

# **A Risk-Based Analysis of General Fund Reserve for the City of Berkeley**



# Purpose of Analysis

- Compliant with City General Fund Reserve Policy
  - Current goal is a minimum of 30% of Adopted GF Revenue within 10 years (2027)
  - Council will consider increasing or lowering reserve level based on a risk assessment (according to best practices) to be updated at least every five years
- Analysis to inform recommendations on whether to make any changes to policy

# Goals for Today

- Review five steps of the project
  - Define “reserves”
  - Define the risks the City of Berkeley is subject to
  - Determine exposure to risks
  - Putting together the findings of risk analysis
  - Next steps from here
- Gain awareness of how analysis was performed, results, and implications for the City of Berkeley
- Discuss existing General Fund Reserve policy and any modifications to the existing policy

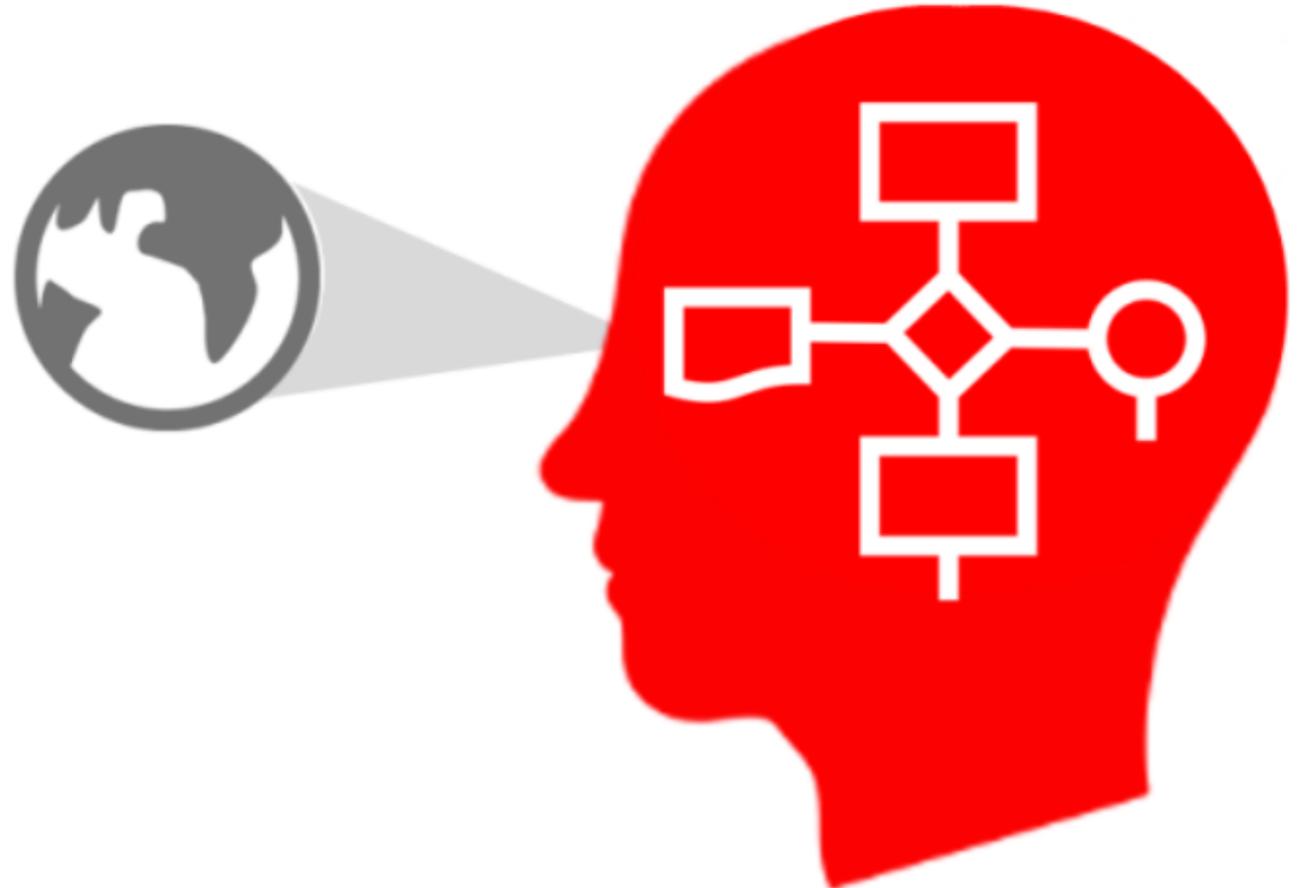


# Step 1 – Define “Reserves”

**A mental model  
is a representation  
of how the real-  
world works.**

**The real world is  
complicated.**

**Mental models  
simplify.**



# What are Reserves?

“Reserves” is a budget and policy term that describes the resources available *outside of the budget* for use if the resources appropriated *inside of the budget* are insufficient. This offers protection against **unplanned, unavoidable** costs or losses.

# What is the Traditional Mental Model for Reserves?

## **The Savings Account**

- Easy to grasp
- Seemingly obvious parallel to our personal lives



# The Savings Account Mental Model is Limited

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- Savings is more commonly seen as deferred spending than a way to manage risk
- Implies that more is better



# What is the Alternative?

## The Insurance Policy

- A reserve manages volatility
- Risk is a product of volatility
- Hence, reserves help manage risk

## Advantages

- Obvious parallel to personal lives
- Invites us to think how commercial insurance complements reserves
- Implies there is an optimal amount



## Reserves as Insurance

Addresses reserve's role in guarding against risks like revenue instability, catastrophic events, and cashflow instability.

Provides a lens that encourages new and savvy ways to manage risk across the government.

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## Reserves as Savings Account

Addresses reserve's role in accumulating cash to pay for future costs that would not be affordable within a single year's revenue. A capital asset is an example of such a cost.

Provides a lens that encourages multiyear financing strategies for large costs.

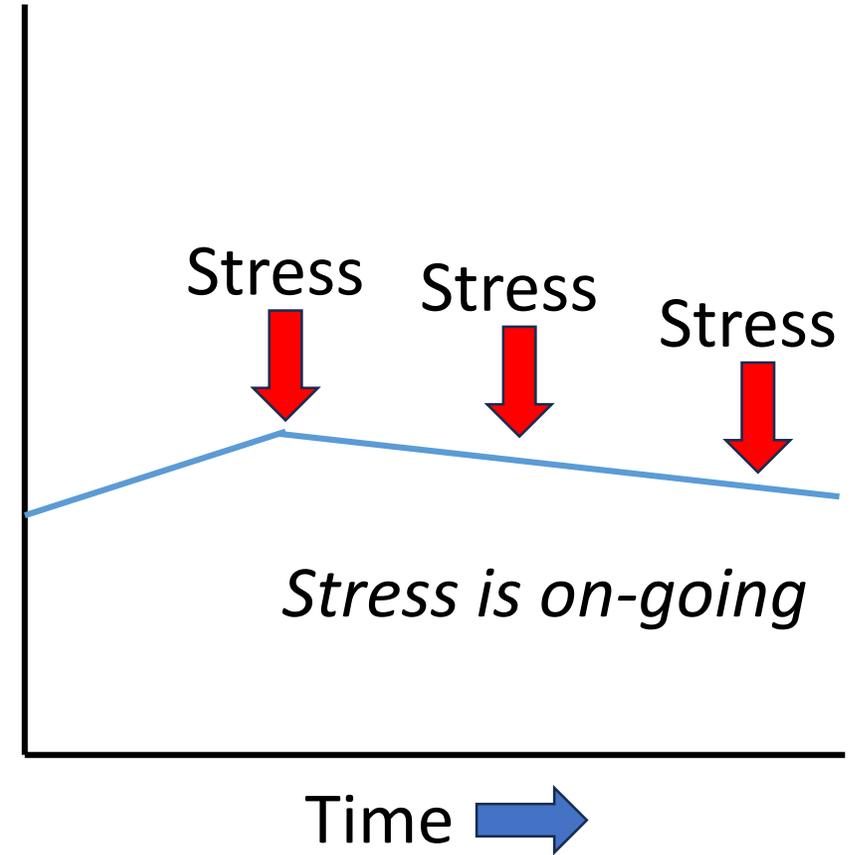
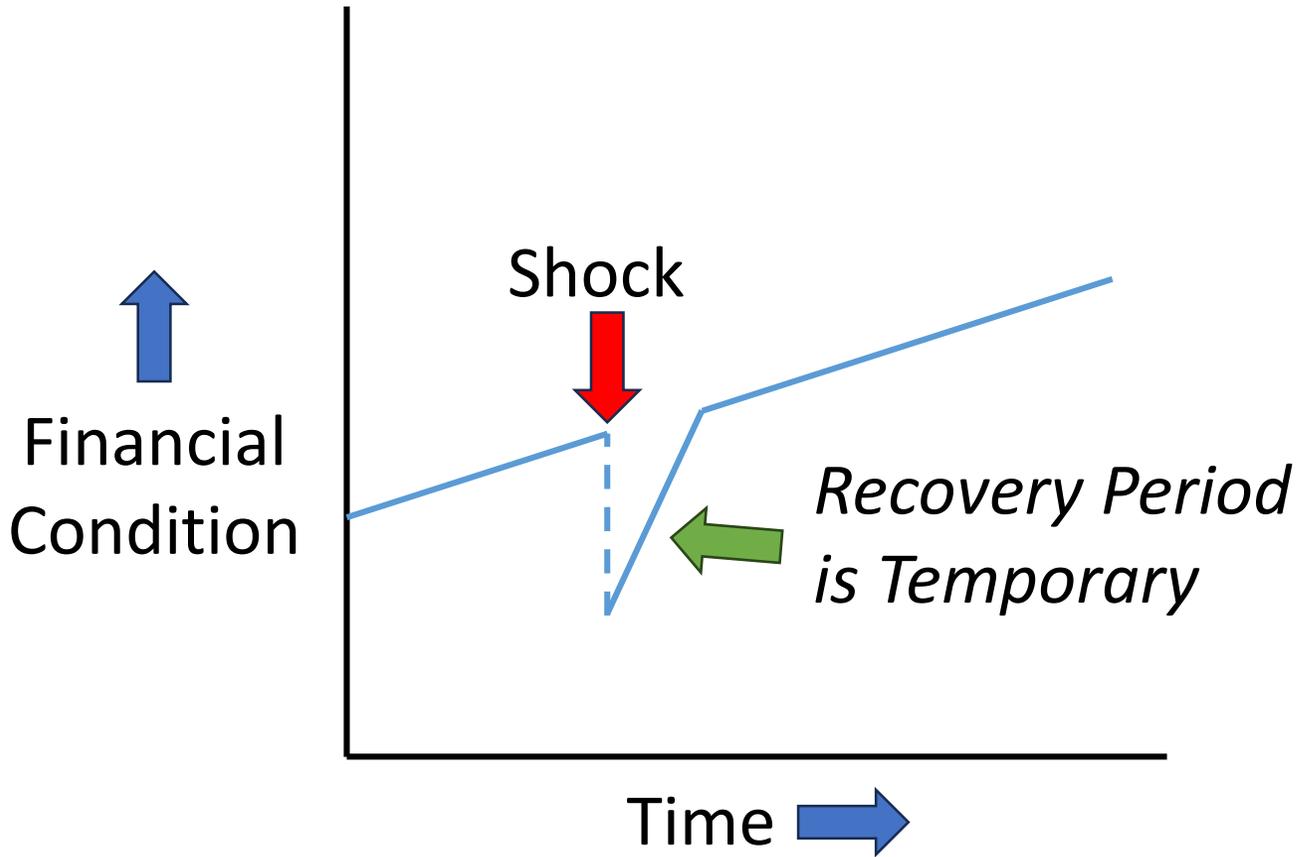
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**Savvy  
Financial  
Strategy**



## **Step 2 – Define Risks City of Berkeley is Protecting Against**

# *Shock*      Versus      *Stress*



*Reserves are an appropriate tool for shocks because temporary recovery period matches with non-renewable nature of reserves*

# Natural & Human-made Catastrophes



***Wildfires***



***Earthquakes***



***Other Hazards***



***Tsunamis***

# Revenue Instability (Recessions and Pension)

Revenue	% of Total
<b>Taxes</b>	
Property Tax	38%
Sales Taxes	7%
Real Property Transfer Tax	12%
Business License Tax	10%
Utility Users Fee	7%
All Other Taxes	3%
All other revenue	22%
<b>TOTAL</b>	<b>100%</b>



## **Step 3 – Determine Amount of Exposure to the Risks**

# How Did We Analyze Exposure to These Risks?

- Monte Carlo computer simulation
  - Has been around since the 1950s
  - Standard practice in industries like insurance
  - Basically, we built a multiverse of the City of Berkeley

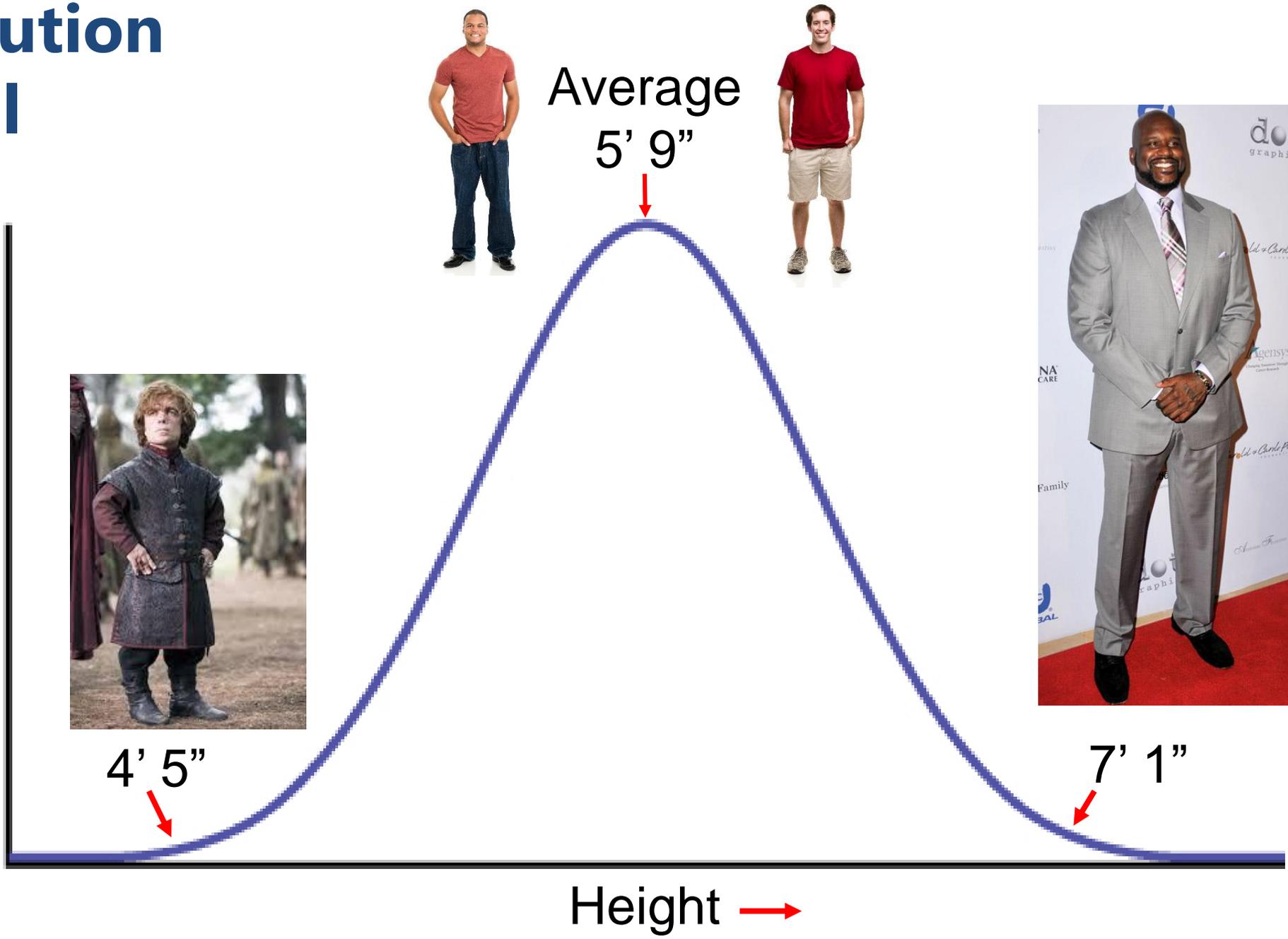


# Where the Data Came From

- Berkeley's own historical experience
- Historical experience in the wider region.
- Berkeley's finance and emergency management staff
- Third party experts
  - Aon and FirstStreet.org
  - State experts
  - County / regional hazard reports

# 18 The Normal Distribution or "Bell Curve"

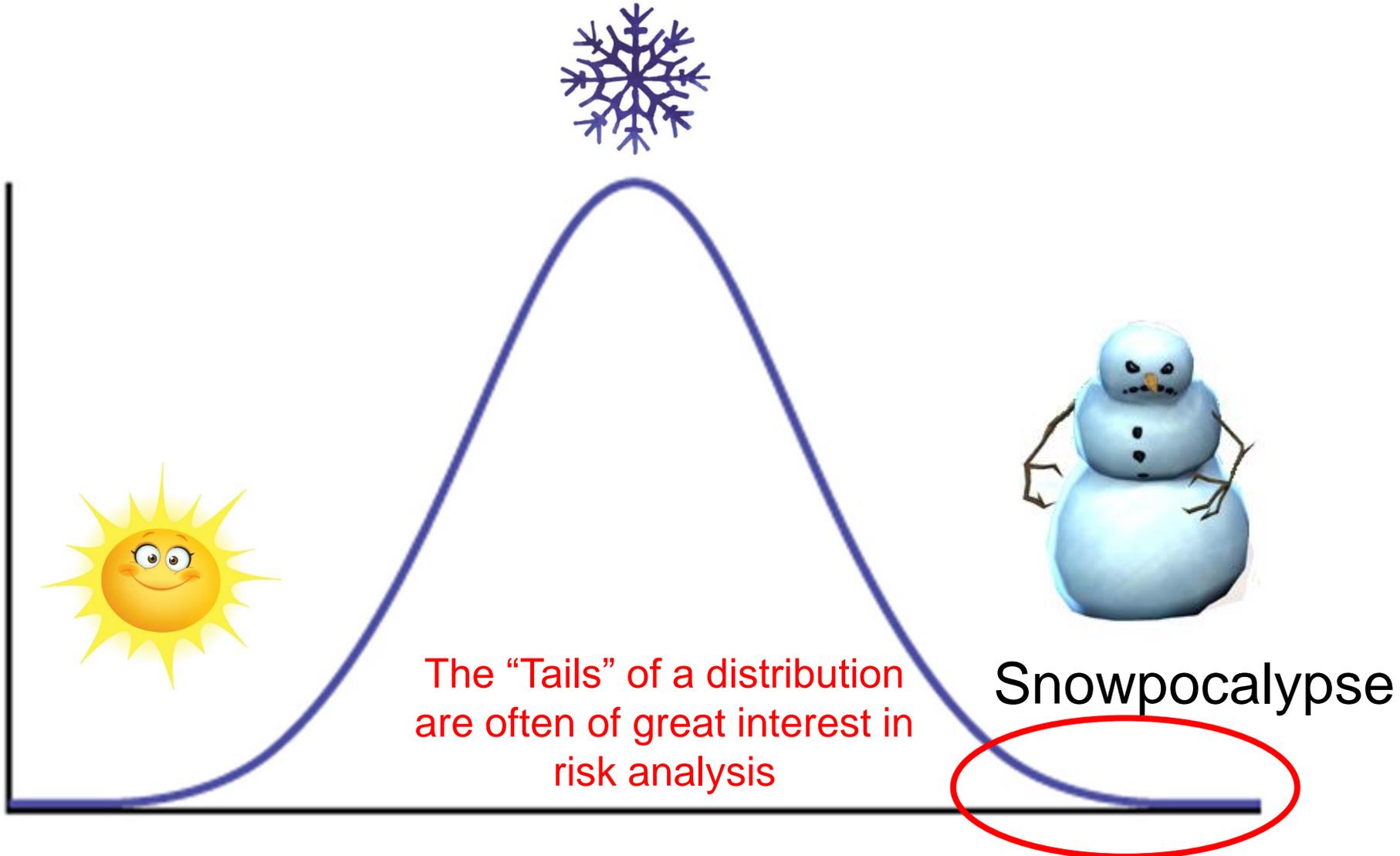
↑  
Frequency





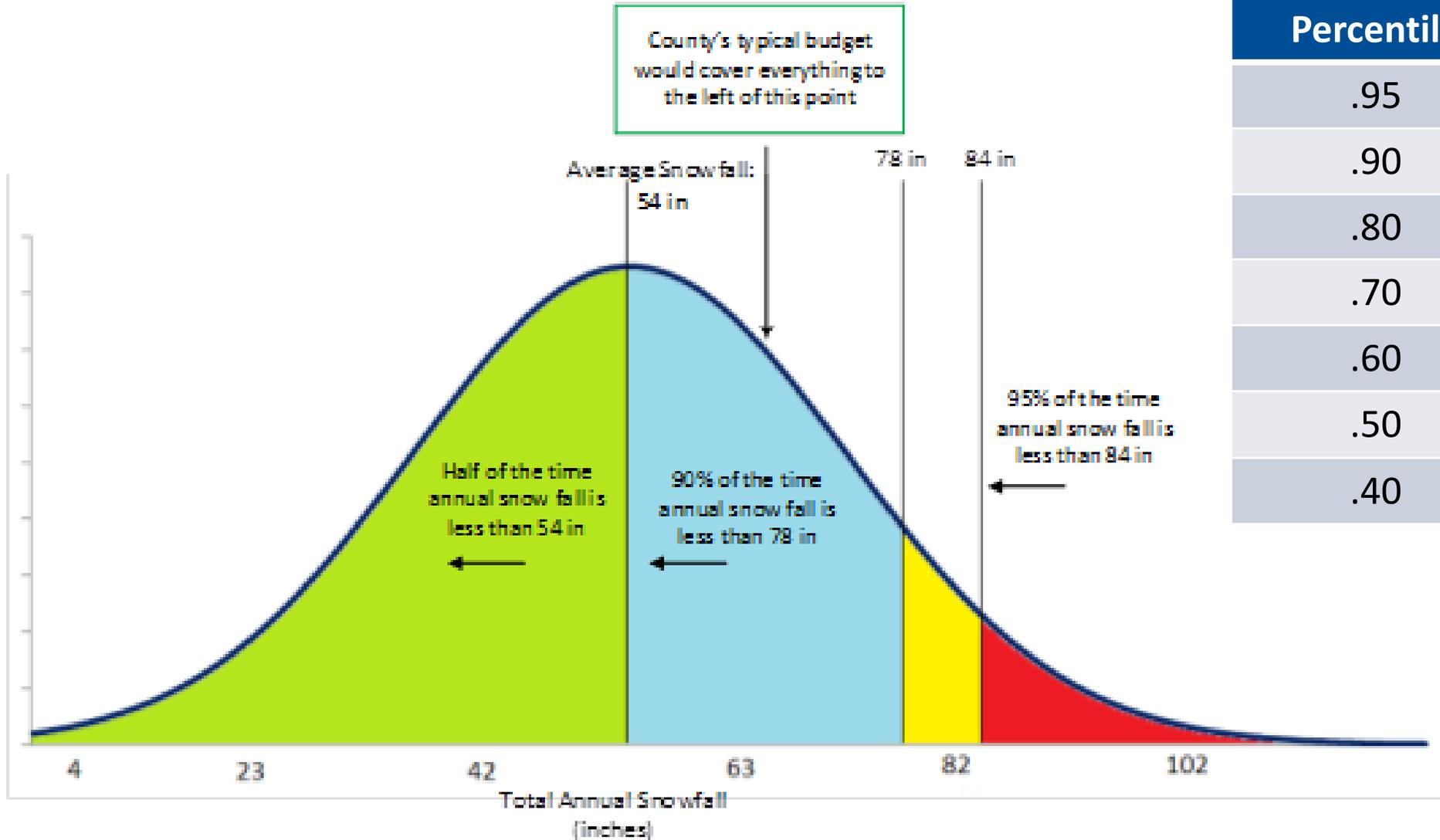
# Normal (Symmetrical) Distribution in Local Govt

↑  
Frequency





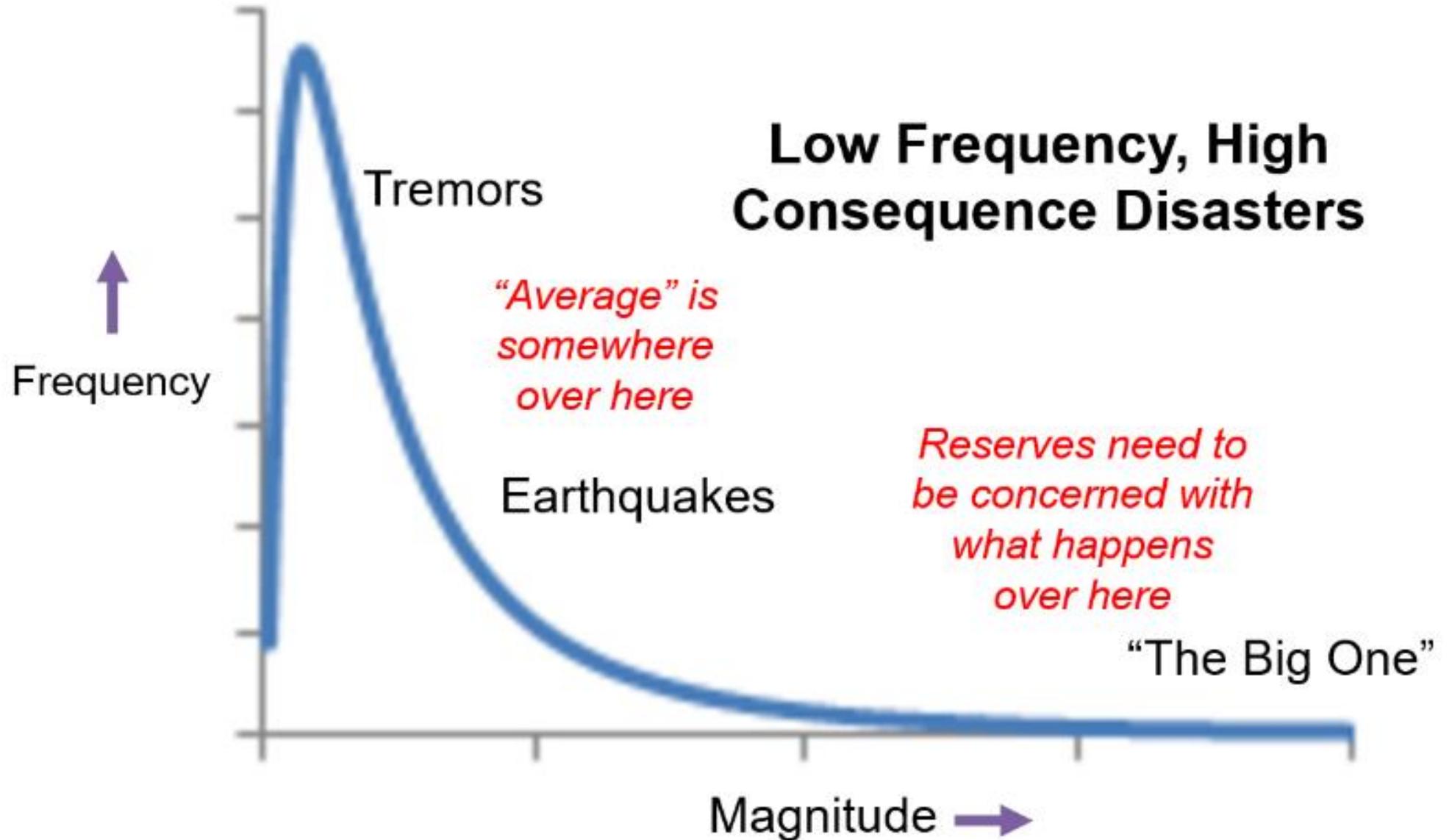
# Normal Distribution Applied to a County



Percentile	Snowfall
.95	84
.90	78
.80	70
.70	64
.60	59
.50	54
.40	49

# Important Feature of Many Catastrophes

- Hockey stick shaped loss curve



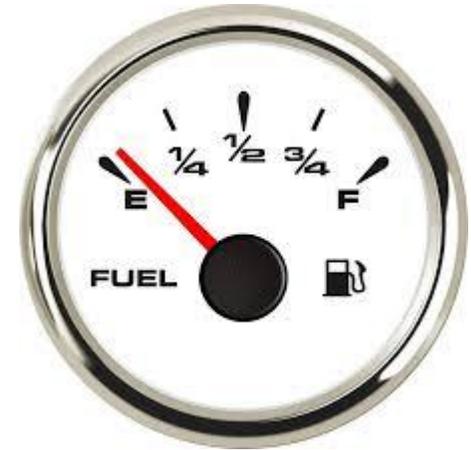


# Step 4 – Putting the Findings of Risk Analysis Together

# Let's Add Up All the Risks GFOA Analyzed

○ But first some important points...

- Risks don't add up like you might expect
  - Interdependencies!
- Berkeley will not "do nothing" if a bad thing happens – it will look for savings opportunities. We assumed a willingness to cut the budget by about 4.5% This can be changed.
- "Critical threshold" is set to Aaa bond rating for fund balance and zero for reserves. This is the "floor" or the least amount of gas you want in your tank.



# Bond Rating Agency Expectations

- Berkeley has a goal of maintaining a Aaa bond rating
- Moody's pegs **fund balances** above 35% across the entire govt as equivalent to Aaa.
- Because Berkeley has robust **balances** in other funds, the burden on the general fund to meet this 35% goal is less than it might otherwise be.
- Our analysis addresses primarily "**reserves**" but also addresses **general fund balance**
  - Reserves is the "insurance policy" aspect of fund balance



Millions

\$140

\$120

\$100

\$80

\$60

\$40

\$20

\$0

Rating agencies care about this because they care about CoB paying back debt

**Total General Fund Unrestricted Fund Balance \$127 M**



“Savings Account”

We focus here because we care about CoB responding decisively to emergencies.

“Insurance Policy” (Reserves)  
The Focus of our Analysis

# Some Implications

- Reducing the “savings account” or the “insurance policy” would make it harder to meet rating agency expectations
- Berkeley could, in theory, borrow from enterprise funds or internal service funds, in an emergency. Bond ratings focus on ability to repay debt. Berkeley has broader concerns.
- General fund does have role in backstopping some aspects of Berkeley operations so must be able to stand alone, to an extent.

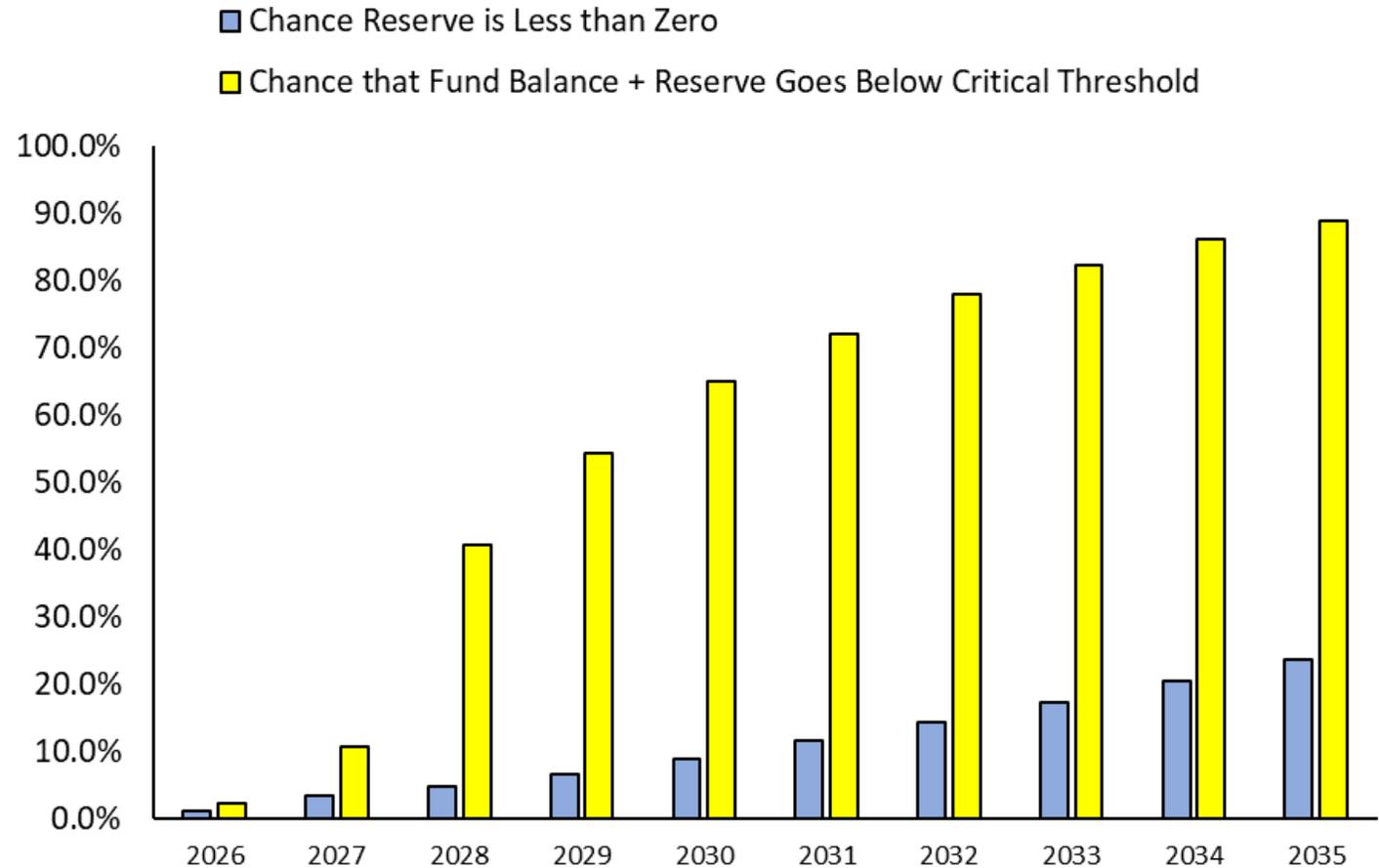
# Other Factors Considered...

Issue	Implication for Risk Aversion	Notes
FEMA/CalOES, Other Reimbursement	↔	Does not reduce need to hold reserves, but helps replenish faster
Commercial Insurance	↓	Insurance might provide coverage that substitutes for reserves. FEMA data used accounts for this.
Taxbase Impairment	↑	Large earthquake (~7.0) could heavily damage many buildings
Unknown Unknowns	↑	Risk Model Includes “Other Hazards” simulation
Opportunity Costs	?	What are alternative uses of the funds and how do those benefits compare to insuring against the risks described in this report?
Analysis uses Historical Data	↑	Historical data does not account for climate risk
Spending cuts	↓	The City can reduce costs in response to a revenue loss or even in response to an expenditure spike. Cuts of 4.5% appear reasonable for planning purposes.
Annual Surpluses and Deficits	↔	Outside of recessions, it is uncertain if the City will create surpluses.



- City has a small but increasing chance of exhausting reserves over 10 years
- General fund will have a dramatically increasing chance of falling below Aaa level of fund balance

**Exhibit 1.1 – Chance Fund Balance + Reserves is Less than Bond Rating Aaa and Chance Reserve is Less than Zero.**

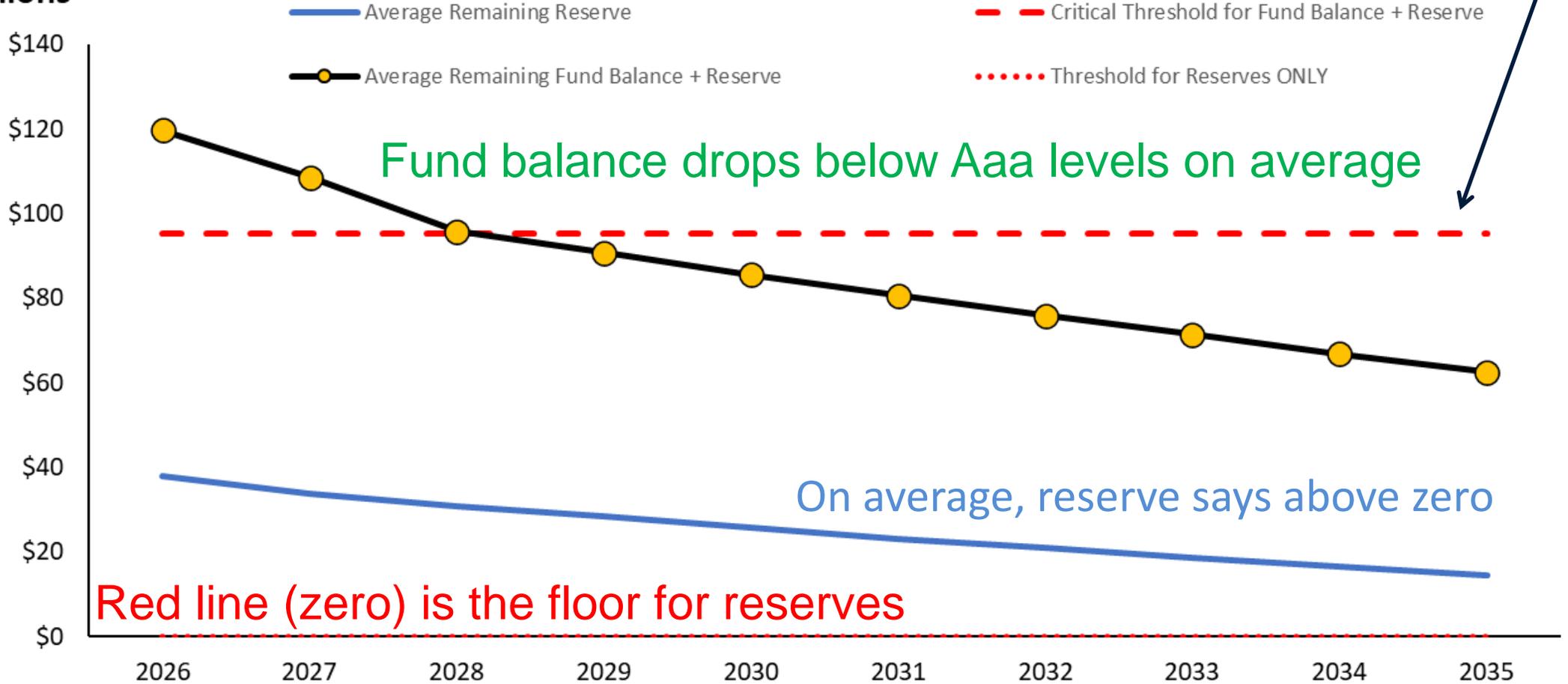




Assumes: 1) annual surpluses are used to build back the reserve if used, as quickly as possible; 2) CoB will cut budget up 4.5% in response to recessions

**Exhibit 1.2 – Simulated Remaining Fund Balance and Reserve each Year**

Millions



Fund balance drops below Aaa levels on average

On average, reserve says above zero

Red line (zero) is the floor for reserves



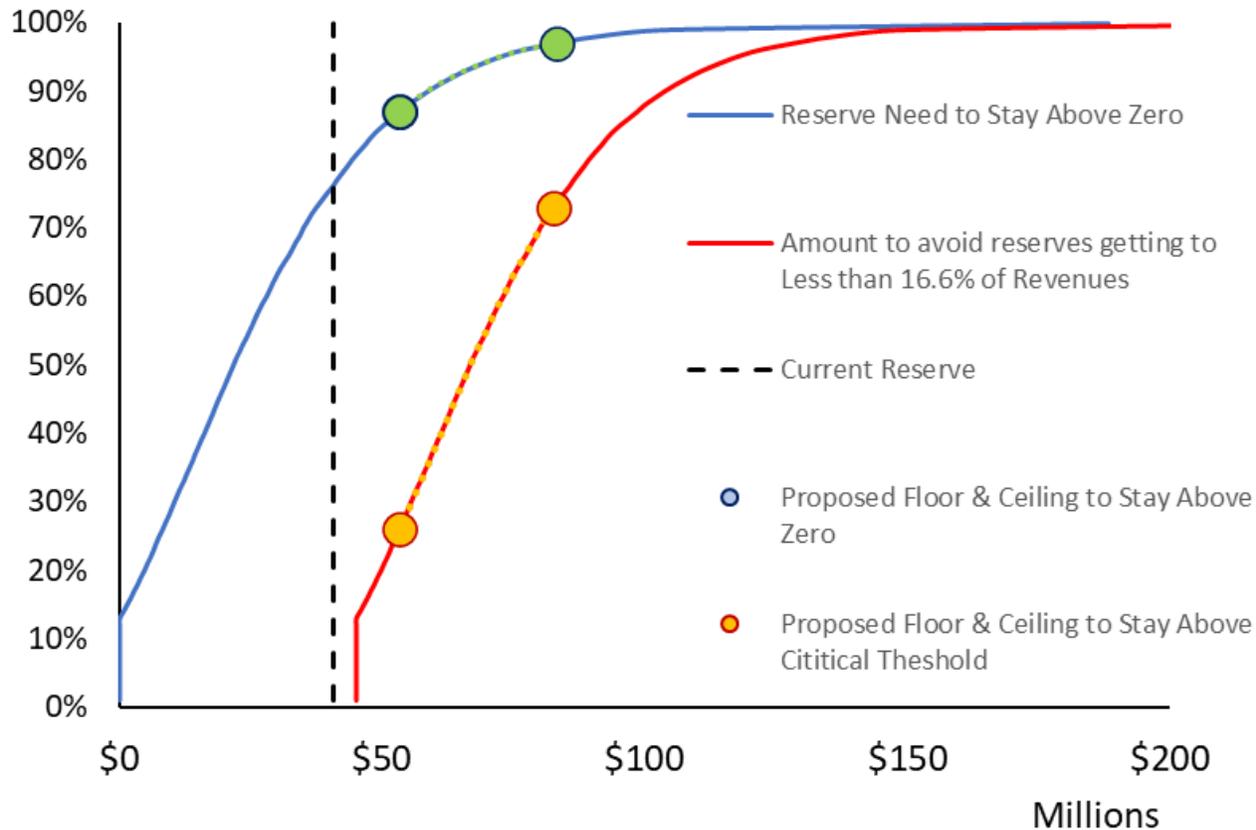
# Step 5 – Where to From Here/Recommendations

# Our Starting Points

- Purpose of this project is to review the City's reserve strategy and provide analysis to inform whether to keep the current policy in place or to make changes
- Current policy 16.7% of Adopted revenue by 2020 with goal of minimum 30% of revenue in 2027. Currently 17%.
- Options to keep or modify policy

Exhibit 1.4 – Cumulative Probability Chart with Proposed Range of Reserves

In 10 Years How Confident can the City be that the Existing General Fund Reserve Will be Enough?



Curves flatten out where more reserves not as beneficial

Long tail represents extreme outcomes, like 7.0M quake



## GENERAL FUND RESERVE SUGGESTIONS RELATIVE TO STAYING ABOVE ZERO

A Reserve Policy typically expresses reserve targets as a percent of expenditures or revenues. Below we have converted the dollar figures to a percent of revenues.

Dollars			Percent of General Fund Revenues
<b>\$53.5</b>	Million	87% confident of staying above zero over ten years	20%
<b>\$83.0</b>	Million	97% confident of staying above zero over ten years	30%

City is currently at about 15%

# Options and Recommendations

- Keep policy of 30% minimum of adopted revenue in place
- OR**
- Modify policy to include a floor and ceiling for reserves instead of one target number (20-30% of revenue)
  - This gives the City between about 87% and 97% confidence of being able to handle the risks included in the analysis while keeping reserve above zero and
  - A 26% and 73% chance of handling the risks while keeping reserves above 17% of revenues (2 months of revenue)

# Options and Recommendations

- Consider combining stabilization and catastrophic reserves into one reserve fund
- GFOA report includes several other suggestions for reporting on compliance with policy and other strategies to potentially increase the reserves