Climate Action Plan Update

County Council Meeting | March 5, 2024

LOS ALAMOS
where discoveries are made

Project Team

County

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Meeting Goals

Provide an update on the Climate Action Plan (CAP) development process.

Present results from analyses and begin target setting discussion.

Outline next steps in the CAP process, including upcoming community engagement.

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Climate Action Plan Process Updates

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where discoveries are made

Project Update

- **Completed**:
  - GHG inventories
  - Community survey #1
  - Baseline policy assessment
  - Zero Waste Strategy
  - GHG forecasting model
  - Strategy and action list
  - Engagement with ESB & County staff on proposed strategies and actions
  - Cost, impact, and multi-criteria analyses

- **Upcoming**:
  - Community engagement
  - Draft CAP

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GHG Inventory Types

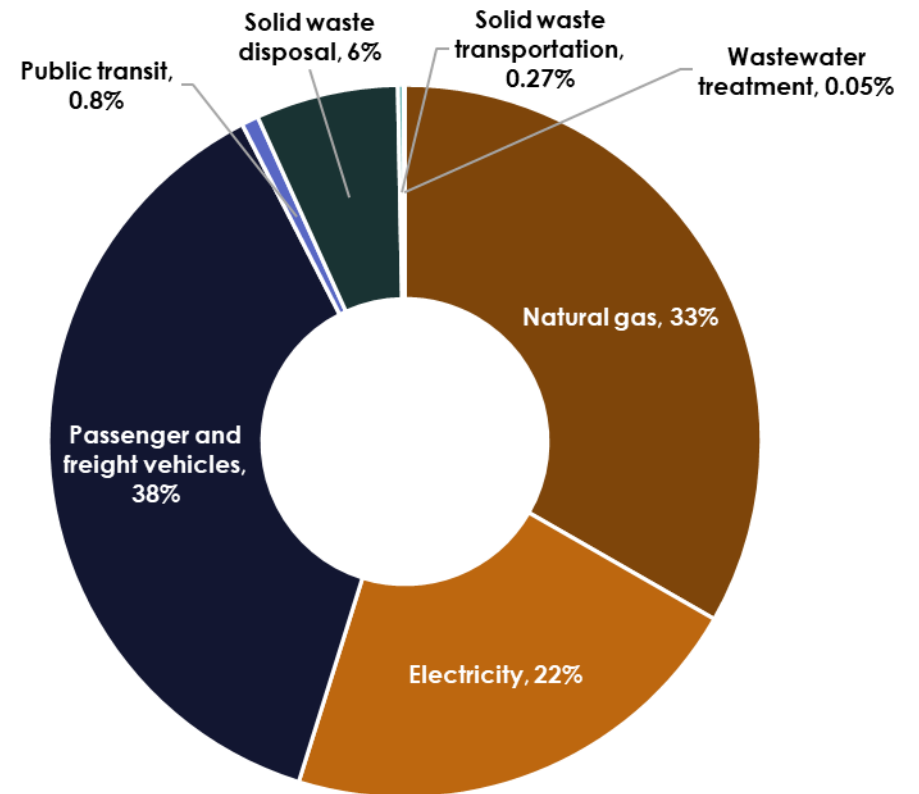| Sector-Based		Consumption-Based
Community-Wide Geographic	**Government Operations**	**Consumption-Based (CBEI)**
• Quantifies emissions occurring generally within the county's geographic bounds from residents and visitors. • Includes emissions from transportation, building energy, solid waste disposal, and wastewater treatment.	• Quantifies emissions from County government operations. • Includes emissions from County vehicle fleet, facility energy, solid waste disposal, and County-owned wastewater treatment.	• Quantifies emissions occurring anywhere in the world from goods and services purchased by county residents. • Includes "upstream" emissions associated with food, medical services, home furnishings, and vehicle purchases.

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Community-Wide Geographic Emissions Overview

- Community-wide emissions were an estimated 137,670 $MTCO_2e$ in 2022.

- The community's largest emissions sources in 2022 were from combining **building energy** (55%) and **transportation** (38%).

- Los Alamos National Laboratory's (LANL) emissions are not included due to data limitations.

Public transit, 0.8%
Solid waste disposal, 6%
Solid waste transportation, 0.27%
Wastewater treatment, 0.05%
Natural gas, 33%
Electricity, 22%
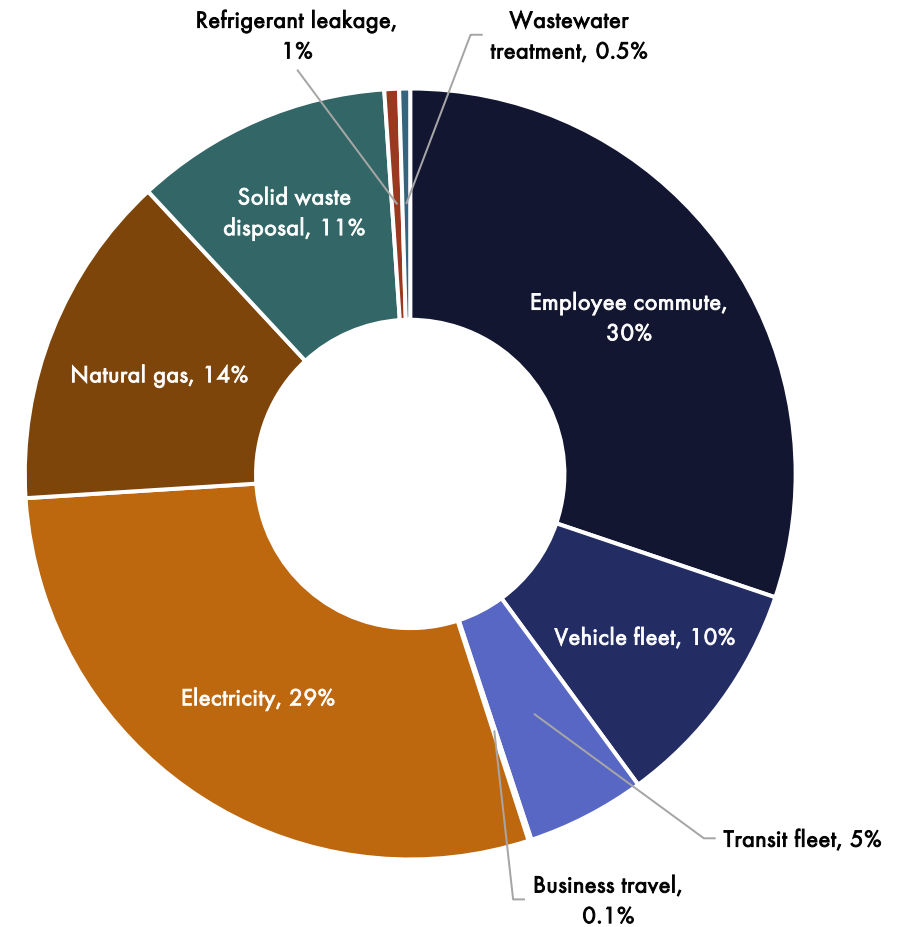Passenger and freight vehicles, 38%

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Takeaways & Recommendations

- The community's largest sources of emissions in 2022 were **passenger and freight transportation** (38%), **natural gas consumption** (33%), and **electricity consumption** (22%).

- Emissions reductions actions should aim to:
  - Expand sustainable transportation options, such as biking, walking, and public transportation.
  - Expand electric vehicle infrastructure and adoption.
  - Increase building energy efficiency.
  - Increase renewable energy sources.
  - Promote building electrification.

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Government Operations Emissions Overview

- County operations emissions were estimated at 15,031 MTCO$_2$e in 2022.
  - This is equivalent to ~11% of community-wide emissions.
- The County's largest emissions sources in 2022 were from the **transportation** (55%) and **building energy** (31%) sectors.
- The County's largest emissions sub-sources were **employee commute** (37%), followed by **electricity** (20%).

Refrigerant leakage, 1%
Wastewater treatment, 0.5%
Solid waste disposal, 11%
Employee commute, 30%
Natural gas, 14%
Electricity, 29%
Vehicle fleet, 10%
Transit fleet, 5%
Business travel, 0.1%

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Takeaways & Recommendations

- Los Alamos County's operations largest sources of emissions in 2022 were **employee commute** (30%), **electricity consumption** (29%), **natural gas consumption** (14%), **solid waste disposal** (11%), and **vehicle fleet** (10%).

- Emissions reductions actions should aim to:
  - Increase commute-trip reduction strategies for County employees.
  - Decarbonize buildings & enhance energy efficiency.
  - Reduce waste generation and increase waste diversion.
  - Shift to lower-carbon vehicle fleet and equipment.

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CAP Actions

Developed and refined using:

- GHG studies
- Community survey and community engagement
- Baseline policy assessment
- Climate action best practices
- Feedback and revisions identified by County staff and ESB

Focus Areas

Buildings & Energy

(8 draft actions)

Transportation

(10 draft actions)

Materials & Consumption

(6 draft actions)

Natural Systems & Water Resources

(6 draft actions)

Community Resilience & Wellbeing

(4 draft actions)

Cross-Cutting

(6 draft actions)

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Buildings & Energy

Advance building decarbonization

Incentivize electrification retrofits

Develop a contractor training program

Increase building efficiency

Establish an energy benchmarking program for commercial buildings

Establish an energy benchmarking program for municipal buildings

Encourage energy efficiency and electrification retrofits

Adopt green building standards

Increase renewable energy generation

Promote local renewable energy

Expand energy resiliency

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Transportation

Expand EV infrastructure and adoption

Promote EV adoption

Develop and EV infrastructure plan

Implement codes requiring EV infrastructure

Transition County fleet to EVs

Expand and promote multi-modal connectivity

Introduce public transit education campaign

Advocate and partner regionally to improve transit network

Encourage multimodal transportation

Expand non-motorized transportation options and accessibility

Develop a CTR program

Enhance sustainable land use planning

Expand mixed-use, transit-oriented development policies

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Materials & Consumption

Maximize waste diversion

Promote circular economy practices

Implement food waste prevention and diversion program

Expand and refine waste data tracking, reporting, and goals

Promote C&D recycling and reuse

Implement the zero waste strategy

Conduct recycling and composting outreach and education

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Natural Systems & Water Resources

Increase urban green space

Promote urban forest stewardship and tree preservation

Provide green space incentives

Conserve water resources

Promote green stormwater infrastructure and low-impact development

Encourage sustainable landscaping and water conservation

Develop a water security strategy

Provide greywater reuse education

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Community Resilience & Wellbeing

Enhance community understanding of climate change

Conduct a vulnerability assessment

Invest in public climate education campaigns

Support the local food system

Prepare the community for climate impacts

Encourage adaptation upgrades

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Cross-Cutting

Encourage sustainable businesses

Develop a sustainable business certification program

Bolster green economic development

Promote climate education outreach

Facilitate equitable public participation in planning

Monitor and share climate action progress

Collaborate with local Pueblos

Expand community partnerships

Action Analyses

Action Analyses Overview

Impact Analysis

- Quantitative assessment
- 15 actions
- Estimated high-level emissions reductions from action implementation

Multi-Criteria Analysis

- Qualitative assessment
- 40 actions (all)
- Scored actions based on four criteria: impact, cost, equity, and co-benefits

Cost Analysis

- Quantitative assessment
- 8 actions
- Estimated high-level costs and cost savings for County and community from action implementation

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Impact Analysis

Forecasting Scenarios

BAU – Business-as-usual

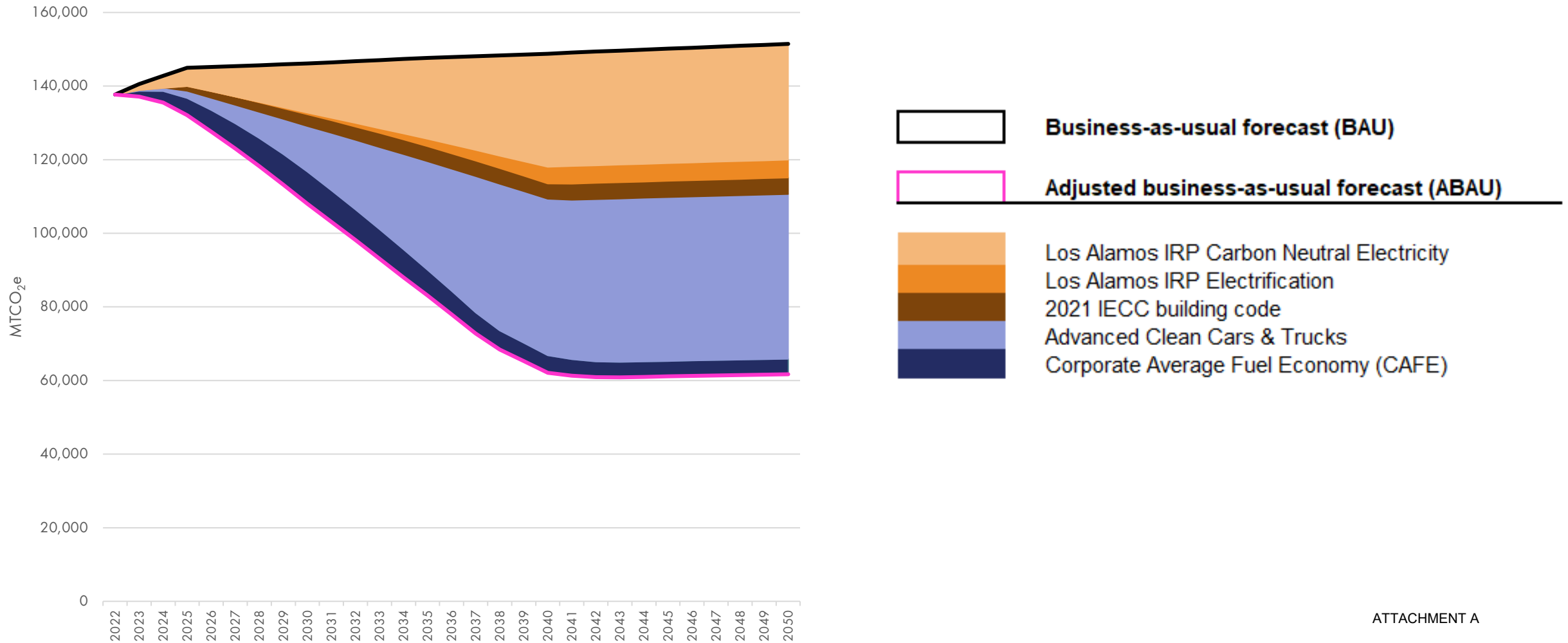- Estimates community-wide forecasted emissions based on population and economic growth.

ABAU – Adjusted business-as-usual

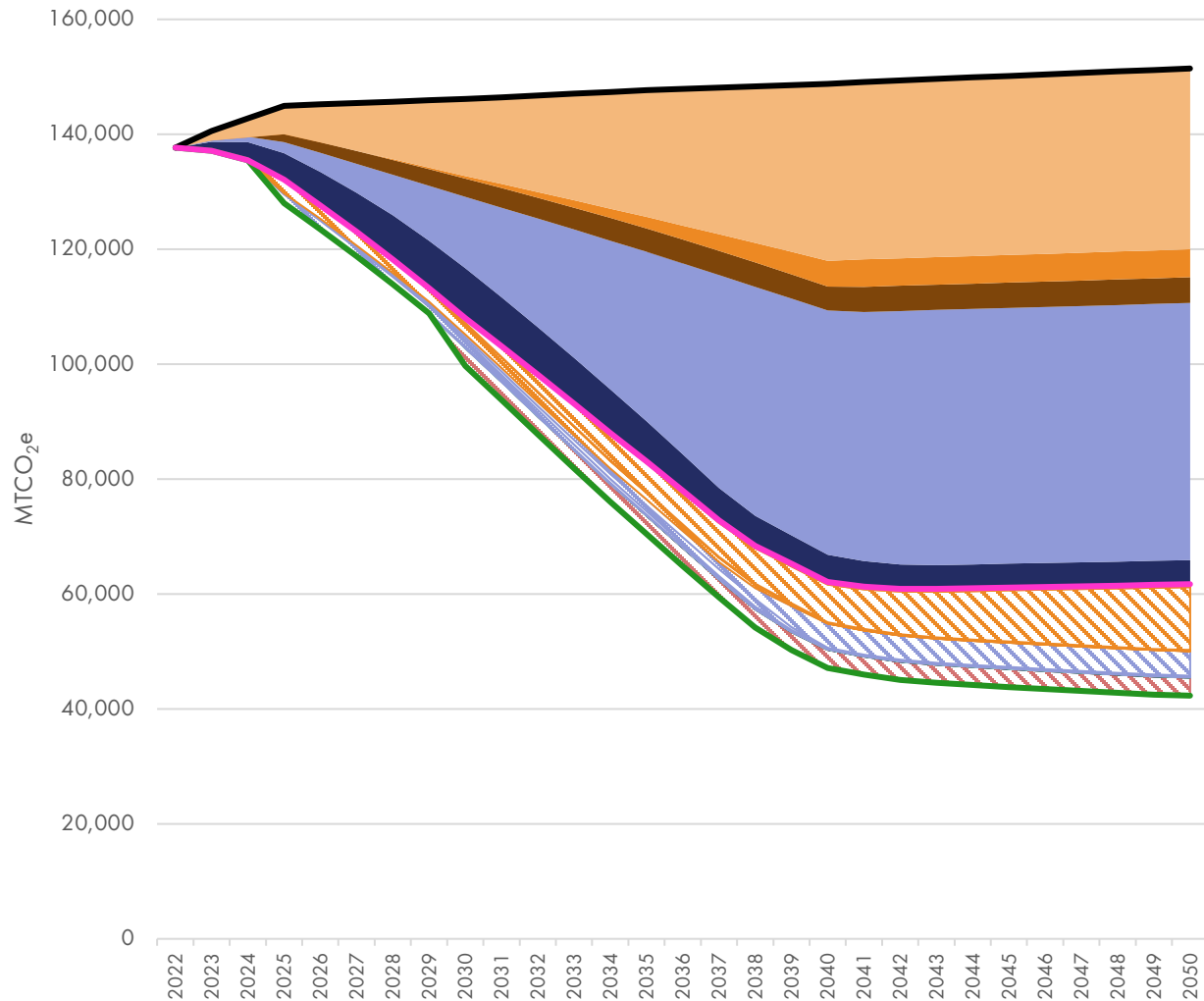- Shows how existing federal, state, and local policies could affect community-wide emissions in the future.

Local climate action

- Shows how implementation of local climate strategies & actions could affect community-wide emissions in the future.

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Sector-Based Emissions Forecast:
Existing Policies

Legend:
- Business-as-usual forecast (BAU)
- Adjusted business-as-usual forecast (ABAU)
- Los Alamos IRP Carbon Neutral Electricity
- Los Alamos IRP Electrification
- 2021 IECC building code
- Advanced Clean Cars & Trucks
- Corporate Average Fuel Economy (CAFE)

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Sector-Based Emissions Forecast:
Draft CAP Actions

CAP Actions

BE1.3	Encourage energy efficiency and electrification retrofits
BE1.4	Adopt green building standards
BE2.1	Incentivize electrification retrofits
BE2.2	Develop a contractor training program
BE3.1	Promote local renewable energy
T1.1	Promote EV adoption
T1.2	Develop EV infrastructure plan
T2.1	Expand mixed-use, transit-oriented development policies
T3.2	Advocate and partner regionally to improve transit network
T3.3	Encourage multimodal transportation
T3.4	Expand non-motorized transportation options and accessibility
MC1.3	Implement food waste prevention and diversion program
MC1.4	Promote C&D recycling and reuse
CC1.1	Develop a sustainable business certification
NS1.1	Promote urban forest stewardship and tree preservation

Note:

To avoid double counting, action modeling is stacked sequentially based on the BAU, ABAU, and then action-level assumptions.

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Sector-Based Emissions Forecast: CAP Actions

		Cumulative Reductions (MTCO2e)		
		2030	2040	2050
BE1.3	Encourage energy efficiency and electrification retrofits	165	3,492	8,364
BE1.4	Adopt green building standards	1,077	49,020	139,537
BE2.1	Incentivize electrification retrofits	65	1,222	2,694
BE2.2	Develop a contractor training program	32	608	1,340
BE3.1	Promote local renewable energy	13,287	23,310	23,310
T1.1	Promote EV adoption	1,760	17,832	60,090
T1.2	Develop EV infrastructure plan	1,760	9,839	9,839
T2.1	Expand mixed-use, transit-oriented development policies	7,398	12,996	15,217
T3.2	Advocate and partner regionally to improve transit network	233	360	360
T3.3	Encourage multimodal transportation	229	1,154	1,154
T3.4	Expand non-motorized transportation options and accessibility	232	357	357
MC1.3	Implement food waste prevention and diversion program	105	284	467
MC1.4	Promote C&D recycling and reuse	-	471	1,269
CC1.1	Develop a sustainable business certification	-	219	557
NS1.1	Promote urban forest stewardship and tree preservation	3,140	34,543	65,946

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Summary & Takeaways

- Achieving impactful, long-term GHG emissions reductions will require significant investment and policies to **transition buildings and vehicles from fossil fuels (natural gas, gasoline) to clean electricity**.

- **Carbon sequestration** (e.g., from tree preservation/planting) will be necessary to reach net zero emissions in the long term.

- Currently proposed CAP actions achieve GHG reductions, but **not to the extent needed** to be on path to net-zero emissions.

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Target Setting

Target Setting Considerations

- **Context:** What are peer communities doing? The state?

- **Science:** What is needed to avoid the worst impacts of climate change?

- **Feasibility:** What is feasible to achieve in a given timeframe?

- **Investment:** How much is Los Alamos County government & community willing to invest in climate action?

- **Lever:** What is the willingness to introduce requirements, mandates, or standards vs. voluntary or incentive programs?
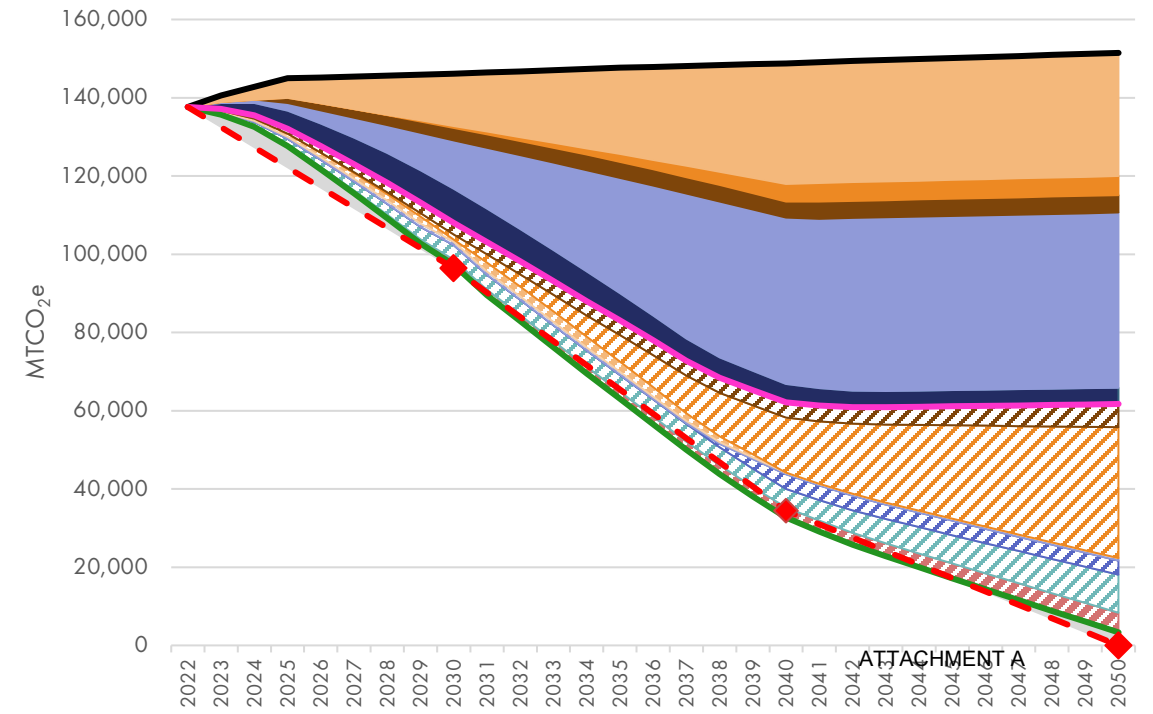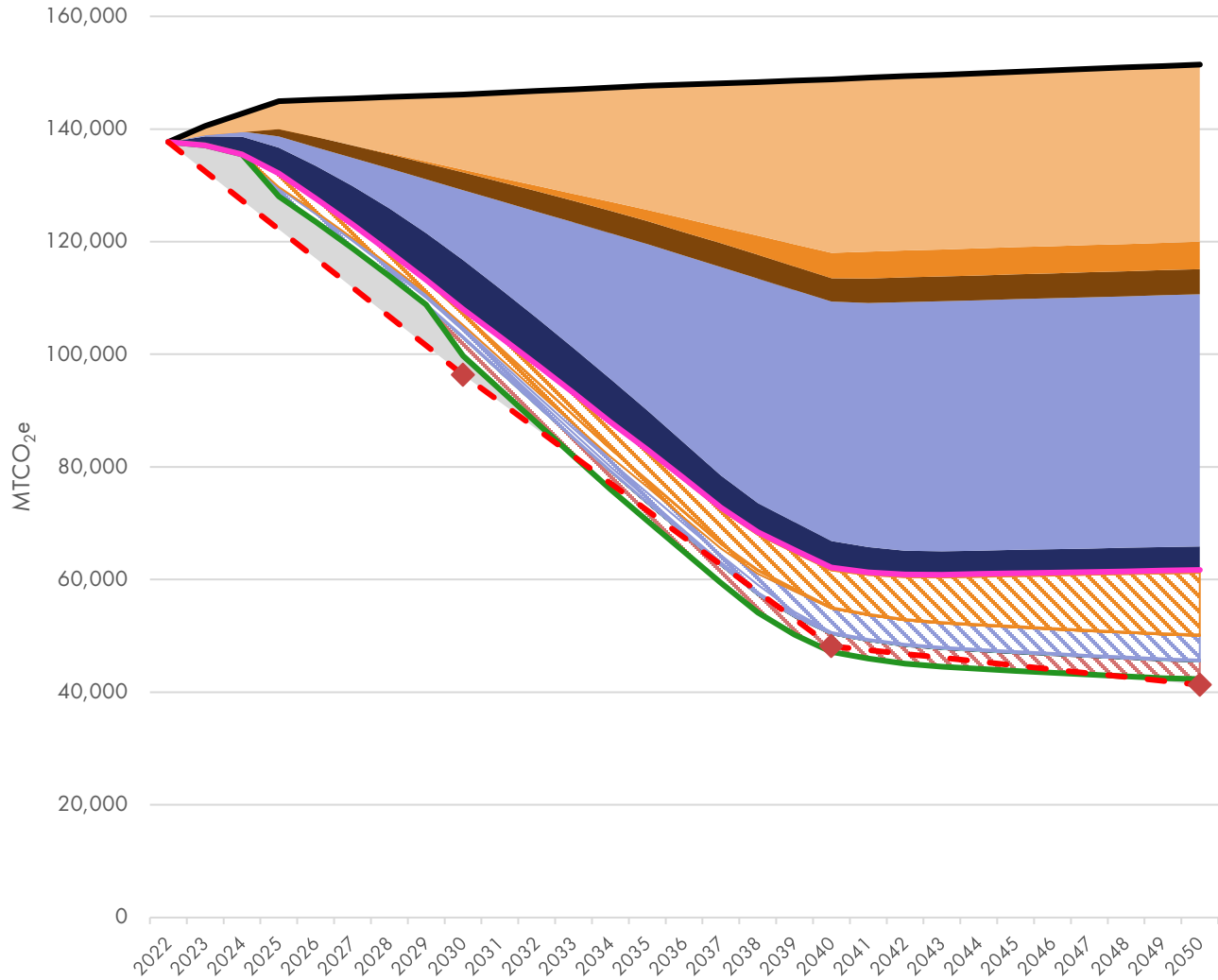
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Potential Target Setting Options

Option #1:

70% reduction by 2050

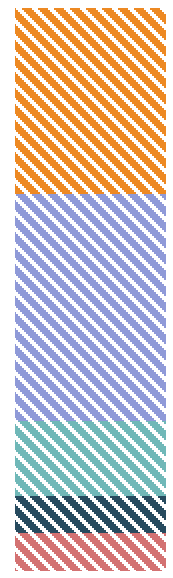(Currently proposed CAP actions)
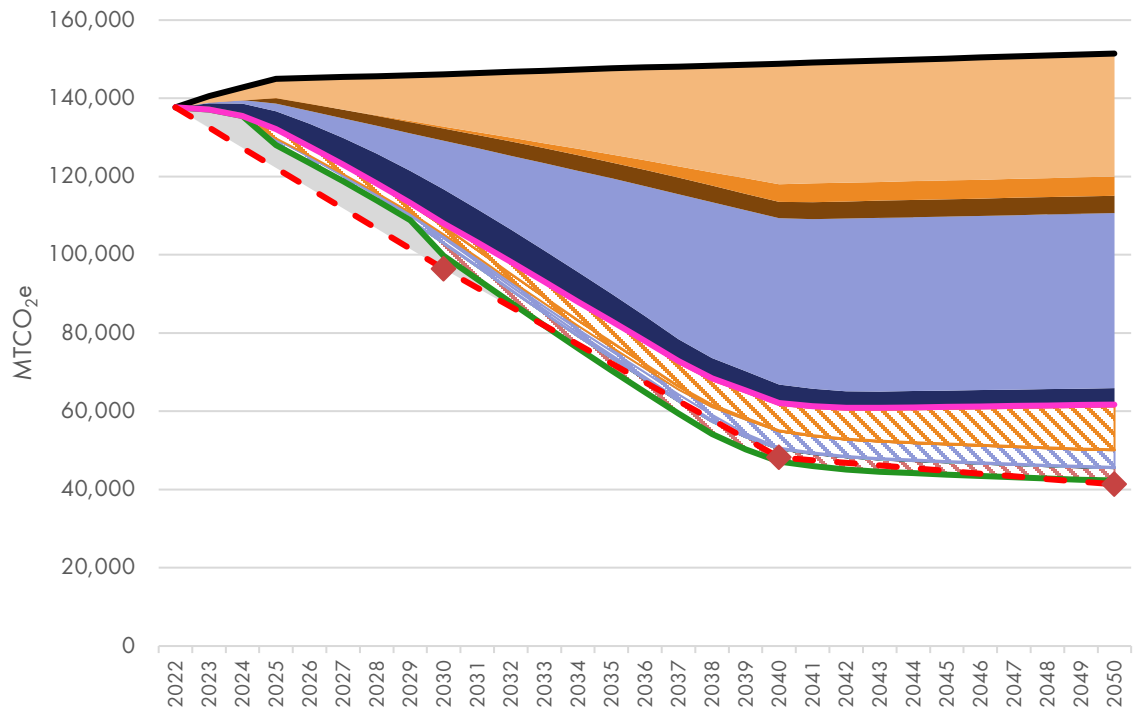
Option #2:

75% reduction by 2040 and carbon neutral by

(Modeled climate strategies)

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Target Option #1 – 70% Reduction by 2050

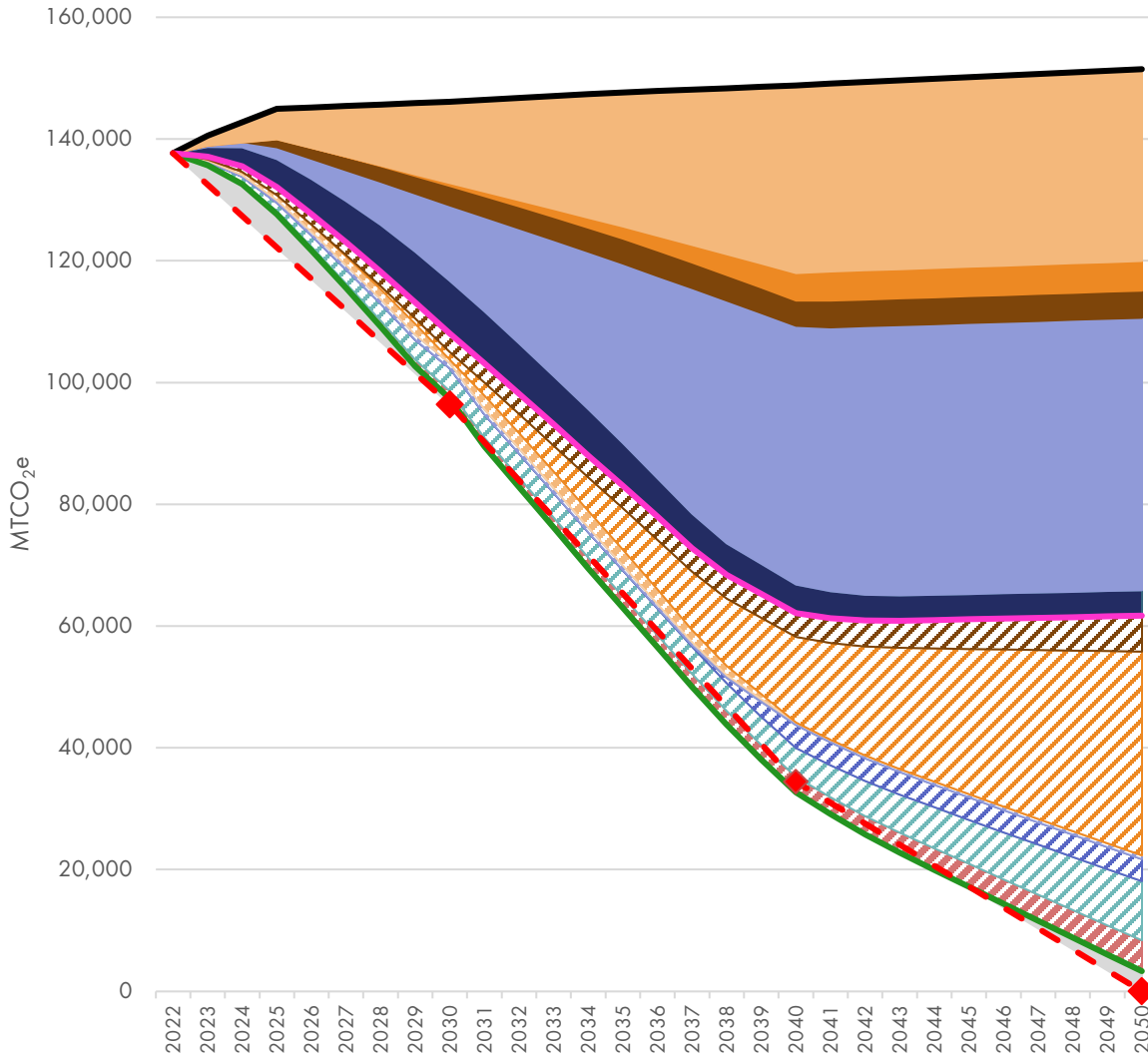**CAP Actions**

|	
BE1.3	Encourage energy efficiency and electrification retrofits
BE1.4	Adopt green building standards
BE2.1	Incentivize electrification retrofits
BE2.2	Develop a contractor training program
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Note:
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Los Alamos County Strategy Scenarios* - INPUTS	2030	2040	2050
Target (% reduction compared to 2022)	30%	75%	100%
Increase energy efficiency (% reduction in building energy consumption)	5%	10%	15%
Building electrification (% of nat. gas in that year converted to electric)	10%	40%	100%
Local renewable generation (% of grid electricity transitioned to local renewables)	3%	5%	10%
VMT reduction (% decrease in overall VMT)	5%	10%	15%
EV adoption (% EV adoption for new passenger vehicles)	80%	90%	100%
Waste diversion - composting (% increase in diversion)	40%	50%	100%
Waste diversion - recycling (% increase in diversion)	40%	50%	100%
Carbon sequestration (new acres of tree cover)	5	10	20
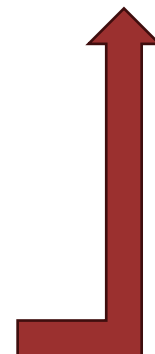
*All percent reductions are relative to the ABAU in the year of reductions. For example, energy usage in 2040 will be 15% more efficient than it would have been 2040's ABAU.

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Target Setting Options

Feasible Target:

70% reduction by 2050

- Lower cost
- Easier to achieve
- Inconsistent with peer communities & climate science recommendations
- Can be achieved with mostly non-regulatory levers (e.g., education, incentives)

Ambitious Target:

75% reduction by 2040 and carbon neutral by 2050

- Higher cost
- Harder to achieve
- Consistent with peer communities & climate science recommendations
- Requires more regulatory levers (e.g., EV charging ordinance, end-of-life replacement requirements for space/water heaters)

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Multi-Criteria Analysis & Year 1 Budget Options

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Criteria and Weights

Criterion	Weight
Impact, including emissions-reduction and/or resilience-building potential.	35%
Cost, including affordability and expenditure timeframe for both the County and community.	30%
Equity in the distribution of benefits and consideration of vulnerable populations.	20%
Realization of **co-benefits**, including improved public health and job creation.	15%
TOTAL	100%

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Top Scoring Actions

Action ID	Action Name	Total Score
T2.1	Expand mixed-use, transit-oriented development policies	4.7
NS1.1	Promote urban forest stewardship and tree preservation	4.4
T3.2	Advocate and partner regionally to improve transit network	4.1
NS2.1	Promote green stormwater infrastructure and low-impact development	3.9
CR1.1	Conduct a vulnerability assessment	3.9
CC1.2	Bolster green economic development	3.8
NS1.2	Green space incentives	3.8
T3.4	Expand non-motorized transportation options and accessibility	3.8

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Summary & Takeaways

- Almost **all focus areas** had high scoring actions and are worth pursuing.

- MCA allows us to consider factors outside of cost and impact, such as **co-benefits and equity**, to make the case for some actions.

- Cost analysis helps us identify actions where **grants, incentives, and rebates** will be especially important.

- MCA, cost, and impact analyses help us plan for **implementation timeframes**.

Year 1 Budget Options

- **BE 2.1:** Incentivize electrification retrofits
  - Cost: $32K | Impact: 4K MTCO2e reduced
  - *Major emission source, cost savings (incentives)*

- **BE 1.4:** Adopt green buildings standards
  - Cost: $40K | Impact: 172K MTCO2e reduced
  - *Major emission source, cost savings*

- **T 1.2:** Develop EV infrastructure plan
  - Cost: $200K | Impact: 14K MTCO2e reduced
  - *Major emission source, foundational action*

T 1.1: Promote EV adoption
Cost: $35K | Impact: 105K MTCO2e reduced
Major emissions source, cost savings (incentives)

T 3.5: Develop a Commute Trip Reduction program
Cost: $25K | Impact: 3K MTCO2e reduced
Lead by example, major municipal emissions source

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Next Steps

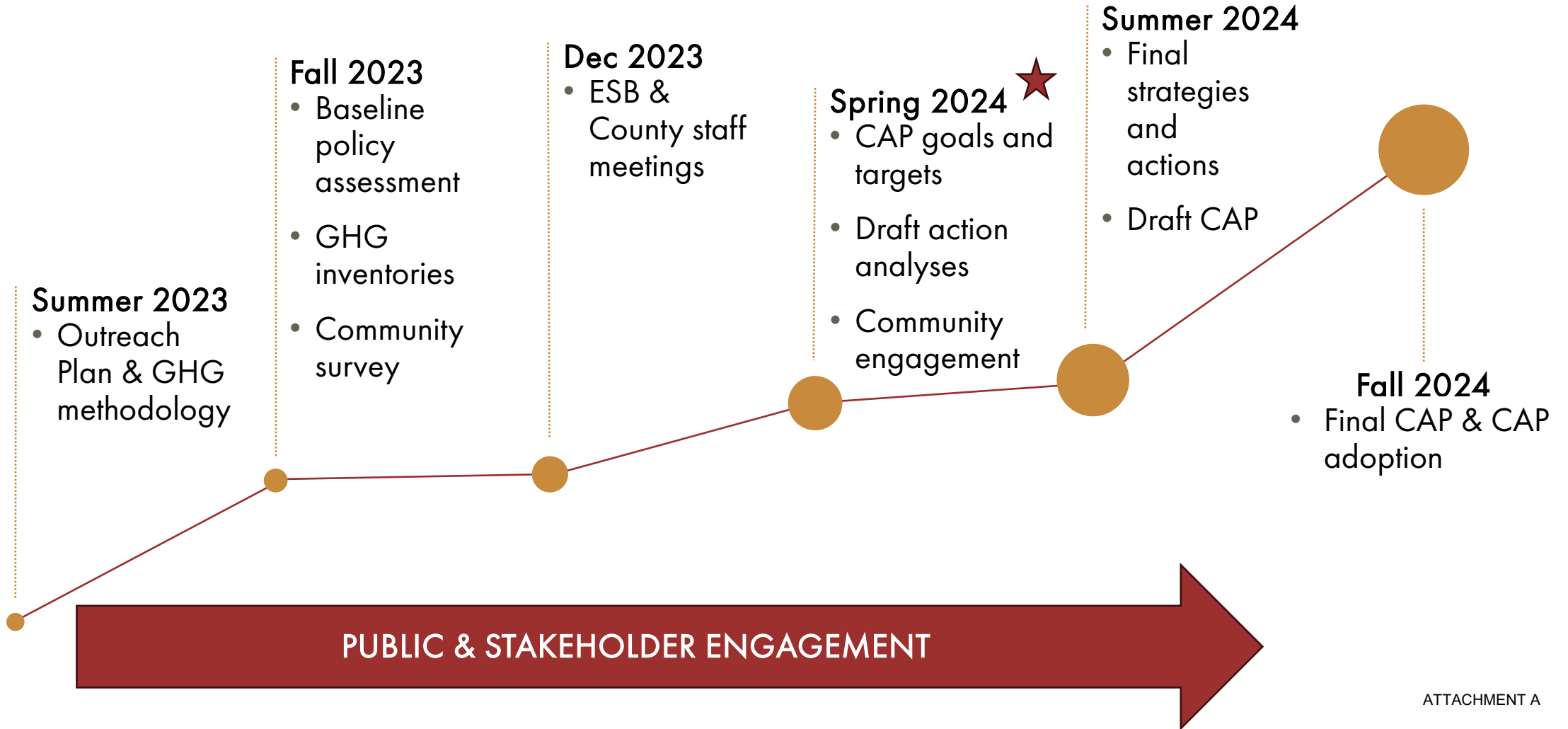LOS ALAMOS
where discoveries are made

Next Steps

- **Engage with the community:**
  - Vet action list and begin planning for implementation through:
    - Interactive community workshop (April 2)
    - Community survey
    - Focus groups and interviews
- **Finalize action list and action analyses** using input from community and Council
- **Develop draft CAP & implementation plan:**
  - Receive input on draft CAP from community and Council
  - Draft detailed implementation plan
- **Finalize the CAP and implementation plan**

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CAP Timeline

Summer 2023
- Outreach Plan & GHG methodology

Fall 2023
- Baseline policy assessment
- GHG inventories
- Community survey

Dec 2023
- ESB & County staff meetings

Spring 2024
- CAP goals and targets
- Draft action analyses
- Community engagement

Summer 2024
- Final strategies and actions
- Draft CAP

Fall 2024
- Final CAP & CAP adoption

PUBLIC & STAKEHOLDER ENGAGEMENT

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For Discussion

- Does Council have any questions or concerns about the proposed strategies and actions for the CAP?
- Do the year 1 budget options align with Council's highest climate action priorities?
- What are Council's initial thoughts about Cascadia's target setting considerations and options?

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Thank you!
Questions?

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