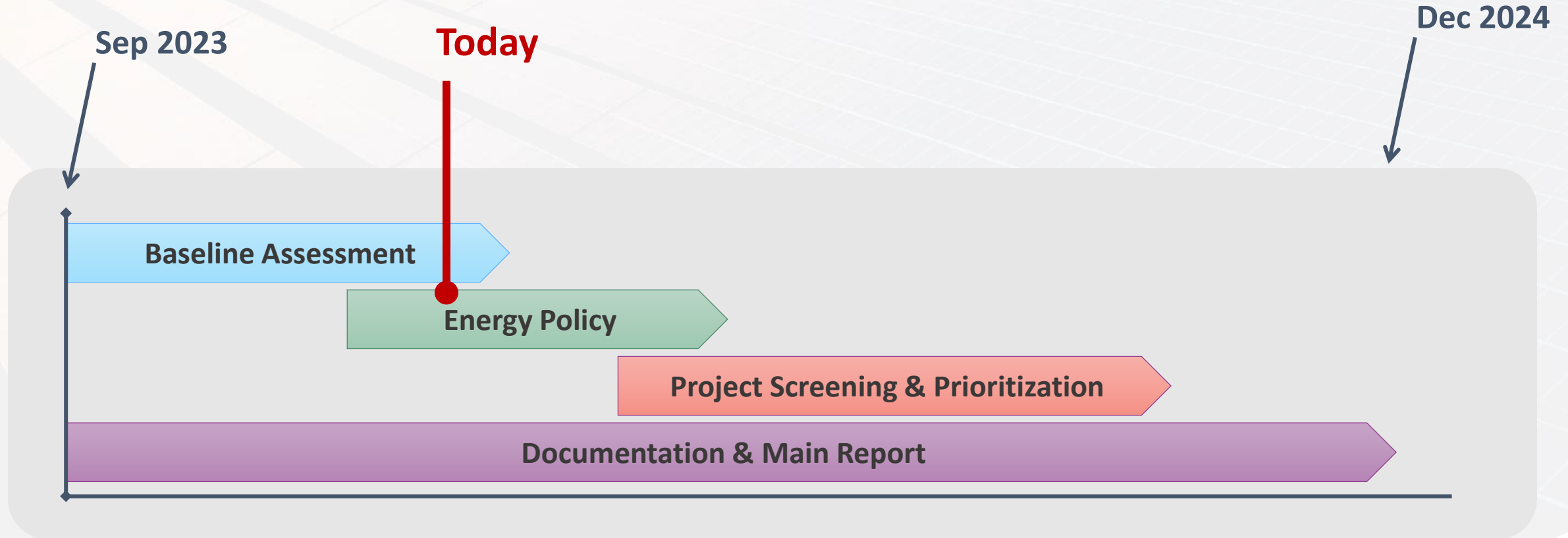


Energy Policy

- Policy research and analysis
- Policy interviews
- Board input
- Adopt Energy Policy



Summary Schedule



Questions