



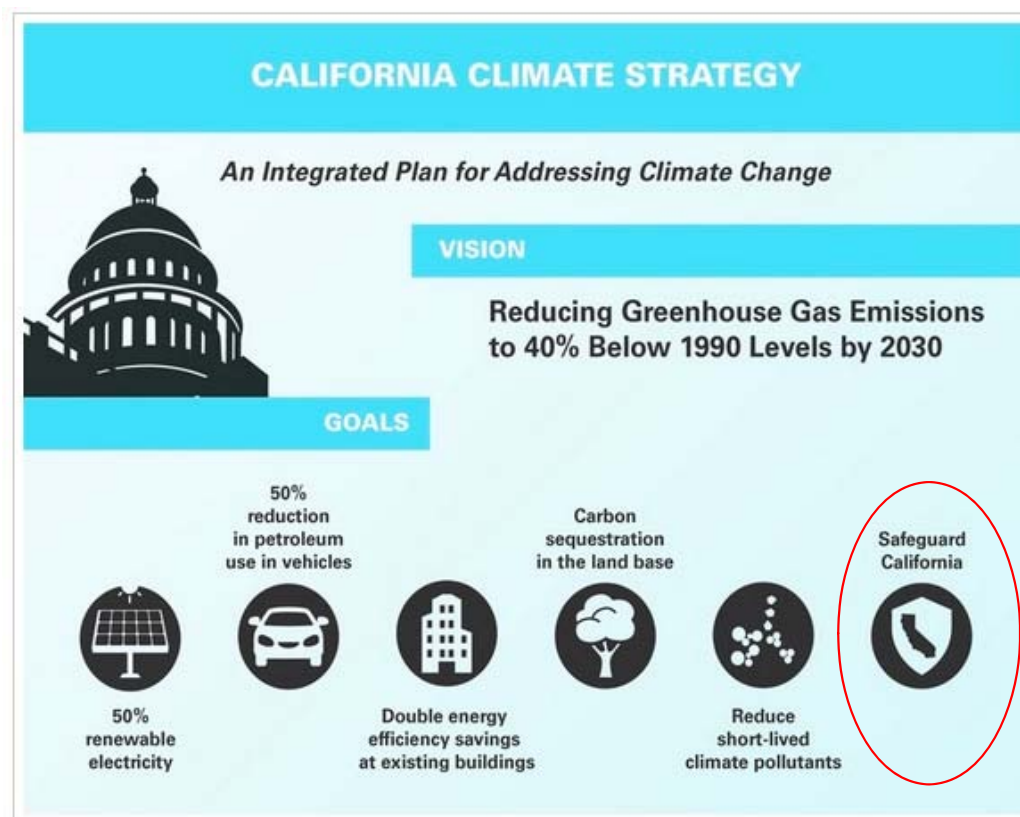
Emerging applications of adaptation pathways for managing and reducing climate change vulnerability in Californian energy utilities

Robert Kay*, Judsen Bruzgul, Tommy Hendrickson, Maya Bruguera and Cole Wheeler

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Big picture: Climate Change in California





State Agency Guiding Principles for Planning & Investment (as per Executive Order B-30-15)

- State agencies' planning and investment shall be guided by the following principles:
 1. Priority should be given to actions that both build climate preparedness and reduce greenhouse gas emissions
 2. Where possible, **flexible and adaptive approaches** should be taken to prepare for **uncertain climate impacts**
 3. Actions should protect the state's most vulnerable populations.
 4. Natural infrastructure should be prioritized



California Legislative Adaptation Requirements

SB 379 (2015)

Jan 1, 2017
California local governments that have adopted an Local Hazard Mitigation Plan must add adaptation to safety element of general plan during next LHMP update

Jan 1, 2022
California local governments that haven't adopted an LHMP must add adaptation to safety element general plan

SB 1000 (2016)

Jan 1, 2017
Climate change vulnerability assessments (through SB 379) explicitly consider environmental justice

AB 1482 (2015)

July 1, 2017
Update to the Safeguarding California Adaptation Plan

July 1, 2020
Update to the Safeguarding California Adaptation Plan

SB 246 (2015)

July 1, 2018
Update to California's Adaptation Planning Guide to include tools, guidance, and strategies for adaptation

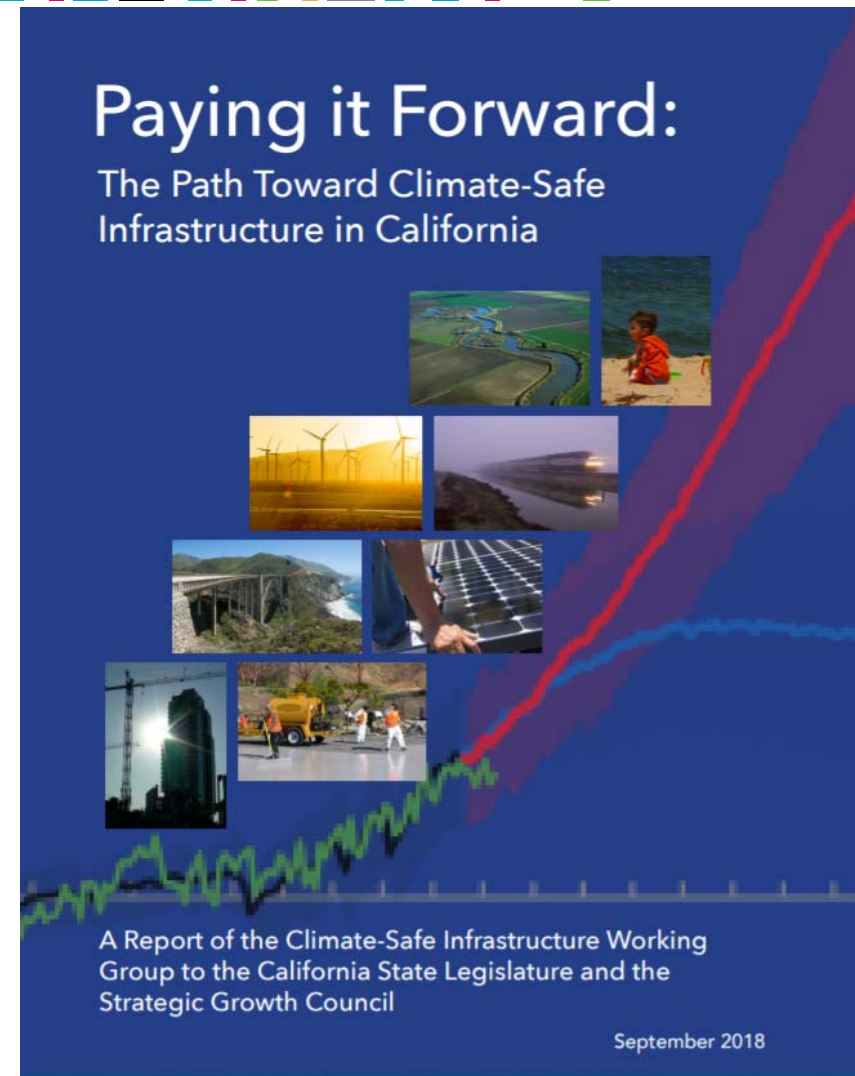
July 1, 2021
Update to California's Adaptation Planning Guide to include tools, guidance, and strategies for adaptation

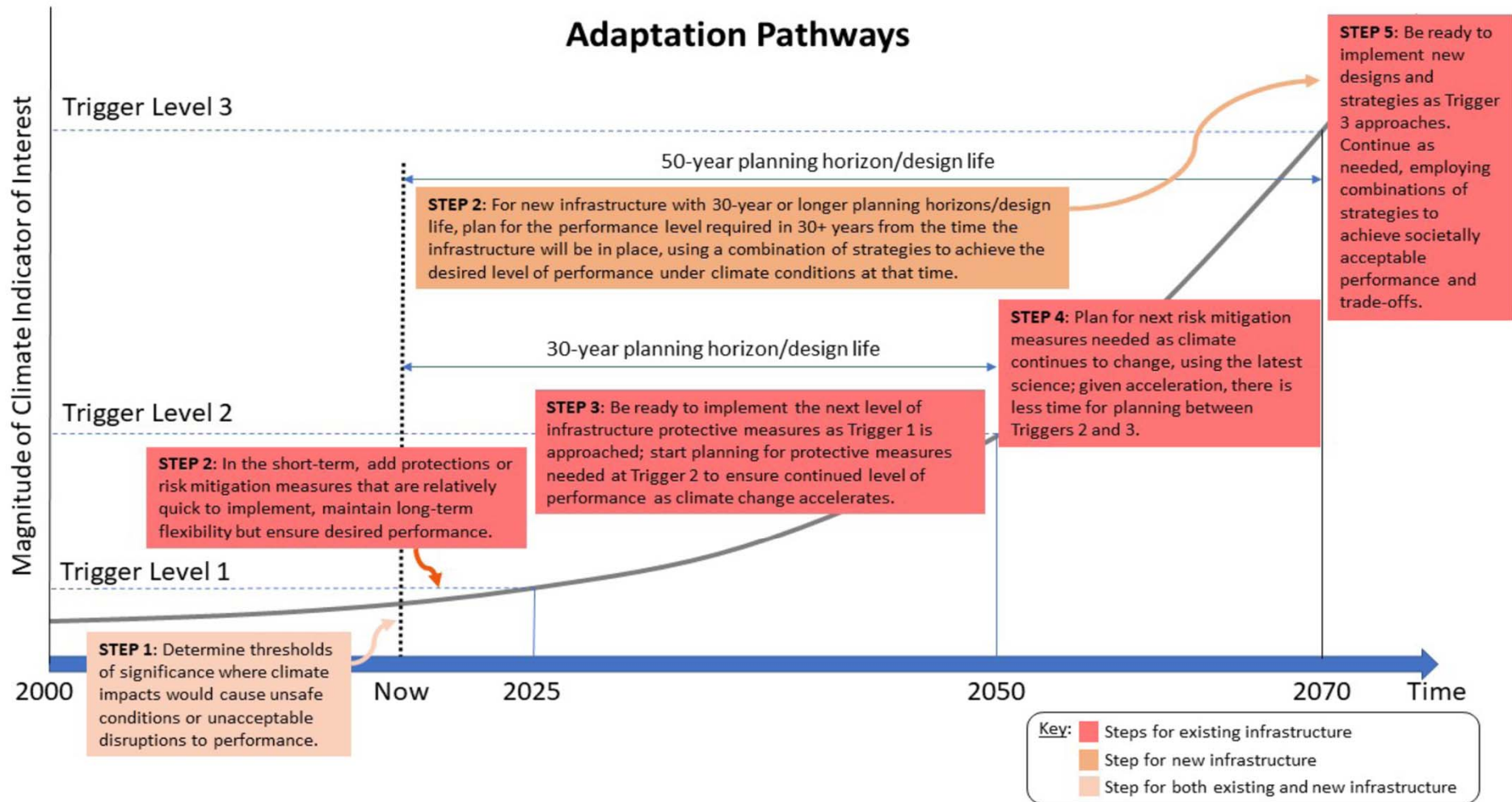
AB 691 (2013)

July 1, 2019
Public land trustees (ports & large harbors) must submit a sea-level rise adaptation strategy

AB2800: Paying It Forward Report

- Climate Safety Through Mitigation and Adaptation: **The Climate-Safe Path**
- Realizing the Climate-Safe Path One Step at a Time: Adaptation Pathways







California Energy Commission-Funded Climate Change Assessment Projects

- Two projects: Electricity & Natural Gas – both in San Diego Service Area
- Electricity
 - Develop an understanding of **climate change vulnerability and adaptation options** to **coastal hazards** at a level of detail appropriate for informing electricity sector policy and planning
- Natural gas
 - Develop an understanding of **climate change vulnerability and adaptation options** to **coastal and inland hazards** at a level of detail appropriate for informing natural gas sector policy and planning
- Undertaken 2016 – 2017. Published August 2018.
<http://www.climateassessment.ca.gov/>

Technical Assessments & Engagements

Adaptation Planning
Workshop:
San Diego Gas &
Electric, Emergency
Operations Center



Mid-Century Coastal Hazard Potential Exposure

Legend

Coastal Wave Flooding from 100-year Event

- 0 m SLR
- 0 m to 0.5 m SLR

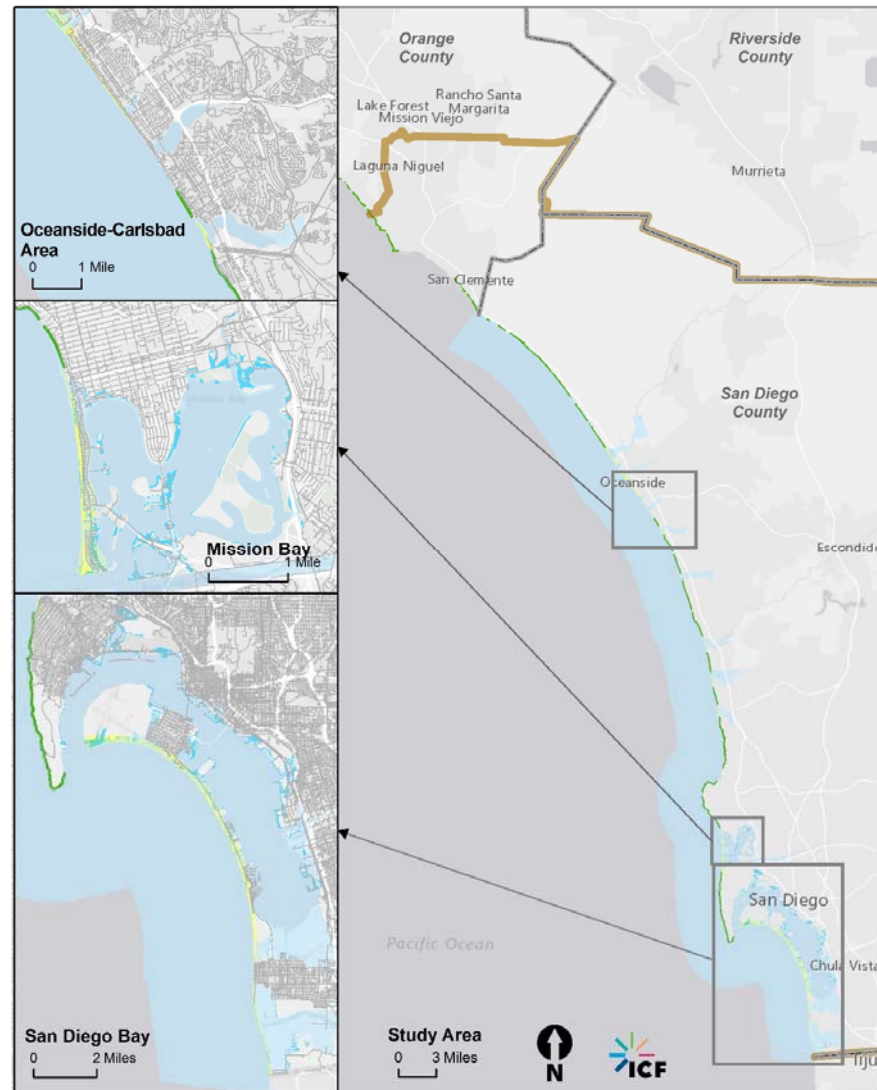
Dune and Low-lying Erosion

- Eroded land under 0 to 0.5 m SLR + 100-year storm event

Cliff Erosion

- Eroded land under 0 to 0.5 m SLR

- SDG&E Electric Line Assets
- SDGE Service Area Boundary
- County Line

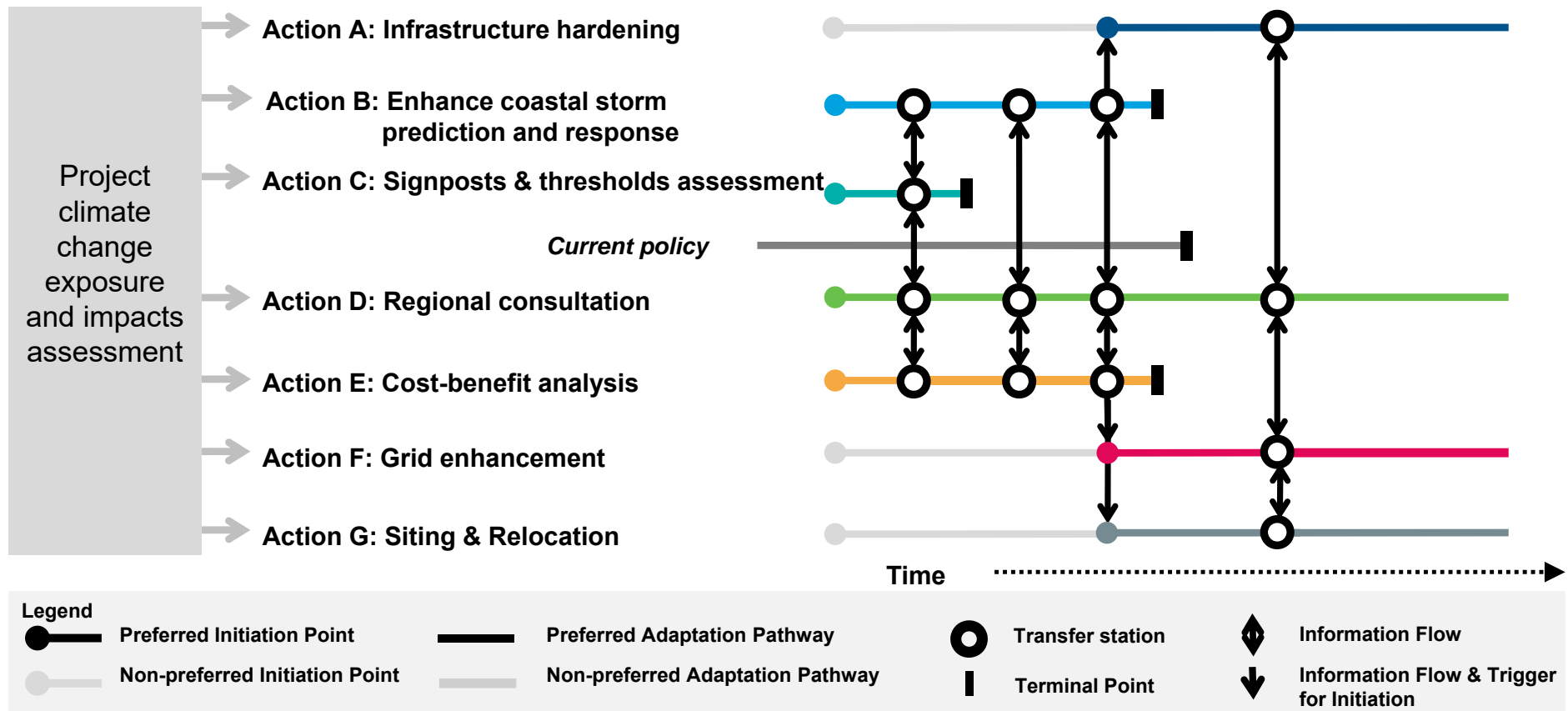




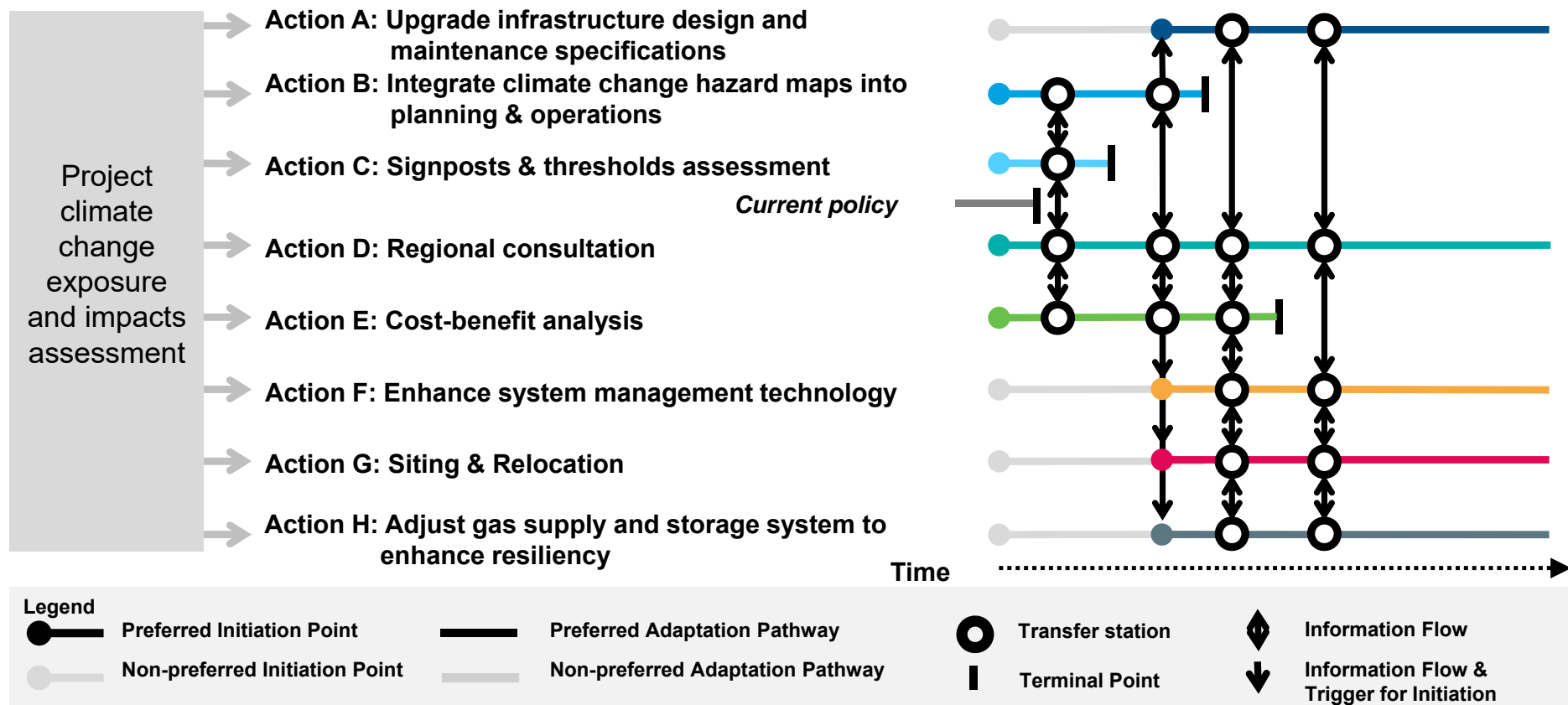
Why did Adaptation Pathways emerge?

- Allows for **integrating climate adaptation** considerations into existing decision-making processes, which can **support implementation**.
- Creates a **long-term, programmatic approach** for adaptation planning which **ensures continuity of investment** and allows for **evaluation over time**.
- Accommodates the possibility of **SDG&E collaborating with local communities** to find the most effective and cost-effective adaptation solutions that directly reduce the vulnerability of utility assets and enhance community resilience.

Adaptation Pathways: Electricity



Adaptation Pathways: Electricity





Looking Forward

▪ SDG&E

- Working with SDG&E to review climate-related signposts and thresholds
- Support SDG&E plan regional engagements on adaptation pathways

▪ California Utility Climate Resilience Landscape

- Utilities across California working to advance adaptation capabilities; and design flexible and robust adaptation pathways to achieve long-term climate resilience
- Rapidly evolving regulatory landscape, with CPUC determining how to regulate & guide utility climate resilience
- Need for regional engagements to optimize adaptation investments and maximize energy system and community climate resilience



Thank you!

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