Integrated Resources Plan: Drivers of Change, Survey Results, and Constructing Scenarios

Integrated Resources Plan Special Committee
Item 6b
June 23, 2020

Overview

- Feedback on drivers of change
- Survey results
- Method for constructing scenarios

Feedback on Drivers of Change

and

Survey Results

Feedback by the Numbers

3 New Drivers

- Impacts of mandatory groundwater management
- Impacts on replenishment
- Public support

Edits to Existing Drivers

- Neutral drivers
- Various edits

Purpose of Survey

- Indication of importance of the drivers of change
  - Not voting on which drivers of change will be used
- Help to develop scenario framework
  - Basis for constructing scenario narratives

Survey Context

- The survey was distributed to following groups:
  - Metropolitan Board of Directors
  - Member Agencies
  - Stakeholders
- Context of the survey questions:
  - Importance of the driver as it impacts Southern California's water supply reliability

Survey Results

DRAFT V3 Drivers of Change Survey - Member Agency Managers Version

Climate Change

* 4. Stresses on River Basin Ecosystems

Continued deterioration of the Bay Delta ecosystem, and potential deterioration of Colorado River riparian systems due to lower flows and rising temperatures, could lead to increased invasive species populations on the Colorado and uncertain State Water Project Table A allocations, as endangered species continue to decline.

Not at all Important | Slightly Important | Moderately Important | Very Important | Extremely Important | N/A

* 5. Rising Sea Level

A changing climate will prompt an unknown level of sea level rise by 2045 that could result in increased saltwater intrusion in coastal groundwater basins and Bay Delta, potential stranded assets under some conditions, and potential impacts on existing seawater desalination plants.

Not at all Important | Slightly Important | Moderately Important | Very Important | Extremely Important | N/A

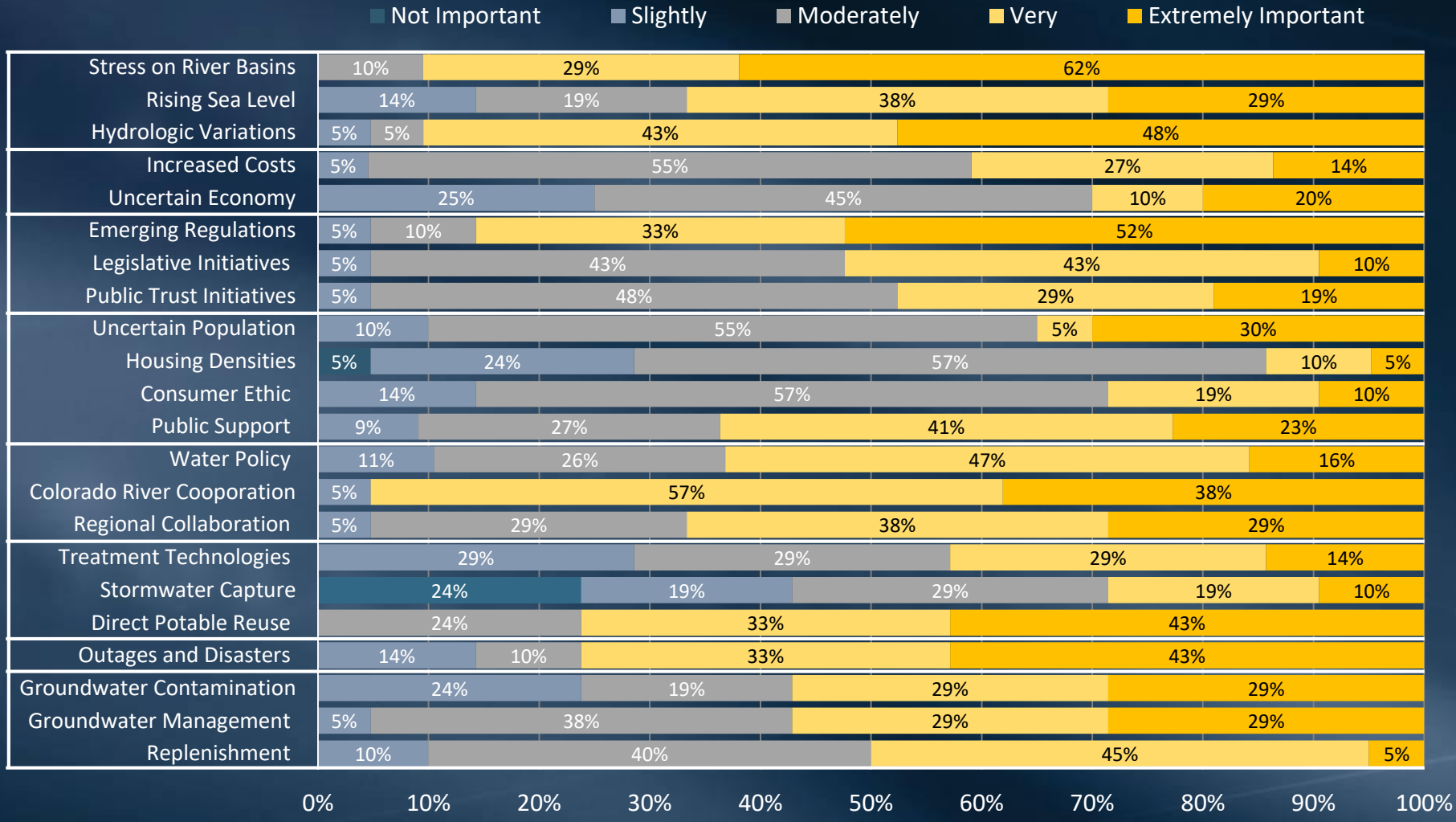
* 6. Hydrologic Variations and Extremes

While California has historically had the nation's most variable weather, the future is expected to be even more variable and extreme, with impacts by 2045. The extent of this change may increase Colorado River salinity and agriculture runoff and prolong drought cycles. Existing storage may prove inadequate in wet cycles.

Not at all Important | Slightly Important | Moderately Important | Very Important | Extremely Important | N/A

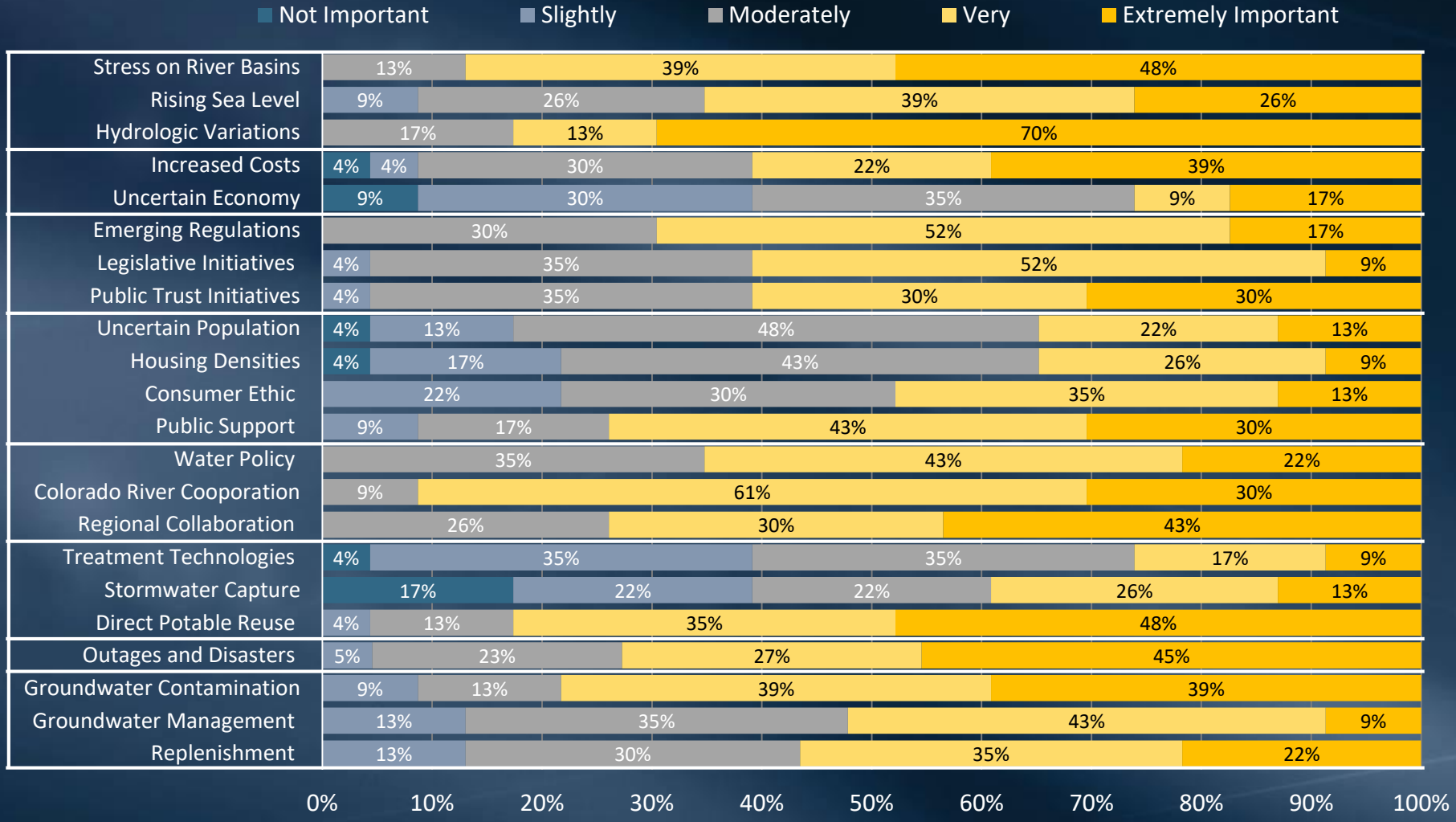
Survey Response Statistics by Driver

Board Members - 25 Responses (70%); 13% N/A



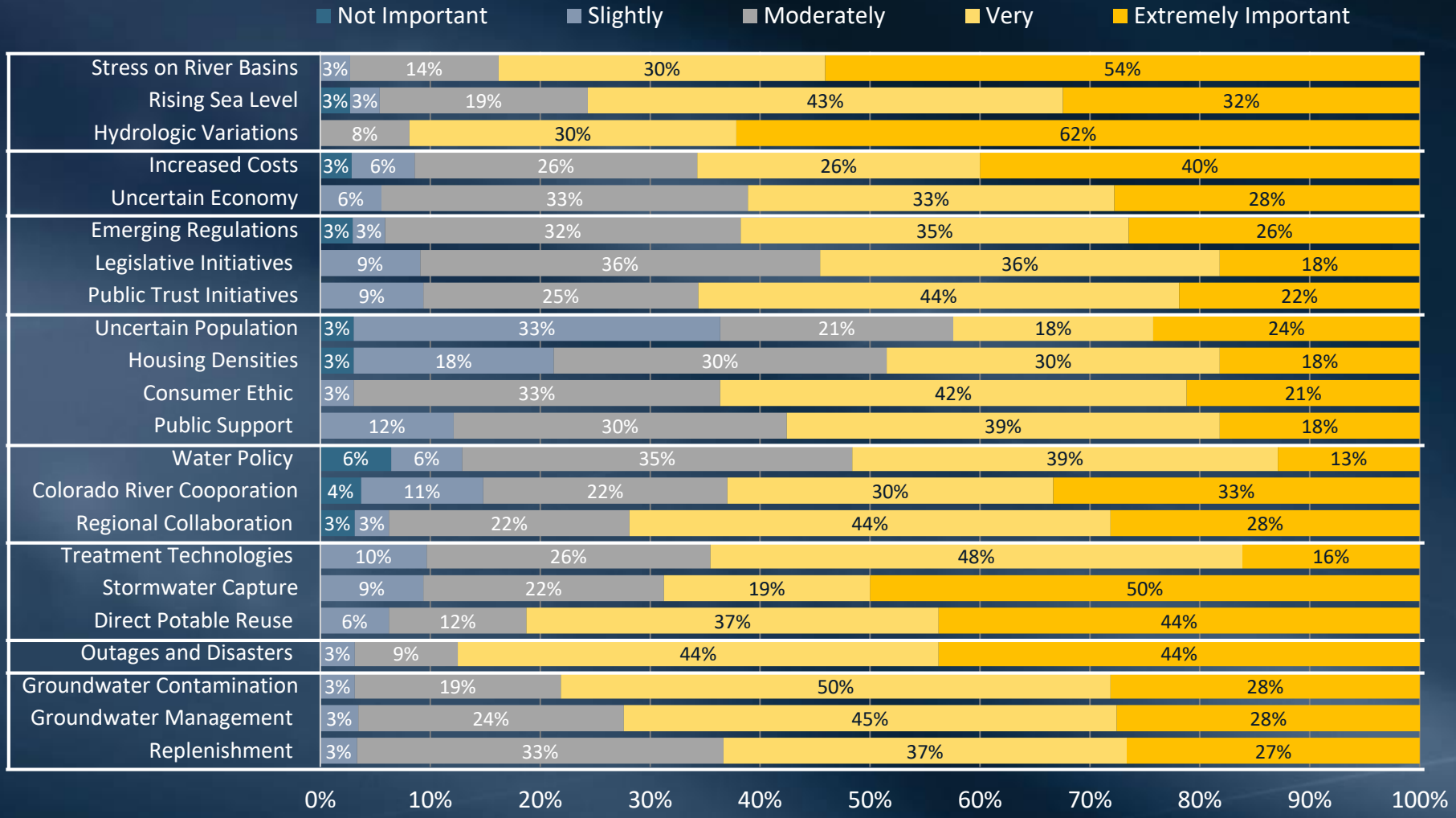
Survey Response Statistics by Driver

Member Agency - 23 Responses (89%); <1% N/A



Survey Response Statistics by Driver

Stakeholders - 43 Responses (10%); 4.6% N/A



Top 5 Survey Rankings by Cohort

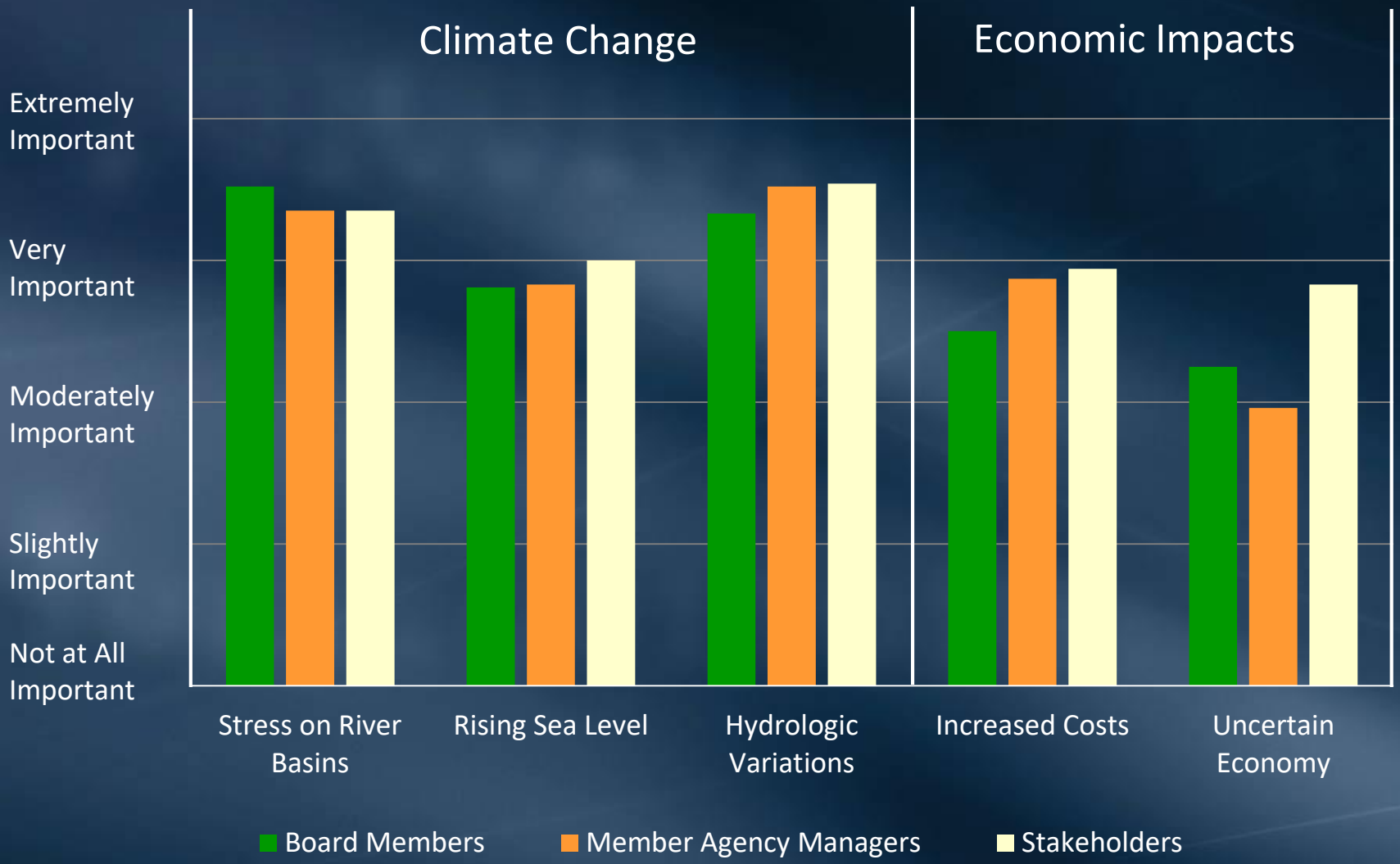
Based on Percentage of Responses that were Extremely or Very Important

Board Members	%
Colorado River Cooperation	**95%**
Hydrologic Variations	**90%**
Stress on River Basins	**90%**
Emerging Regulations	**86%**
Direct Potable Reuse	**76%**
Outages & Disasters	**76%**

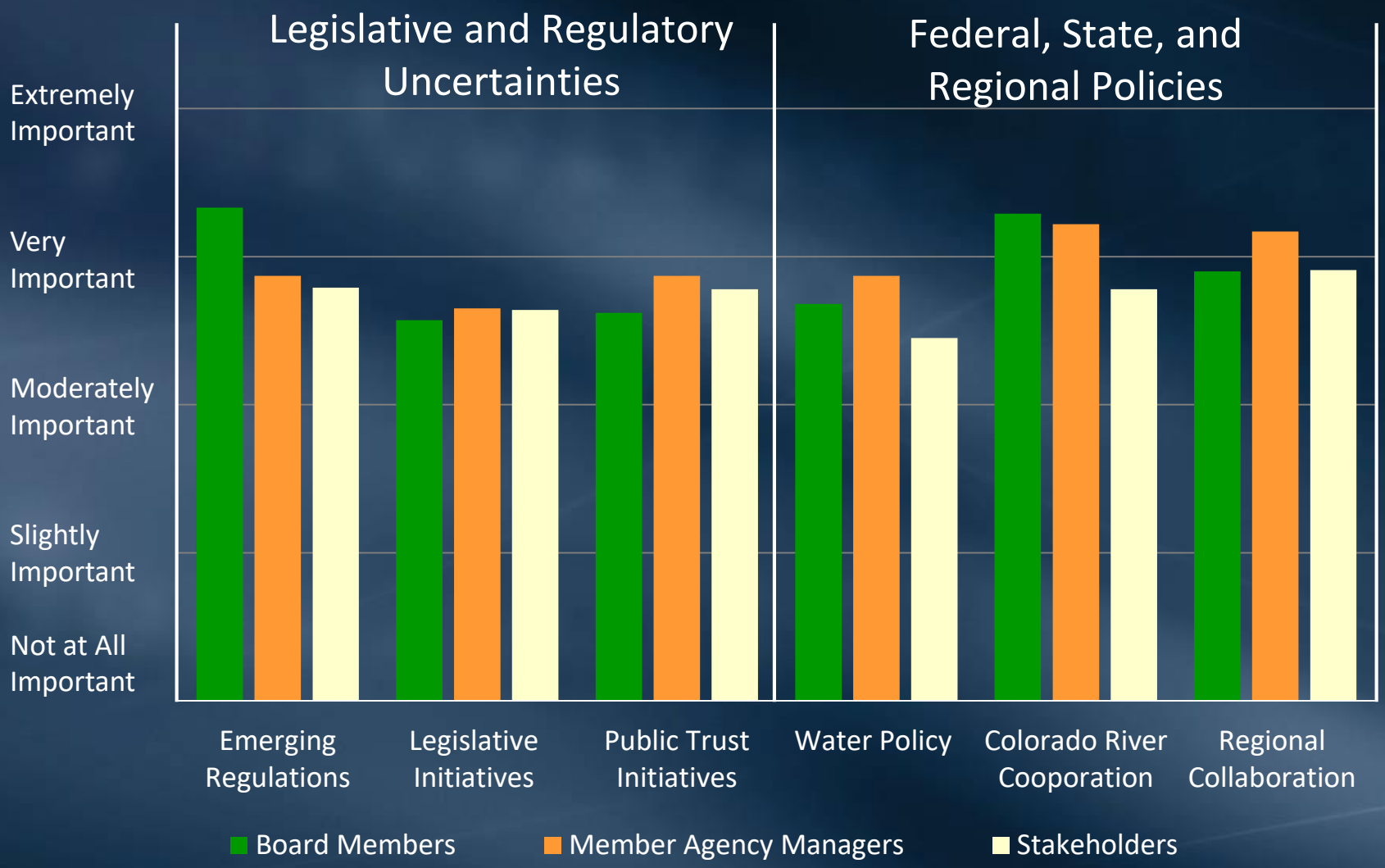
Member Agencies	%
Colorado River Cooperation	**91%**
Stress on River Basins	**87%**
Direct Potable Reuse	**83%**
Hydrologic Variations	**83%**
Groundwater Contamination	**78%**

Stakeholders	%
Hydrologic Variations	**92%**
Outages and Disasters	**87%**
Stress of River Basins	**84%**
Direct Potable Reuse	**81%**
Groundwater Contamination	**78%**

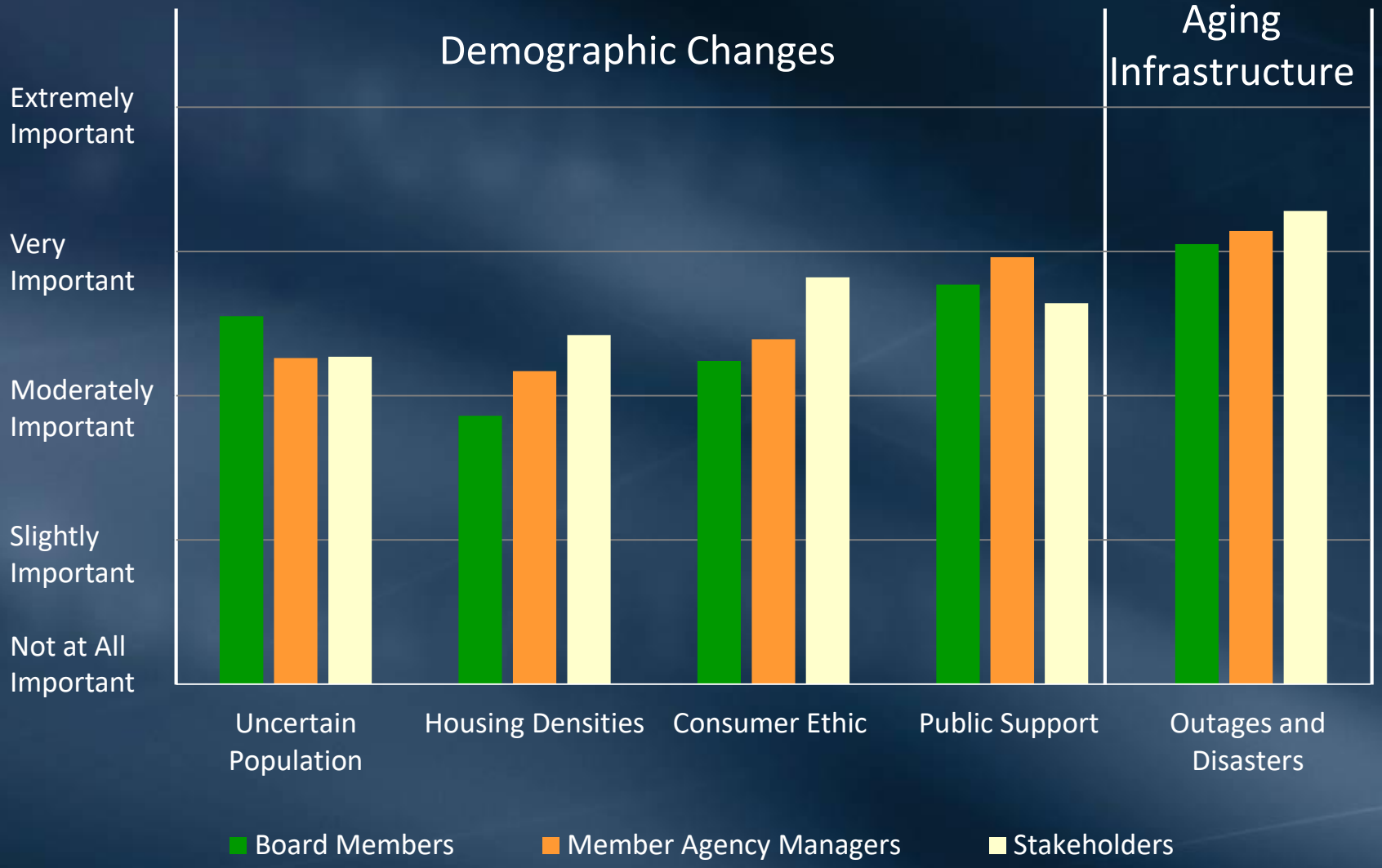
Driver Rankings by Cohort



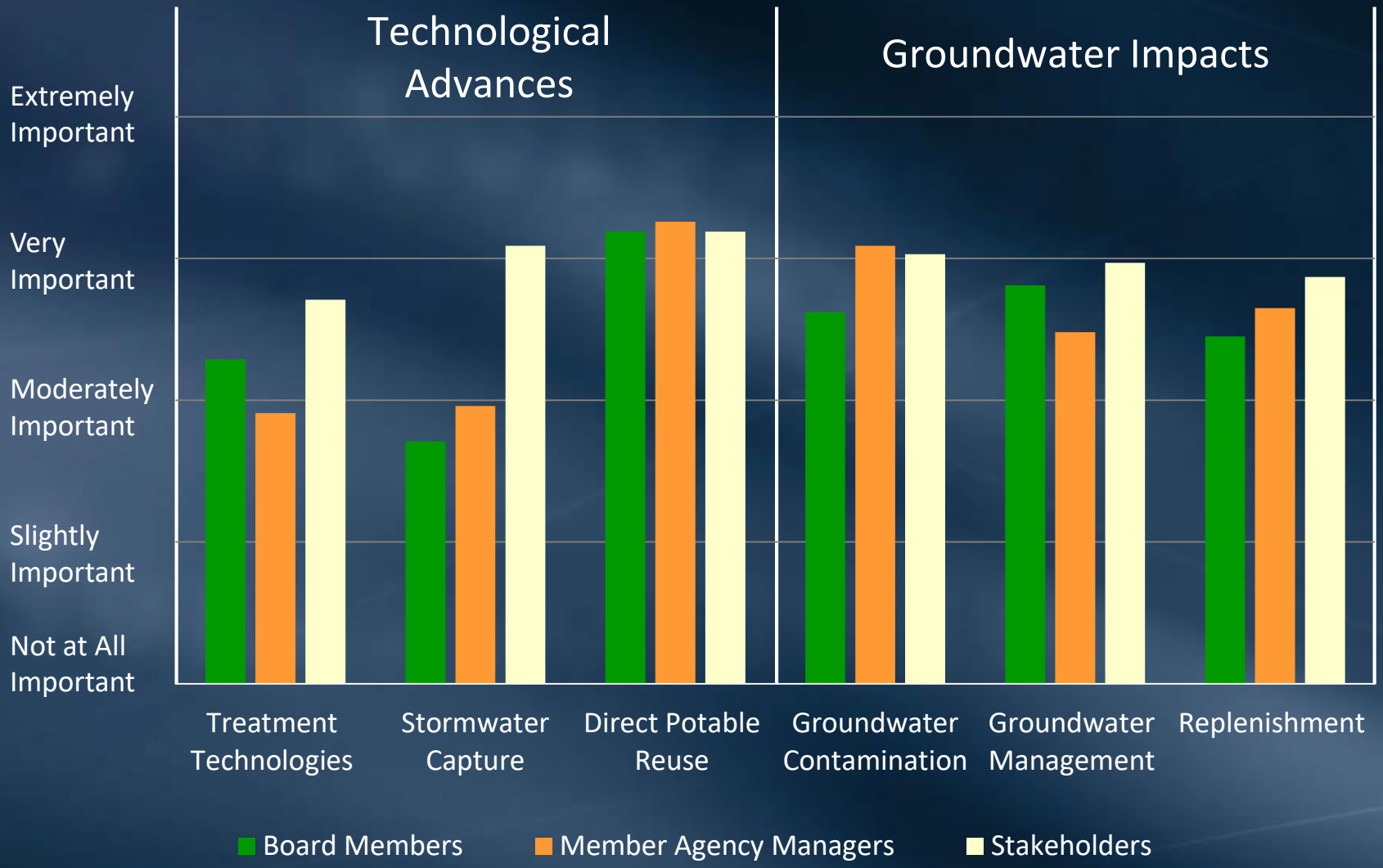
Driver Rankings by Cohort



Driver Rankings by Cohort

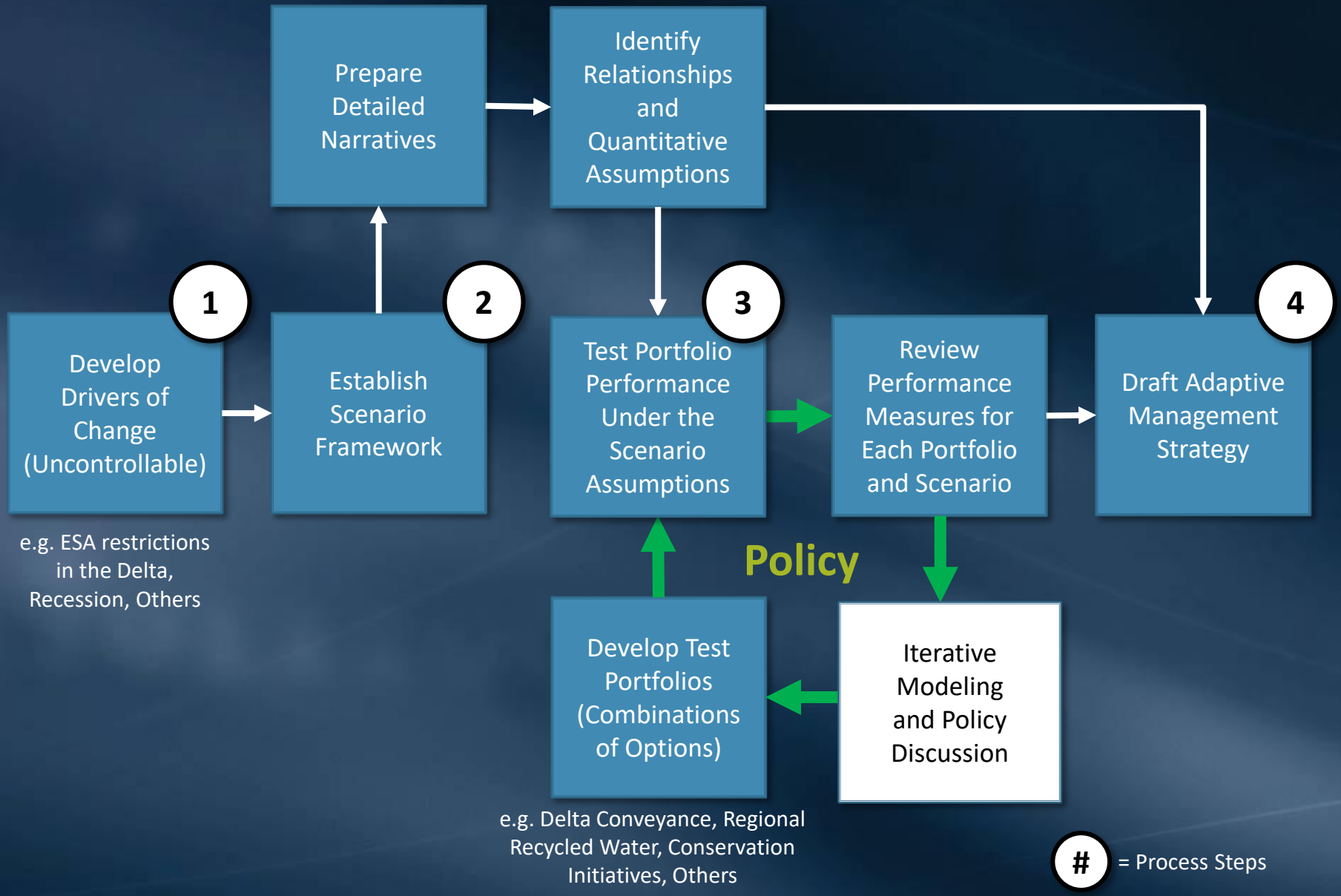


Driver Rankings by Cohort

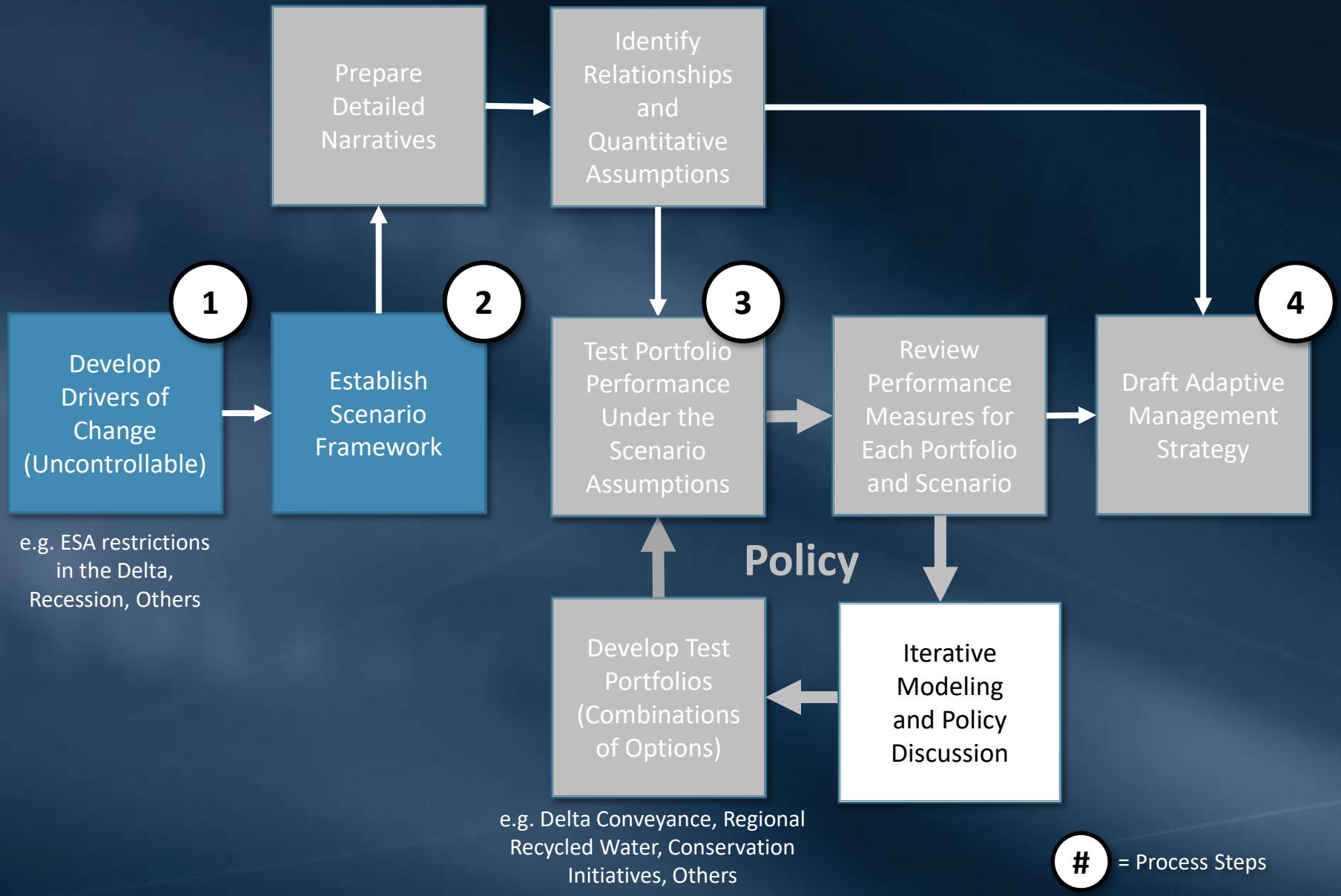


Moving Into Constructing Scenarios

2020 IRP Process Flow Chart



2020 IRP Process Flow Chart



Process Steps

- Identify and develop a list of drivers of change
  - Metropolitan Board updates
  - Member agency participation/feedback loop
  - Stakeholder involvement

Process Steps

- Identify scenario framework
  - Allows us to construct scenarios addressing a range of plausible futures
  - Qualitative and quantitative assessment of drivers and their impact and uncertainty

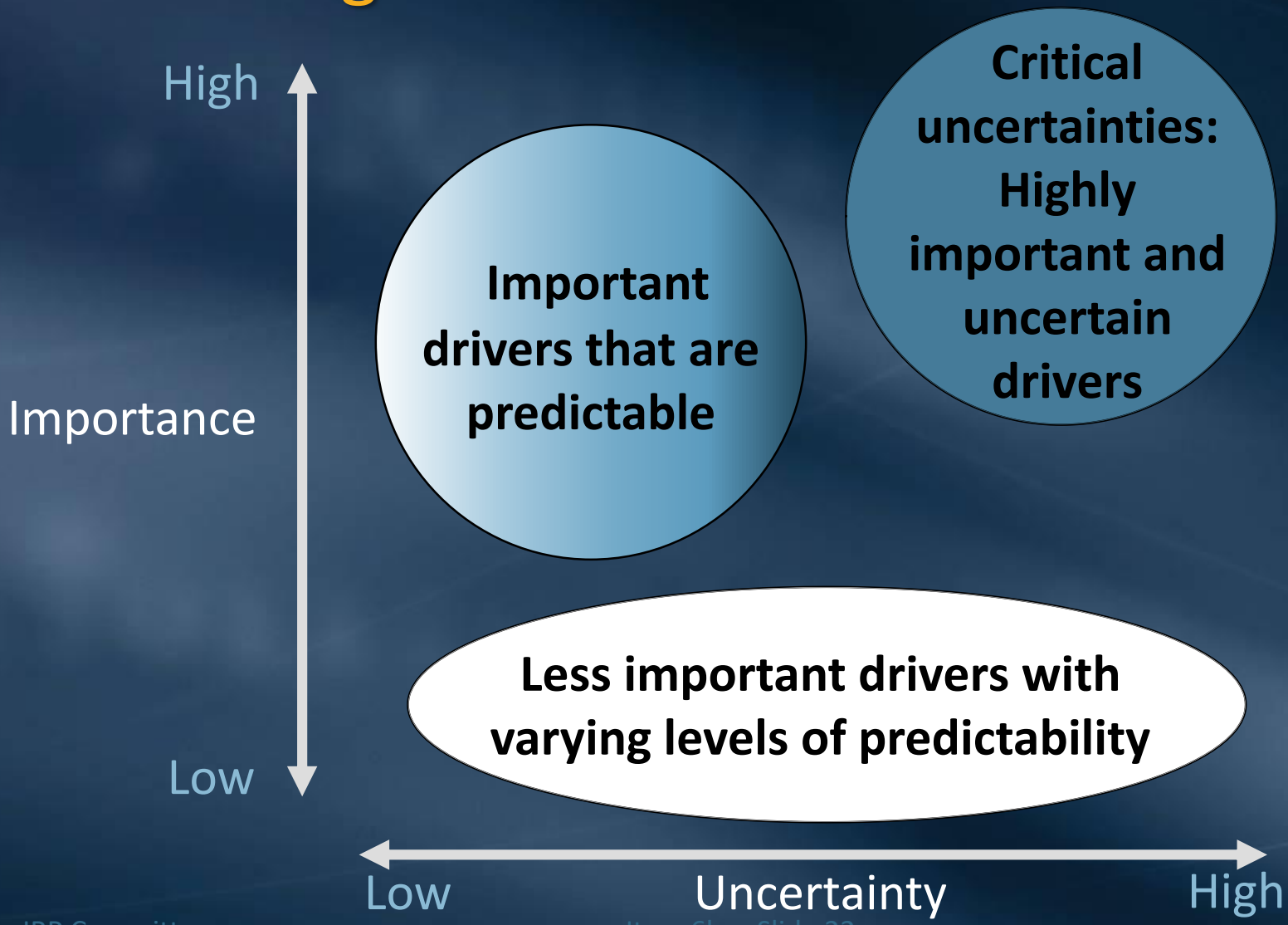
Scenario Framework

A broad view of the future will better prepare us for the future

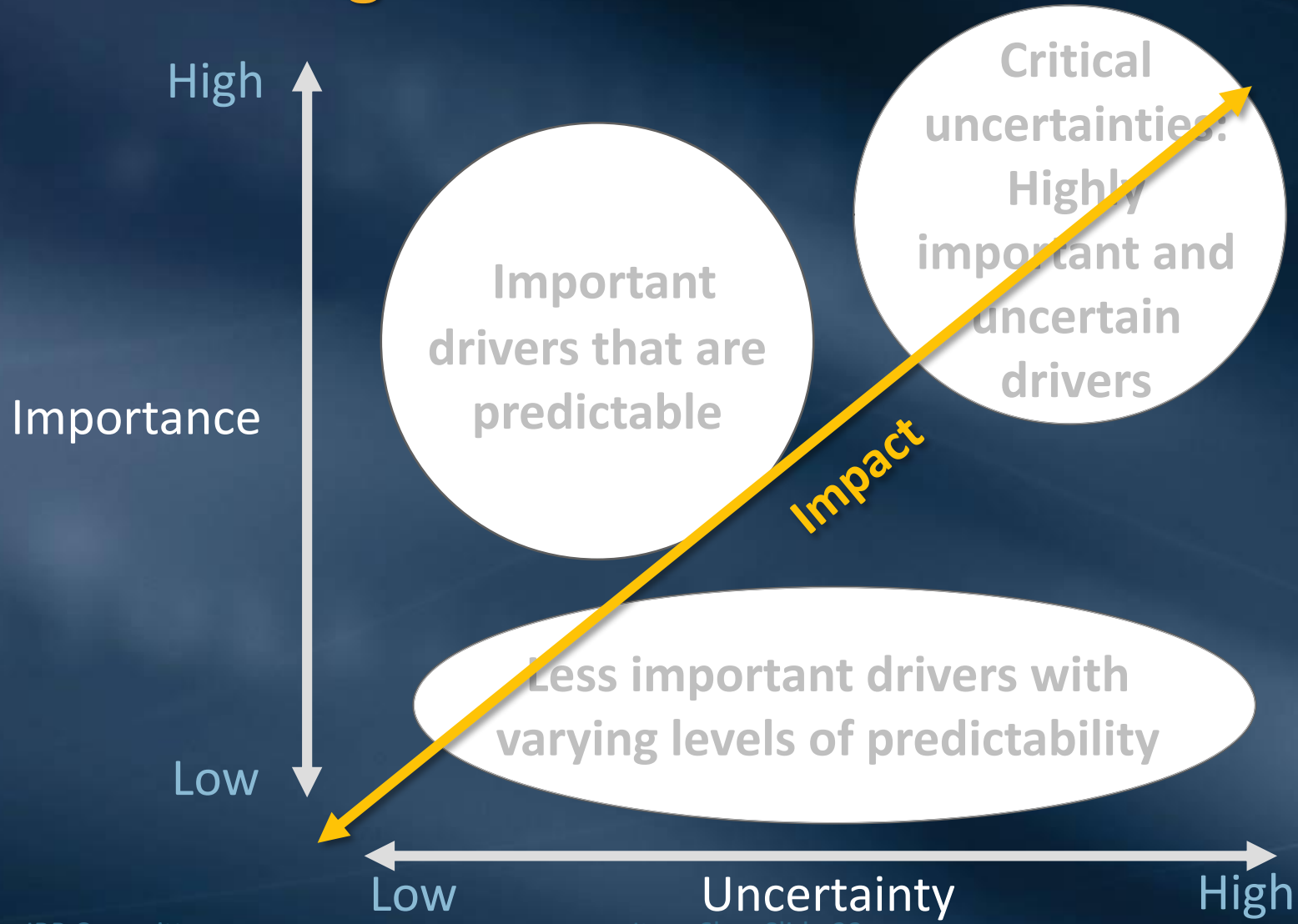
TODAY

FUTURE

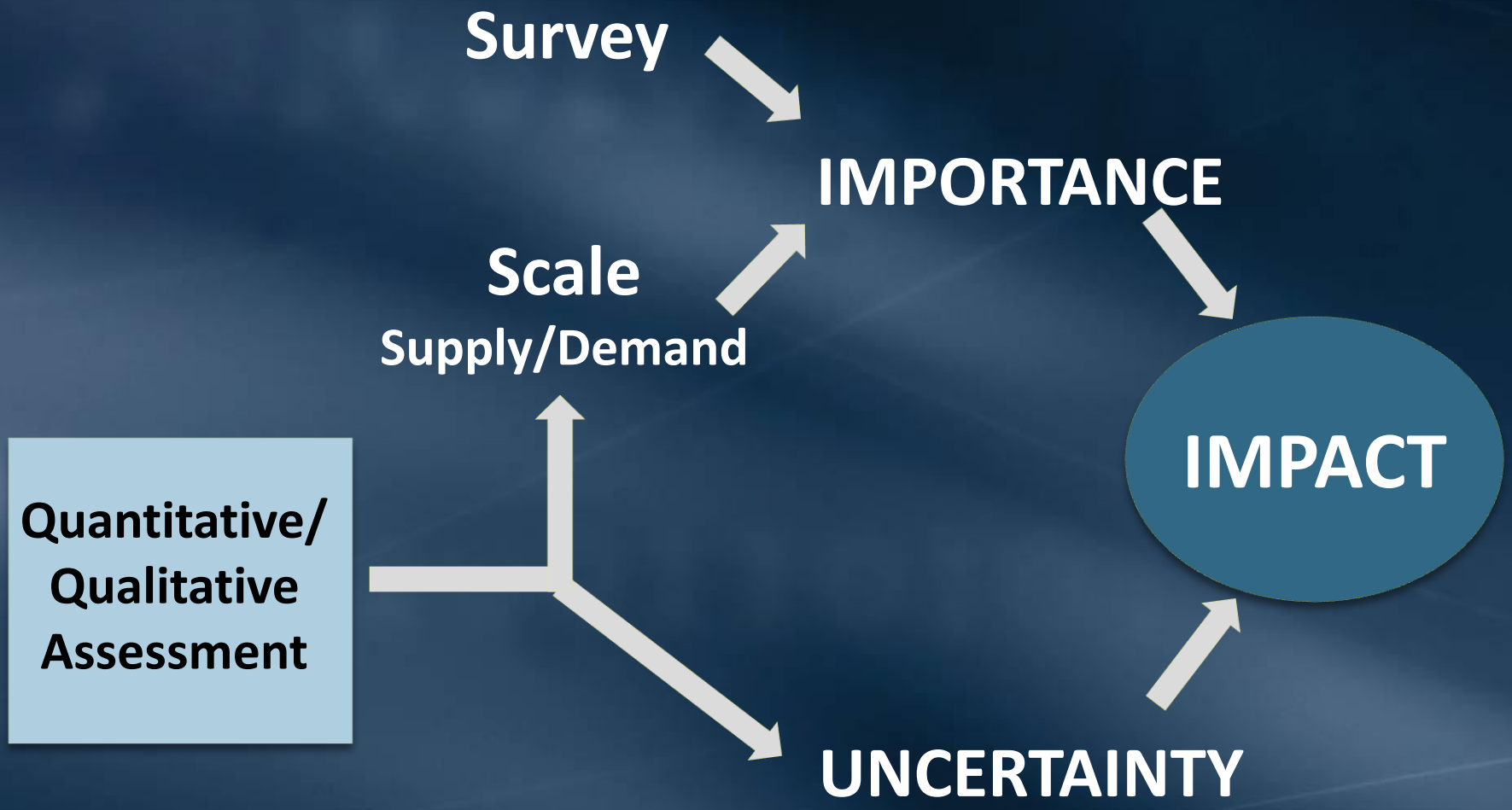
Scenario Framework
Establishing How to Get A Broad View



Scenario Framework
Establishing How to Get A Broad View



Scenario Framework
Dimensions of Impact

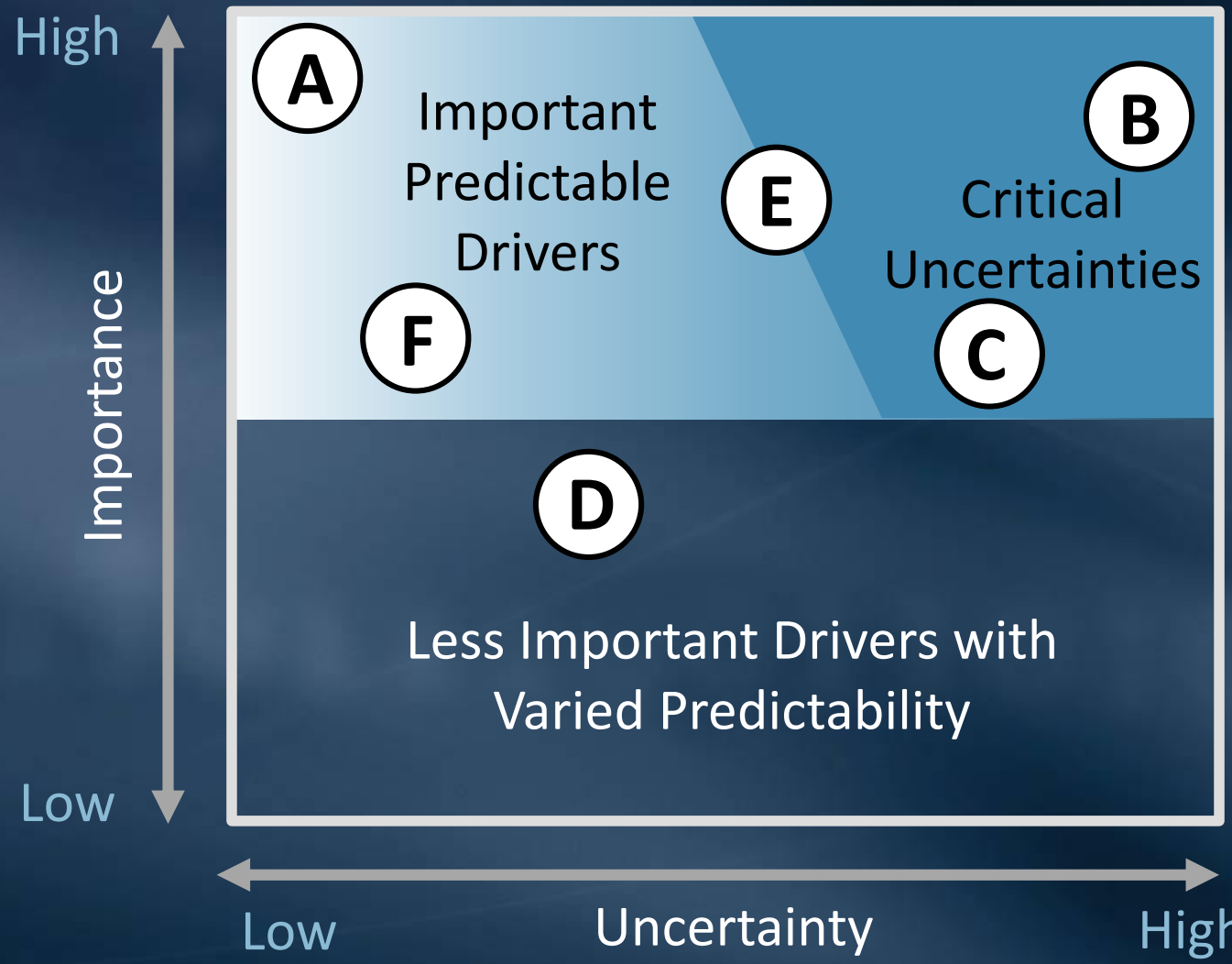


Scenario Framework
WRF Example

WERF Study (Brown, 2017)

The WE&RF Interim Research Plan called for
"A board-driven long-term strategic visioning process . . . to define a WE&RF research strategy for 2018 and beyond."

Scenario Framework
WRF Example



A - Aging Infrastructure

B - Natural Disasters

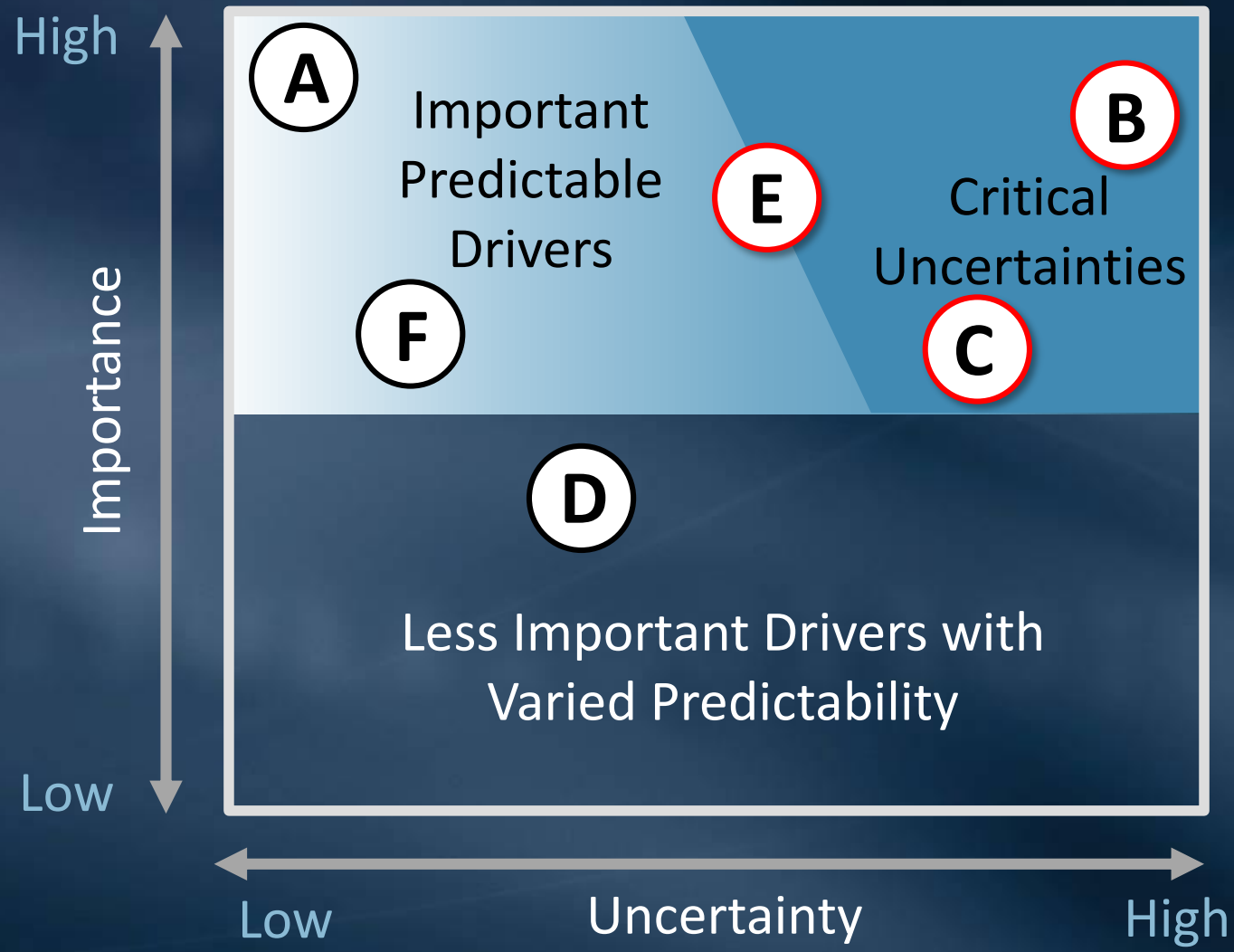
C - Fiscal Constraints

D - Smart Water Grid

E - Increased GHG and Temperatures

F - Water Tech Advances

Scenario Framework
WRF Example



A - Aging Infrastructure

B - Natural Disasters

C - Fiscal Constraints

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E - Increased GHG and Temperatures

F - Water Tech Advances

Scenario Framework
WRF Critical Uncertainties

B E

Gradual Increase in Disruptions ⟷ Rapid Increase in Disruptions

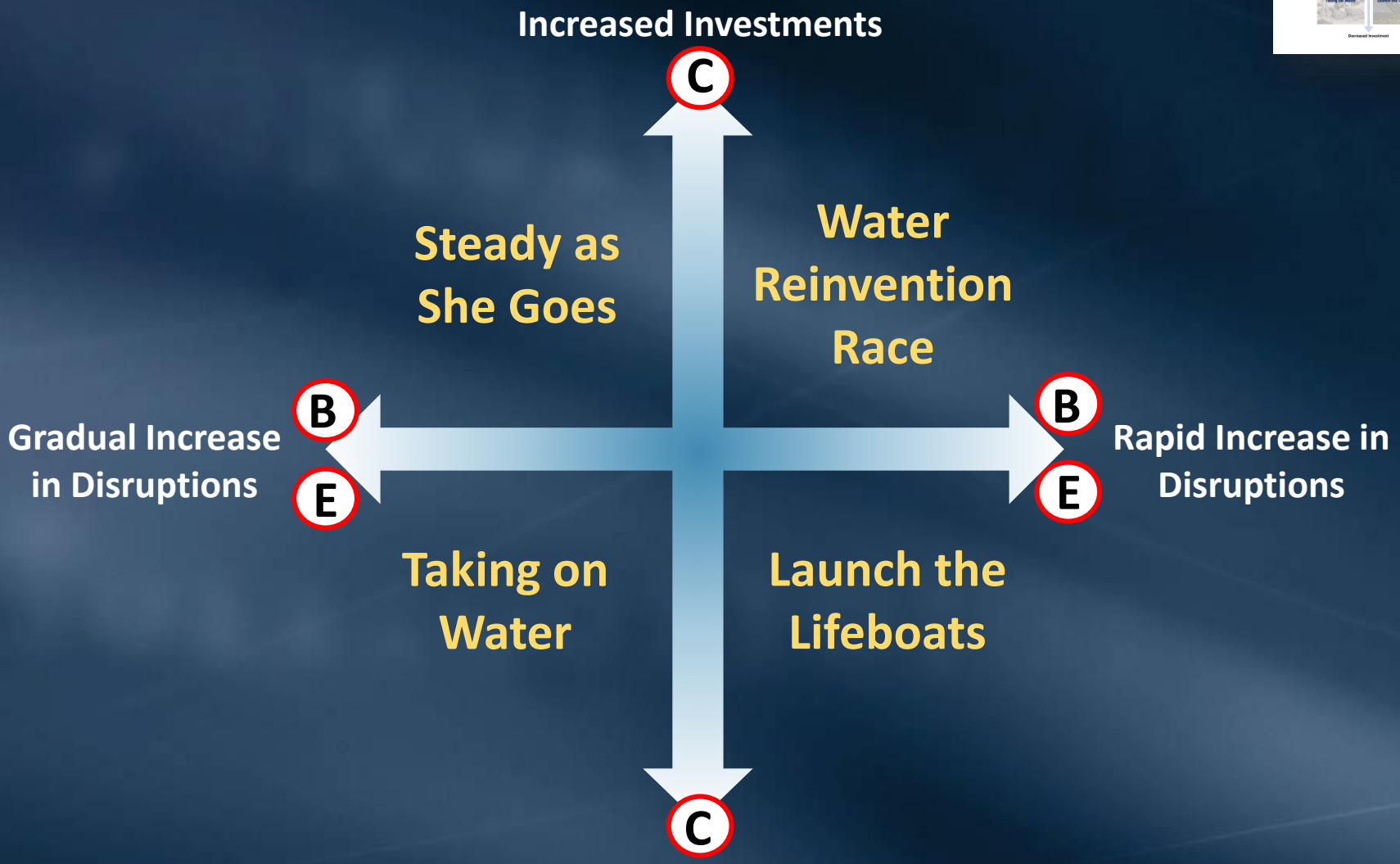
Frequency of Natural Disasters and Disruptive Climate Events

C

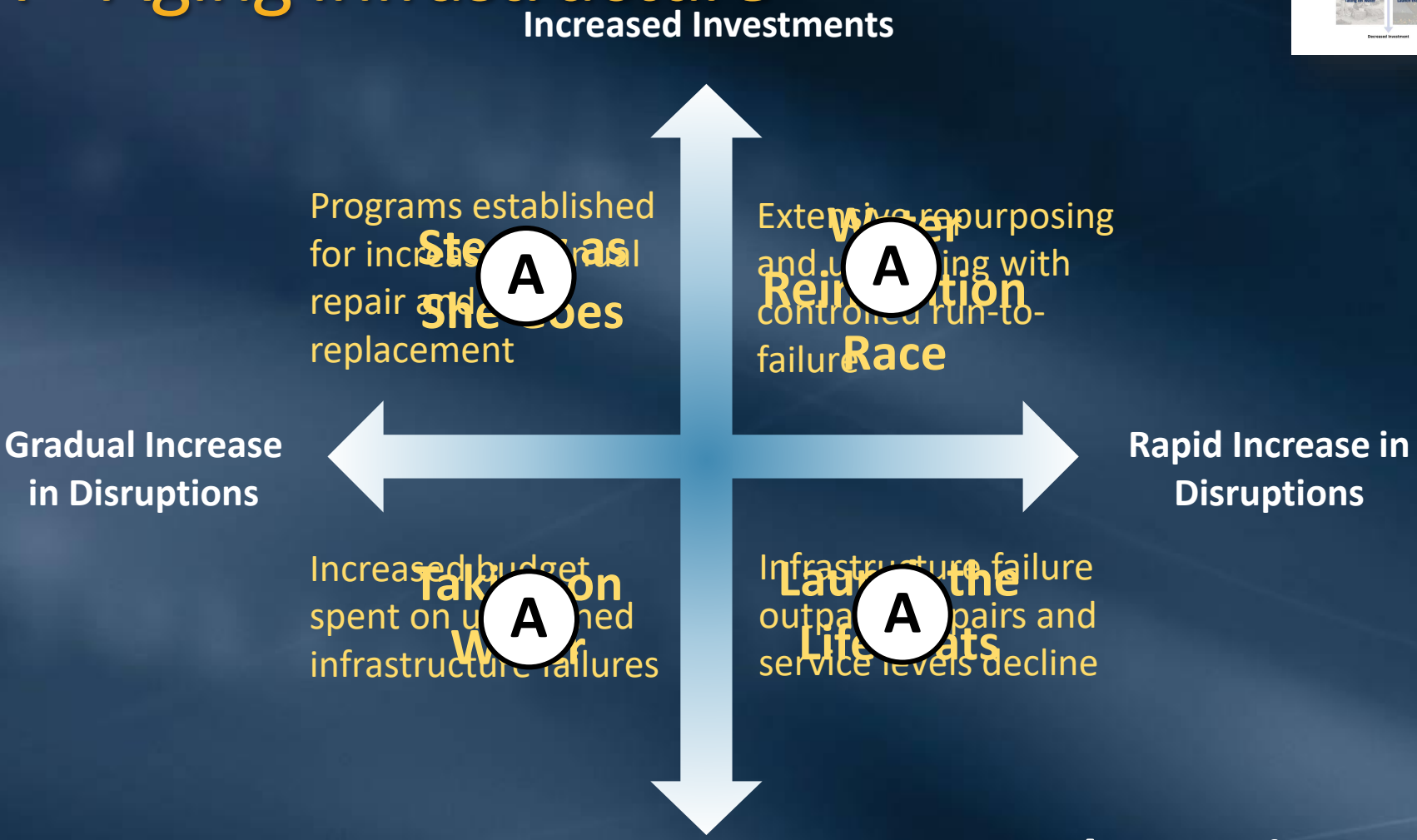
Severe Cutbacks and Revenue Reductions ⟷ Steadily Increasing Investments

Availability of Federal, State, and Local Funding

Constructing Scenarios

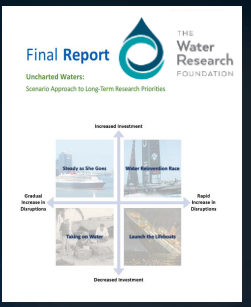


Constructing Scenarios
A – Aging Infrastructure



A - Aging Infrastructure

Constructing Scenarios
D – Smart Water Grid



Increased Investments

Large regional utilities implement improved SCADA systems

Smart-grid enables virtual centralization of new decentralized approaches

Gradual Increase in Disruptions

Rapid Increase in Disruptions

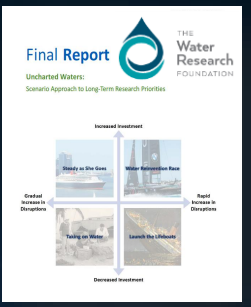
Cheap IT monitors central failures and new decentralized systems flourish

Failing centralized systems serve poor communities while wealthy go off grid

Decreased Investments

D - Smart Water Grid

Constructing Scenarios
F – Water Technology Advances



Increased Investments

Integrated fit-for-purpose systems with treatment at every scale

Increased emphasis on distributed systems to withstand extremes

Gradual Increase in Disruptions

Rapid Increase in Disruptions

New technologies applied where public health threats appear

Emergency skid-mounted treatment travels to disaster sites as needed

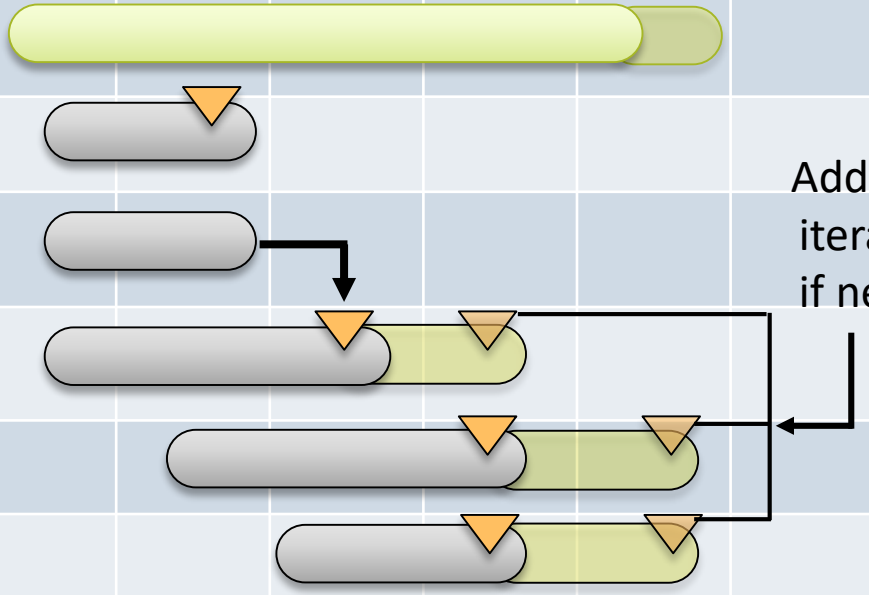
Decreased Investments

F - Water Technology Advances

IRP Process Schedule

2020

Steps	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2. Construct Scenarios								
2.1 Qualitative Assessment								
2.2 Quantitative Assessment								
2.3 Scenario Framework								
2.4 Scenario Narratives								
2.4 Supply/Demand Gap calc.								



▼ = Metropolitan Board, Member Agency Input and Review Throughout the Process (examples only)

What's Next

- Qualitative and quantitative assessment of drivers
- Collaboratively identify scenarios helpful for policy discussions
- Construct scenarios


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928