

# A Cascade of Uncertainty, A Need to Act: The Evolution of San Francisco's Thinking on Climate Change

Michael Carlin

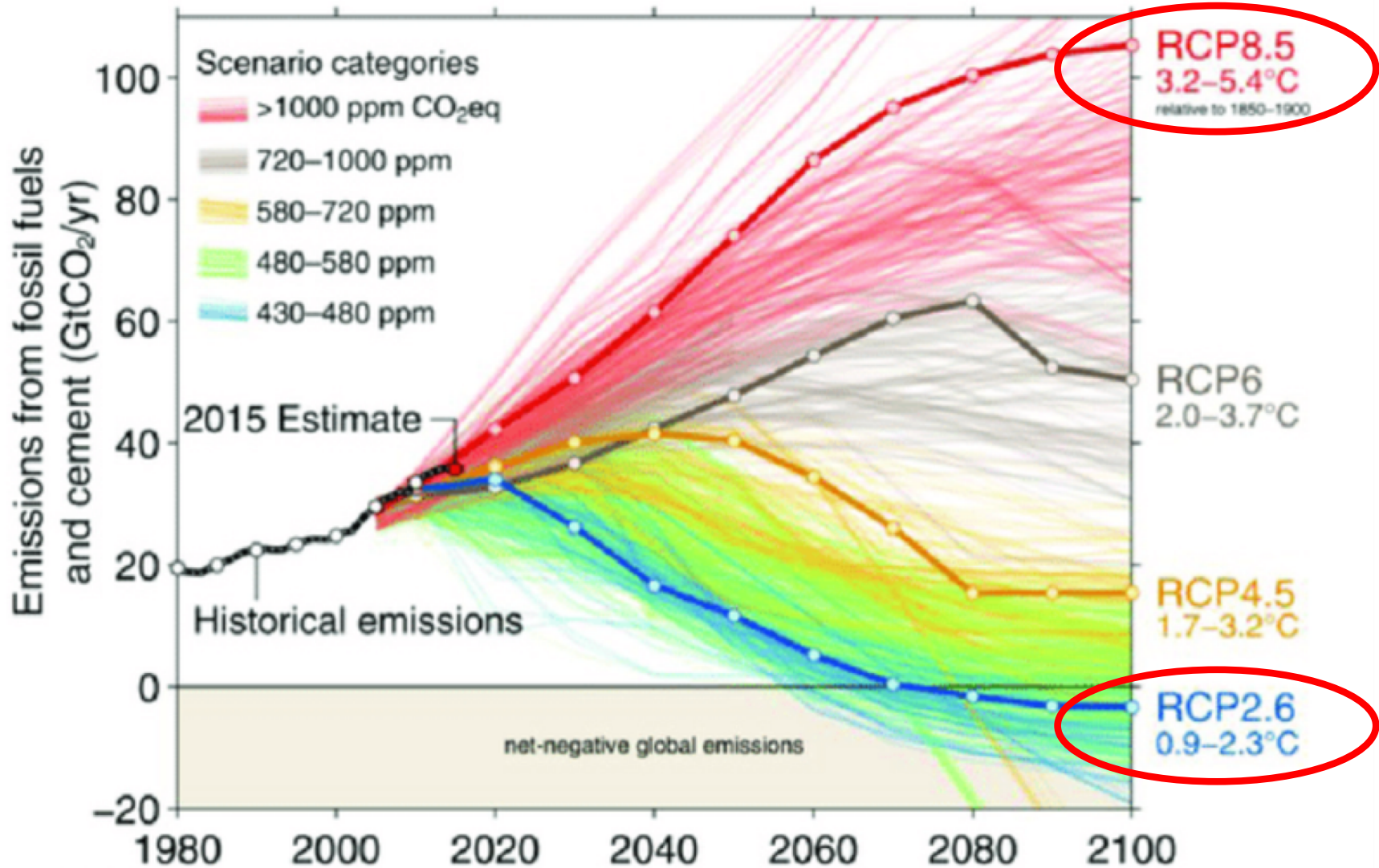
Deputy General Manager and COO

San Francisco Public Utilities Commission

Association of Metropolitan Water Agencies

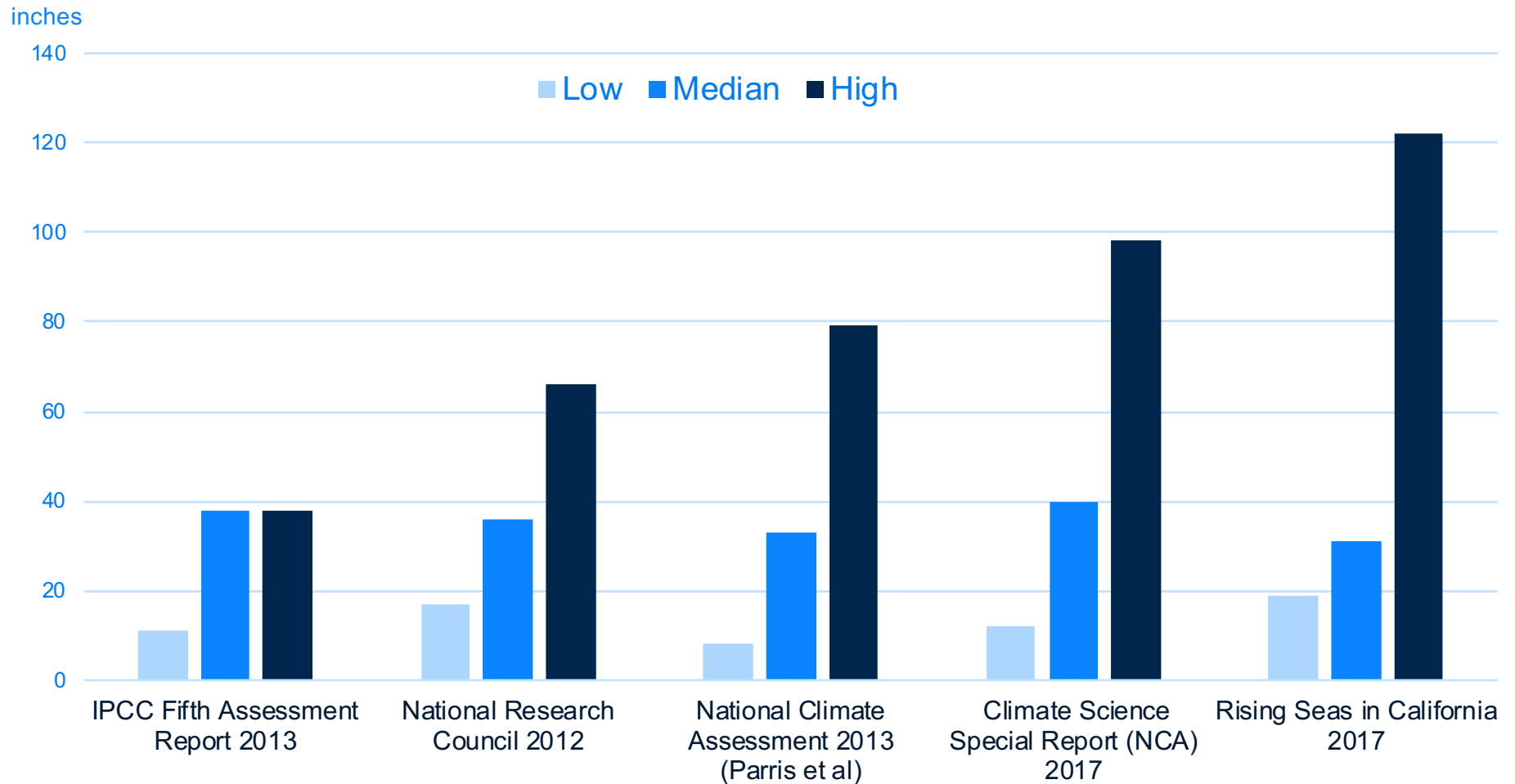
October 16, 2018, San Francisco

# Uncertainty: Warming



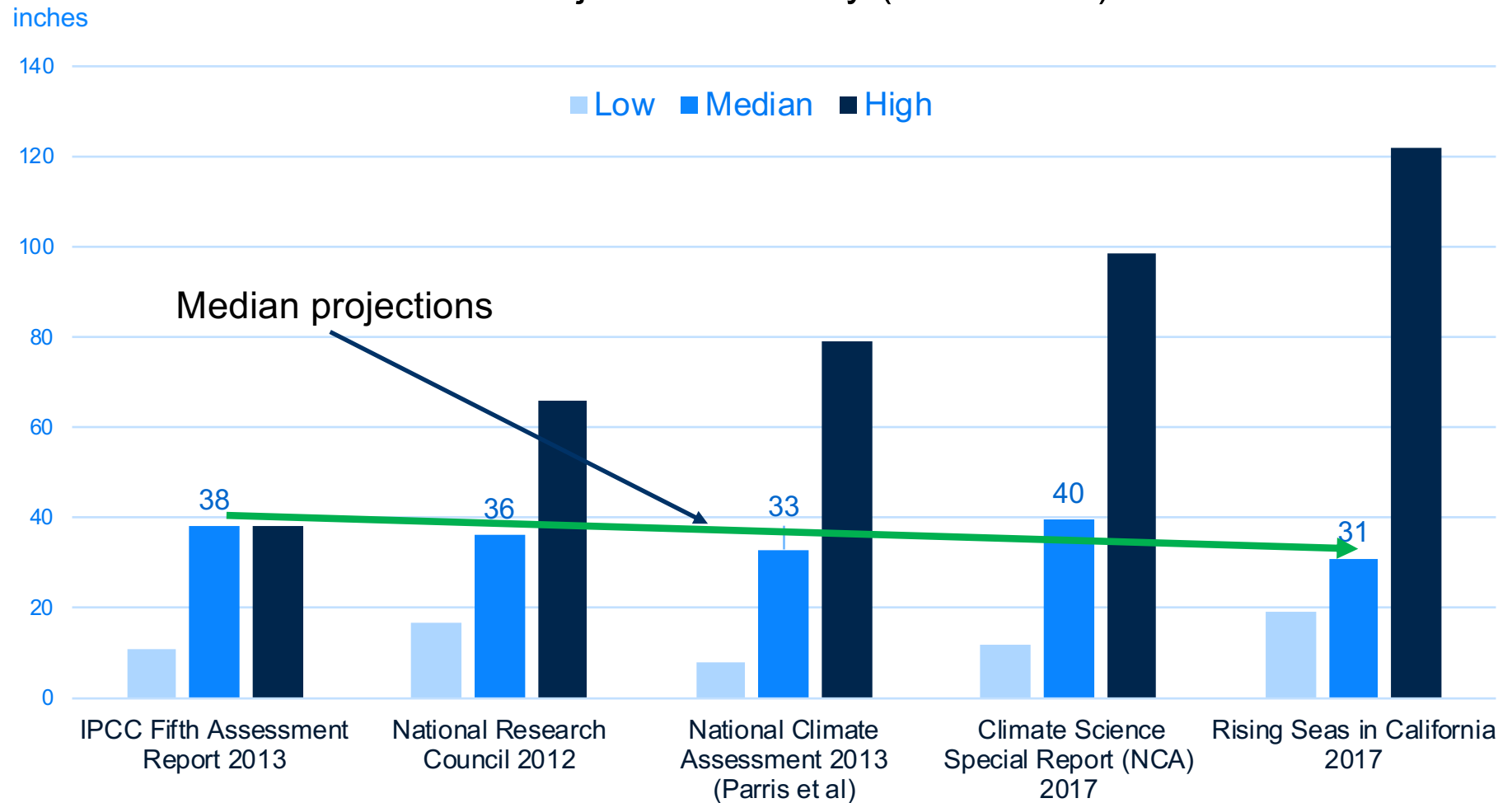
# Five years of sea level rise projections

## Sea Level Rise in 2100 Recent Projections History (2012-2017)



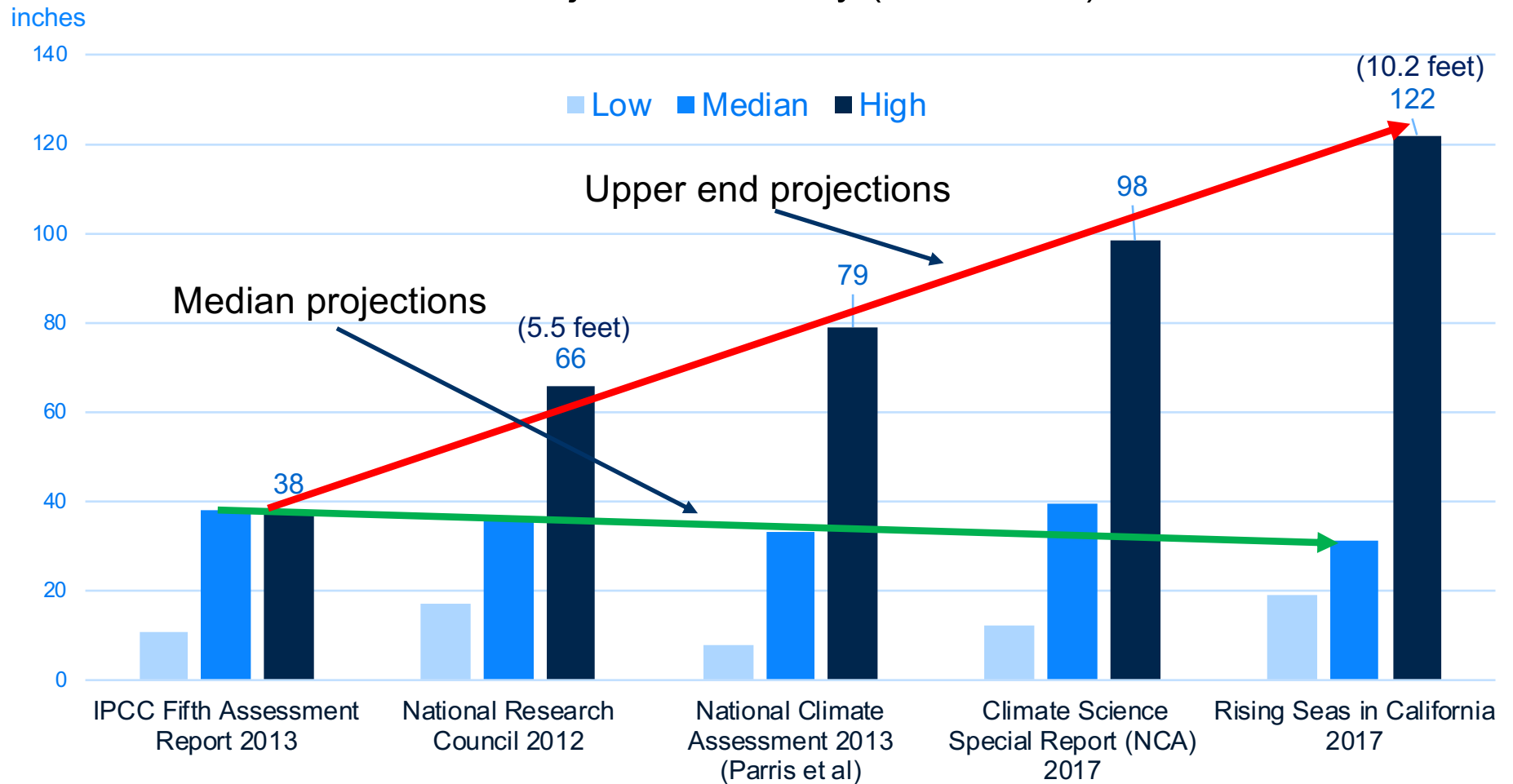
# Median projections: little change

Sea Level Rise in 2100  
Recent Projections History (2012-2017)



# High end projections: major change

Sea Level Rise in 2100  
Recent Projections History (2012-2017)



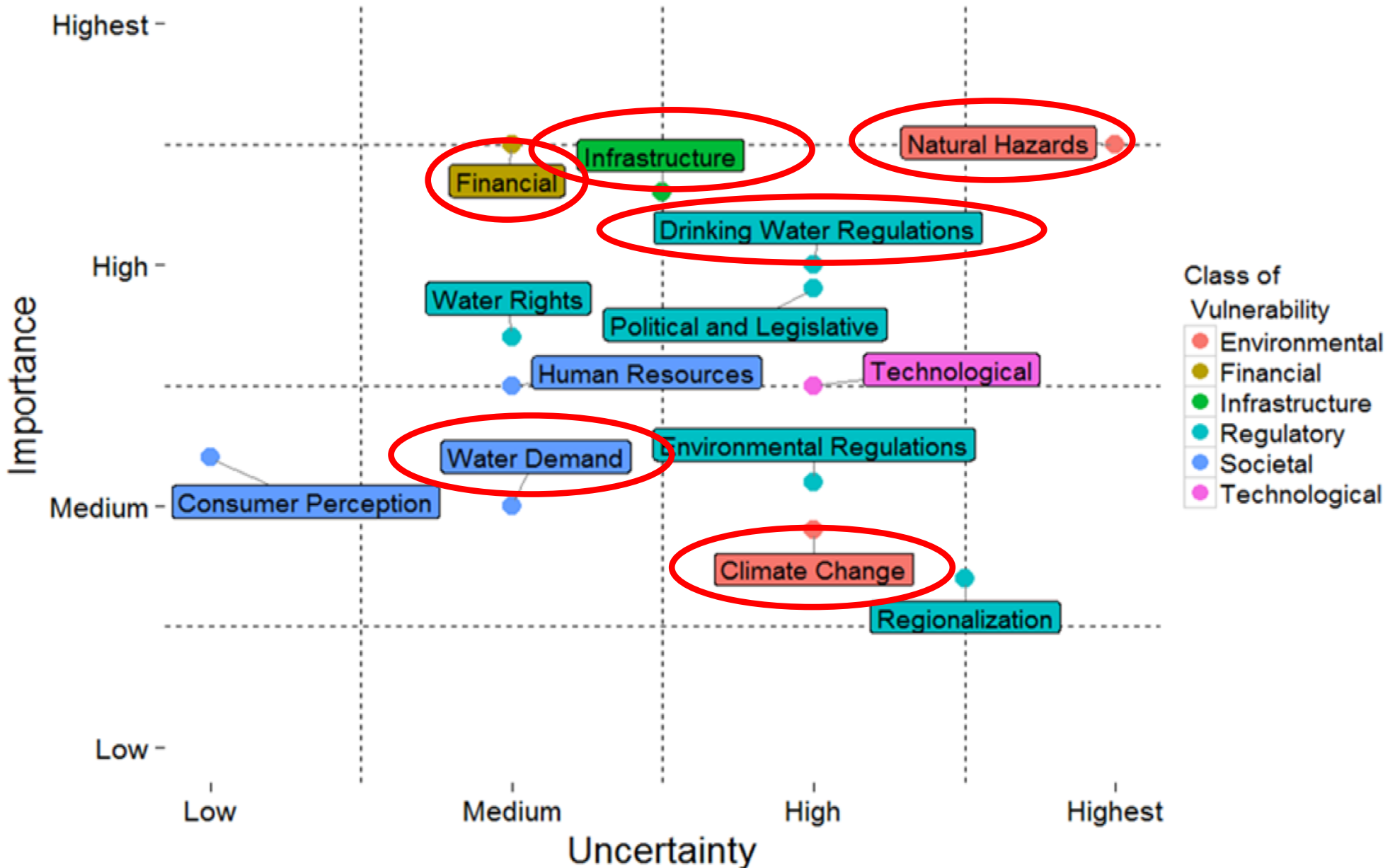


## Climate: One of many uncertainties

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To what extent will climate change be a threat to the Hetch Hetchy Regional Water System in comparison to or in combination with other drivers of change over the next 50 years?

# Broadening the Uncertainty





# Not paralyzed by uncertainty: acting where needed. . .



**Fireboat Pier**



**Golden State Warriors arena**

**Calaveras Dam**



# San Francisco's Sea Wall

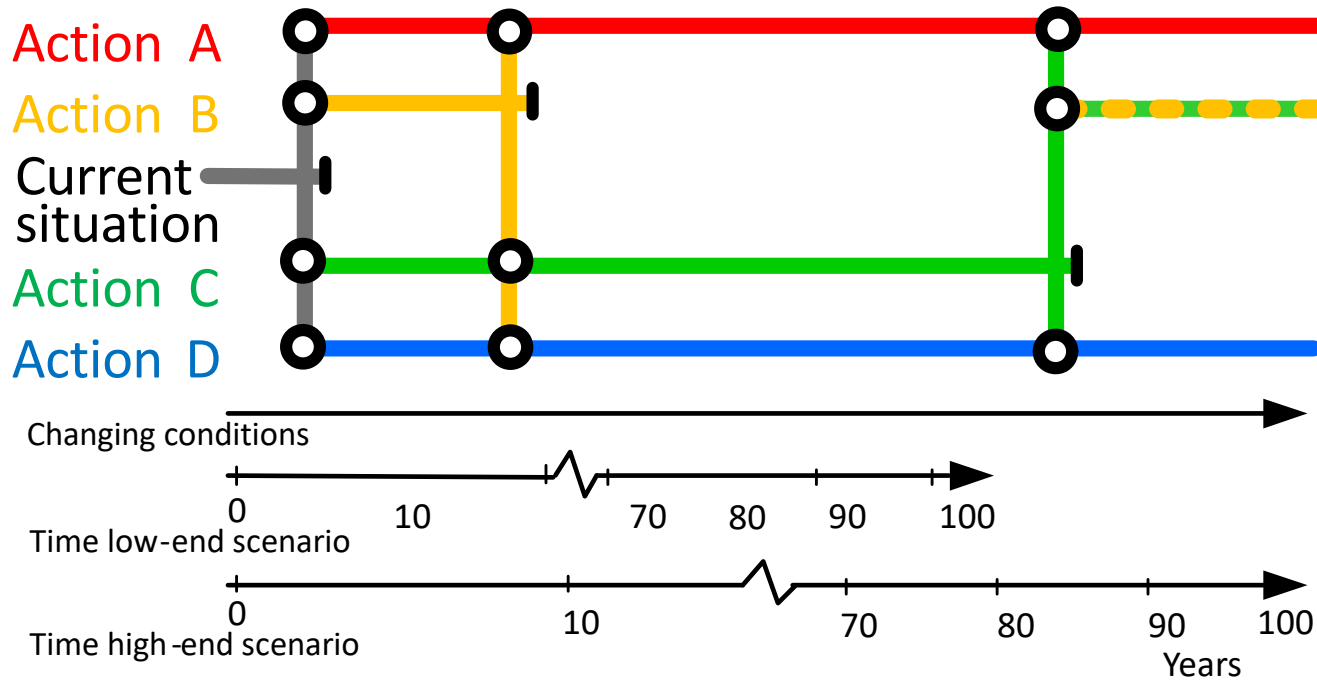


**Earthquake**




**Sea  
Level  
Rise**



## Adaptation Pathways



Time horizon 100 years				
Pathway		Costs	Benefits	Co-benefits
1	●	+++	+	0
2	● ●	+++++	0	0
3	● ●	+++	0	0
4	● ●	+++	0	0
5	●	0	0	-
6	● ●	++++	0	-
7	● ●	+++	0	-
8	● ●	+	+	---
9	●	++	+	---

-  Transfer station to new policy action
-  Adaptation Tipping Point of a policy action (Terminal)
-  Policy action effective

# Thank you!

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