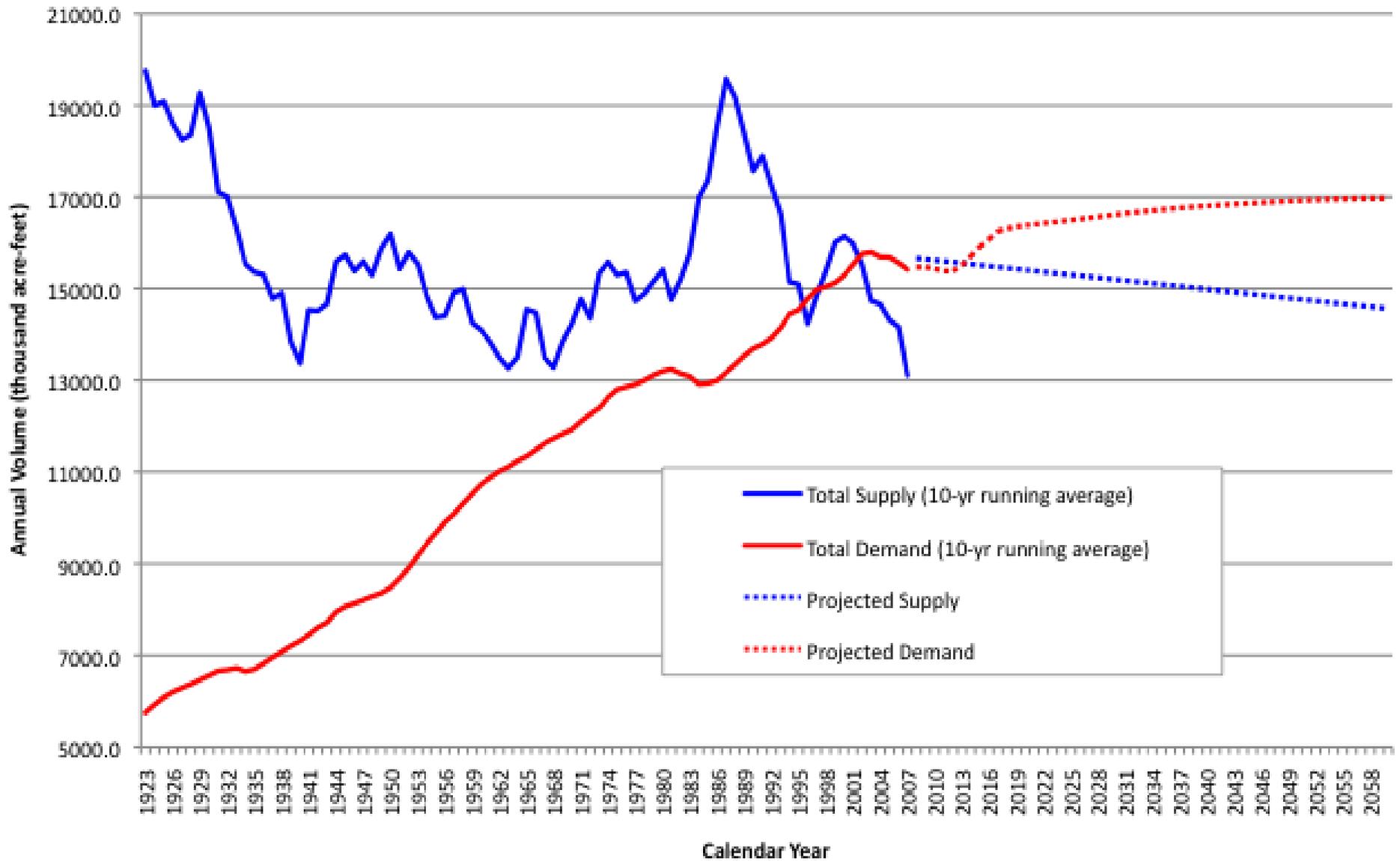


# Addressing Uncertainty and Discussing Institutional Reform in the Colorado River Basin Under a Changing Climate

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# Potential Climate Change Impacts

- “The most accurate models show the range of likely flows by 2050 are **5 to 20 percent less** than current flows.”

-USGS, 2011

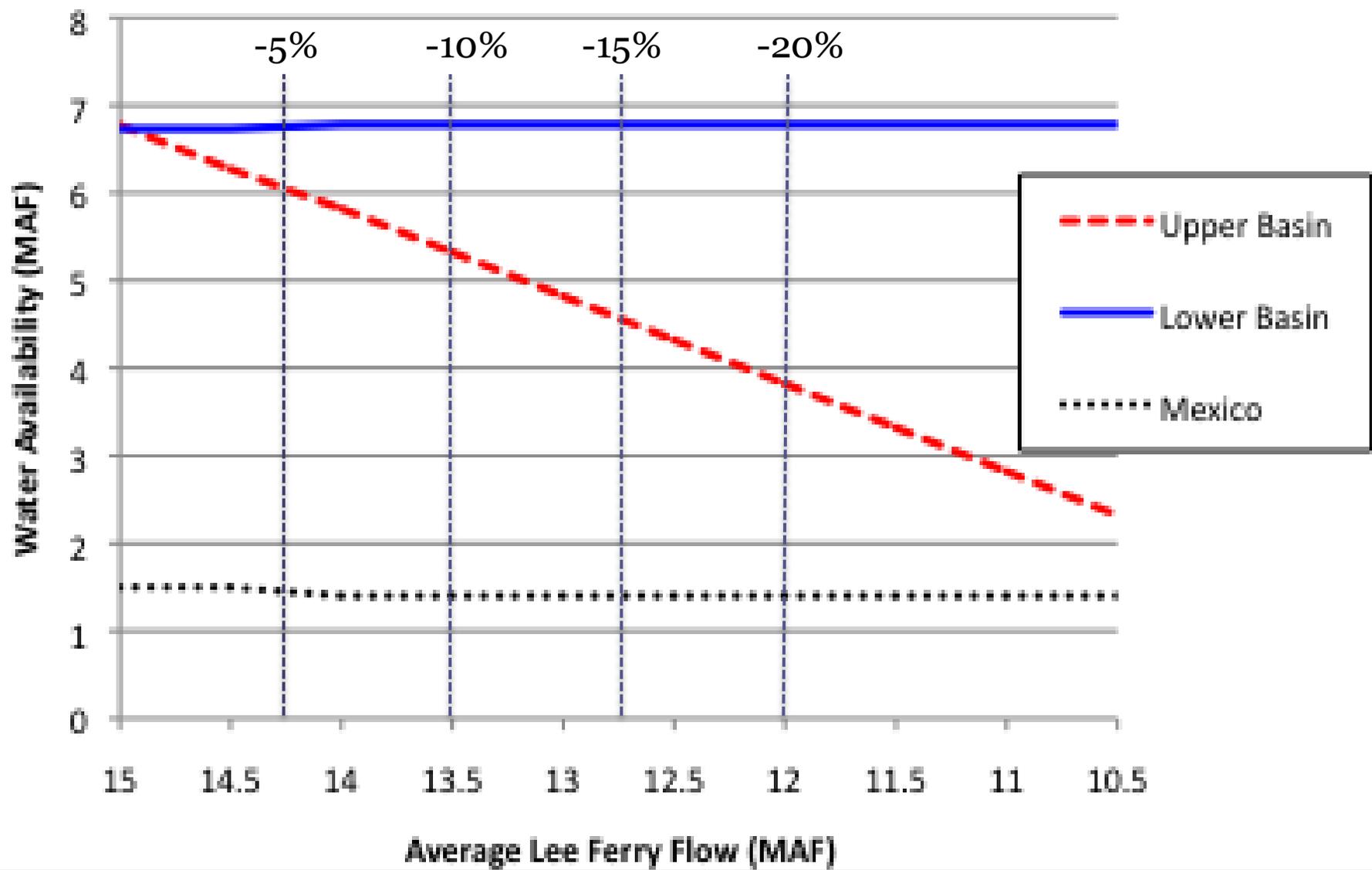
# Law of the River Ambiguities

## 1. Upper Basin “Delivery Obligation”

- Article III(d): “The States of the Upper Division *will not cause the flow of the river at Lee Ferry to be depleted* below an aggregate of 75,000,000 acre-feet...”

# Law of the River Ambiguities

2. Definition of “surplus waters” and the Upper Basin’s obligation to Mexico deliveries
  - Article III(c): “...such waters shall be supplied first from the waters which are surplus...”



# Study Objectives

- Further analysis of salient legal ambiguities
- Discussions with key Colorado River stakeholders
- Quantitative modeling to determine risk of shortages
- Development of potential reforms for water managers under such uncertainty, with the possibility for modeling such reforms

# Basin-wide, innovative solutions

- Example of reform:
  - The Compact allocations are continued, but the Upper Basin implements a voluntary demand limit. The Lower Basin agrees not to request an inter-basin compact call.
  - Both Basins make concessions, but limit 'unacceptable outcomes' and address legal uncertainties.

# Colorado River Compact, 1922

- Article I: “The major purposes of this compact are to provide for the equitable division and apportionment of the use of the waters... to promote interstate comity; to remove causes of present and future controversies...”

# Potential for amendments

- “The ‘constitution-like’ character of the Compact cannot justify the concept of complete rigidity in the face of significant changes in circumstances since the Compact was signed. After all, we’ve amended the United States Constitution 17 times in the past 216 years.”

-Robert Adler

*Wallace Stegner Center 12<sup>th</sup>  
Annual Symposium, 2007*

# Conclusions

- Climate change, in addition to key legal ambiguities, creates vast uncertainty in the coming decades.
  - Especially for the Upper Basin
- This was not the intent of the Compact.
- Discussions need to happen now before the resources of the Colorado River are severely threatened.

# Conclusions

- “We argue that the relatively small risk of drying in the next 2 decades should not lull policy makers into inaction because if by 2026 the detection of changing climate confirms incipient 20% reduction in annual average flow due to a climate change signal, then the policy options available may be limited in their ability to mitigate the large risk.”

-Rajagopalan, et al., 2009

Thank you.

Thoughts, comments and suggestions:

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For additional information see:

[www.waterpolicy.info/projects/CRGI/](http://www.waterpolicy.info/projects/CRGI/)