# Climate Safe Infrastructure Working Group

**Meeting #1**

Stanley Mosk Library and Courts Building

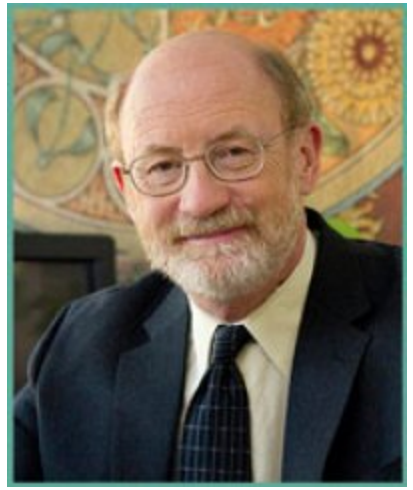
Room 500, 914 Capitol Mall

Sacramento, CA 95814

Thursday, January 18, 2018

10am – 4pm

# Opening Remarks



**Secretary John Laird**
Natural Resources Agency

**Hon. Bill Quirk**
California State Assembly

**Jamesine Rogers Gibson**
Union of Concerned Scientists

**Bruce Blanning**
Professional Engineers in CA Government

**Deputy Secretary for Climate and Energy Keali'i Bright**
Natural Resources Agency

# Agenda

| Time | Agenda Item |
|---|---|
| 10:00-10:20am | Welcome and Opening Remarks |
| 10:20-10:50am | Overview and Introductions: Working Group and Project Team Members |
| 10:50-11:15 | Introduction to AB 2800 |
| 11:15-12:00 | Co-Development of Project Goals & Objectives |
| 12:00-12:30 | Drawing Bounds around the CSIWG: Literature Review (Part I) |
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| 4:00 | Adjourn |

# Meeting Goals

1. **SET GOALS** - Through an iterative process, define the goals of, and boundaries around, the work of the Climate Safe Infrastructure Working Group
2. **BUILD SOCIAL CAPITAL** - Get to know fellow Working Group and Project Team members
3. **SHAPE PROCESS** - Clarify the Working Group's preferred ways of working with each other toward a productive, successful outcome
4. **GET READY TO WORK** – Identify project elements, timelines, deliverables, and gain clarity on the work ahead

# Introductions

- Your name, affiliation
- Why are you here, really?
- What do you bring to the discussion?
- What do you most hope to see come out of this Working Group?

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# Climate Safe Infrastructure Working Group

Keali'i Bright, Deputy Secretary for Climate and Energy

California Natural Resources Agency

# Why Are We Here?

- Climate change impact science is a moving target
- Engineers and design standards don’t do well with moving targets
- Billions from taxpayer funding will be spent on new infrastructure
- Executive Order B-30-15: Consider climate change in all state investments
- AB 2800 (Quirk): Directed the creation of the working group
- California’s 4th Climate Change Assessment

# Executive Orders, Statutes & Administrative

- Executive Order S-13-08, 2009
- Executive Order B-30-15, 2015
- AB 1482 (Gordon, 2015)
- AB 2800 (Quirk, 2016)
- 5-year infrastructure plan
- State Hazard Mitigation Plan
- California/Regional Transportation Plans, California Water Plan, Central Valley Flood Plan, etc.

# AB 2800 (Quirk): Purpose

Examine how to integrate scientific data concerning projected climate change impacts into state infrastructure engineering, including oversight, investment, design, and construction.

# AB 2800 (Quirk): Scope of Assessment and Recommendations

The working group shall consider and investigate, at a minimum, the following issues:

(1) The current informational and institutional barriers to integrating projected climate change impacts into state infrastructure design.

(2) The critical information that engineers responsible for infrastructure design and construction need to address climate change impacts.

(3) How to select an appropriate engineering design for a range of future climate scenarios as related to infrastructure planning and investment.

# AB 2800 (Quirk): Additional Scope of Recommendations

(A) Integrating scientific knowledge of projected climate change impacts into state infrastructure design.

(B) Addressing critical information gaps identified by the working group.

(C) A platform or process to facilitate communication between climate scientists and infrastructure engineers.

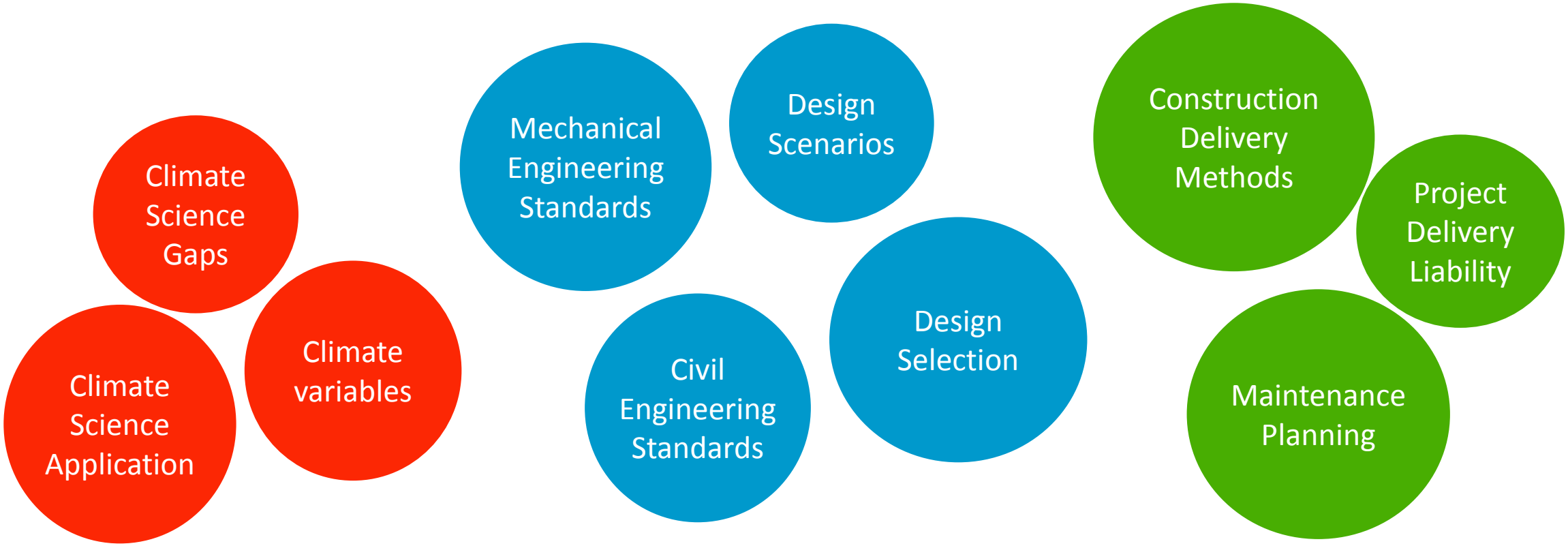
# AB 2800 (Quirk): Final Deliverable

July 1, 2018 -- Report to the legislature and Strategic Growth Council

Outcome Opportunities and Leverage Points

- ✓Legislation
- ✓Infrastructure Planning
- ✓Standards
- ✓California Standards
- ✓Best Practices
- ✓Budget decisions

# Conclusion:
# How do we ensure state infrastructure meets planned objectives under a changing climate?



# Questions?

# Opportunity for Public Comment

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# Working Toward Feasible Project Goals

Opening Remarks

AB 2800 Requirements & State Goals

Working Group Member Goals

INITIAL PROJECT GOALS

Literature-Based Focus Areas

Implementation Discussion

**REVISED PROJECT GOALS**

# Co-Development of Project Goals & Objectives

# Project Goals & Objectives (Prelim)

- [text to be added based on CSIWG's discussion]

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# Literature Overview … well, overview.

Before lunch (30 min):

- Review initial questions
- High level overview of the literature
- First reactions… to be mulled over during lunch

After lunch (30 min):

- What are your “go-to” sources?
- What gaps are there in what we’ve outlined?
- What other questions should we examine in the literature?
- How do our goals fit into the available state of knowledge?

# Issues for the Working Group to Consider

1. The universe of types of infrastructure to focus on
2. General types and sector-specific standards and procedures, climate-sensitivity, importance
3. Linking climate science to risk/exposure assessments, infrastructure standards
4. Approaches to prioritization
5. Processes for developing/changing standards and how to ensure, track, reward adoption/implementation
6. Ensuring delivery of climate-safe infrastructure, with and beyond standards

# Infrastructure

Includes:

- Buildings of all types
- Communication facilities for all types of communication technologies
- Energy generation and distribution systems
- Industrial facilities
- Transportation networks of all types (land, air, water) and supporting facilities
- Drinking water and waste water systems
- What are we missing?

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- What are we missing?

City of Seattle's Auditor's Office Assessment of Vulnerable Transportation Infrastructure:

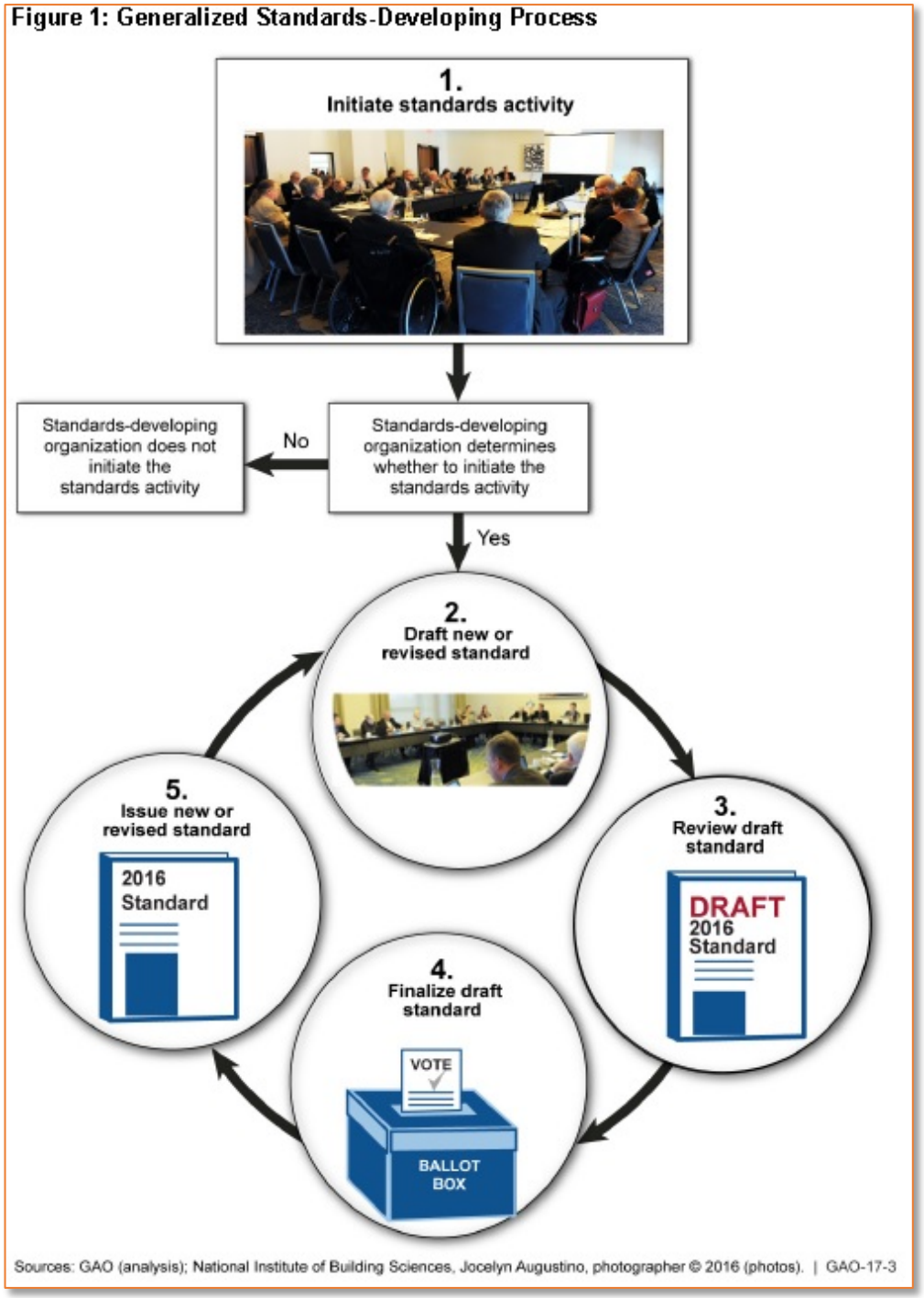
- Bridges and culverts
- Causeways and coastal roads
- Pavement surfaces
- Surface drainage
- Hillside slope stability

Key Task (Meeting #2) - identify infrastructure relevant/important for the State to consider for AB2800

# Standards and Procedures

- By design: slow, deliberate, conservative, tested, and consensus-based

"It is difficult to reconcile the dynamic nature of climate change with the stable framework of infrastructure design."
(GAO 2016, p.20)



# Standards and Procedures

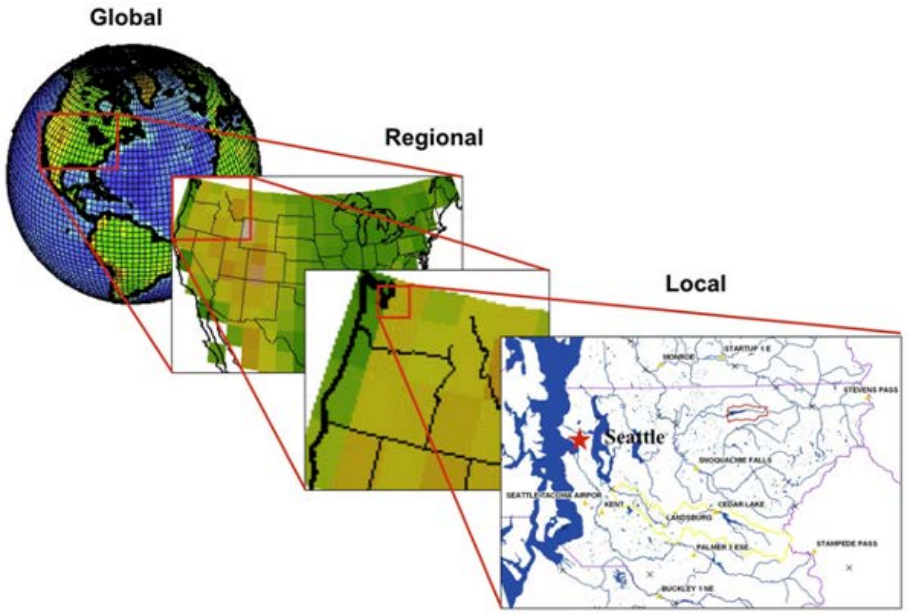
Different ways to develop/implement standards:

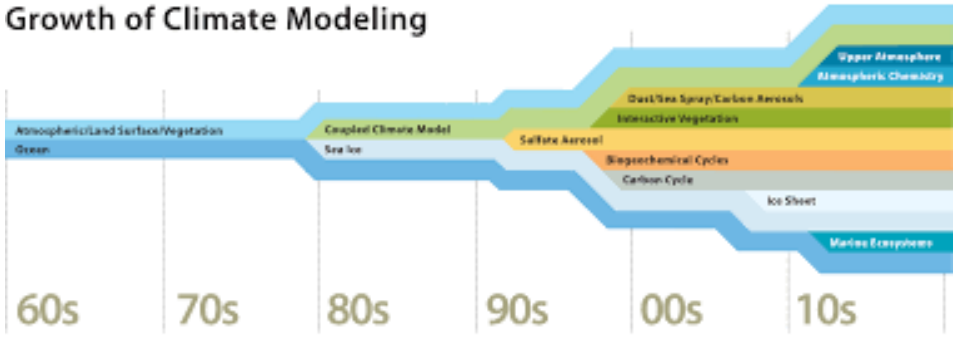
- International vs. US-only vs. state-based
- Mandatory vs. voluntary
- “Best” or “accepted” practices and principles
- Design vs. performance

# Linking Climate Science to Standards

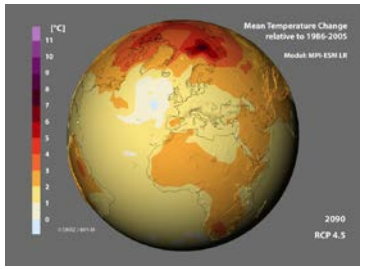
ASCE (2015):

*"The requirement that engineering infrastructure meets future needs and the uncertainty of future climate at the scale of the majority of engineering projects leads to a dilemma for practicing engineers. This dilemma is a gap between climate science and engineering practice that must be bridged."*




Source: Global Institute of Sustainability

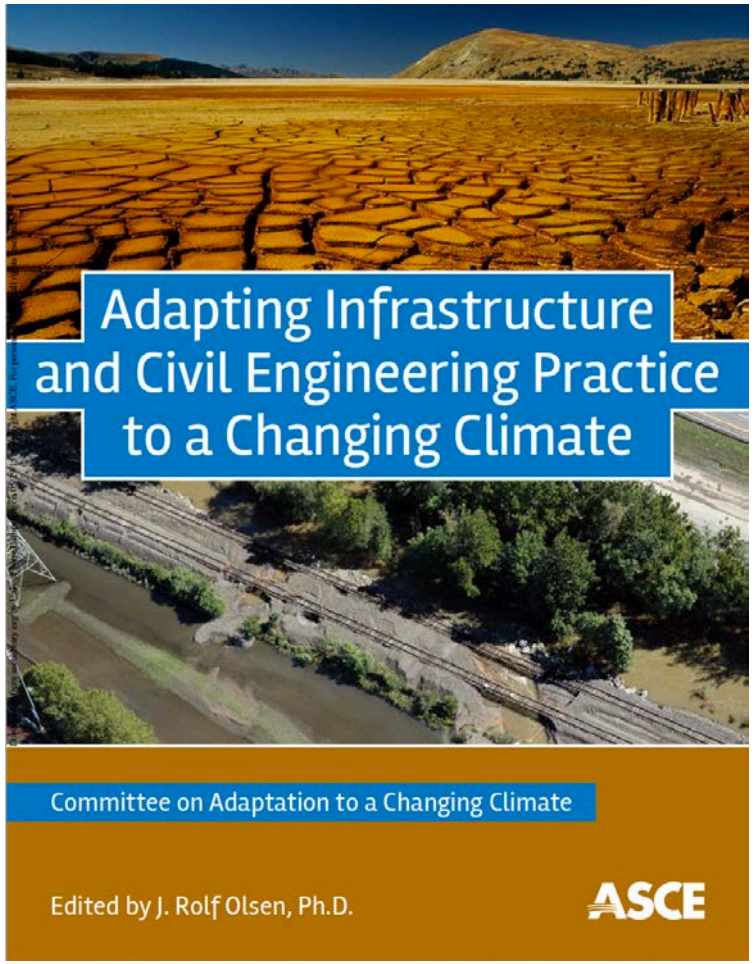


# Linking Climate Science to User Needs

| Climate-Change Phenomenon | Change in Environmental Condition | Design Implications |
|---|---|---|
| Temperature change | Rising maximum temperature; lower minimum temperature; wider temperature range; possible significant impact on permafrost | Over the short term*, minimal impact on pavement or structural design; potential significant impact on road, bridge scour and culvert design in cold regions<br>Over the long term, possible significant impact on pavement and structural design; need for new materials; better maintenance strategies |
| Changing precipitation levels | Worst case scenario, more precipitation; higher water tables; greater levels of flooding; higher moisture content in soils | Over the short term, could affect pavement and drainage design; greater attention to foundation conditions; more probabilistic approaches to design floods; more targeted maintenance<br>Over long term, definite impact on foundation design and design of drainage systems and culverts; design of pavement subgrade and materials impacts |

(Meyer 2006)

# ASCE 2015 Report

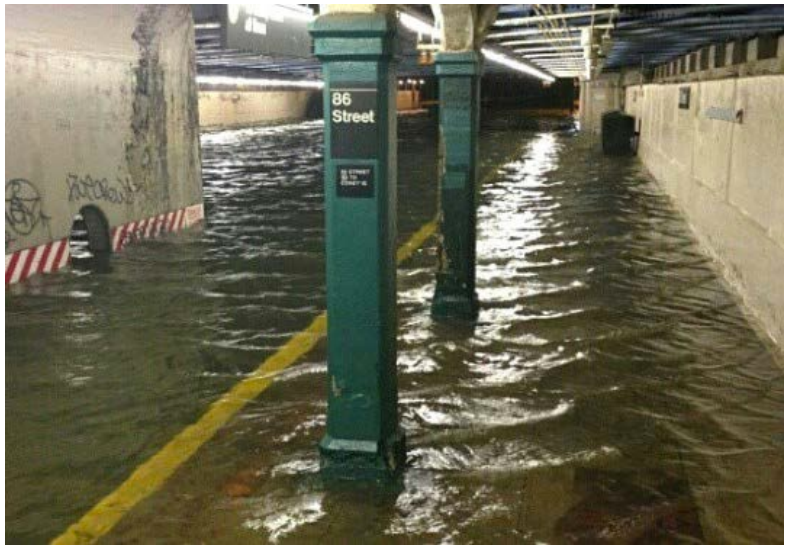



Recommendations:

- Engineers and climate scientists must engage in cooperative research
- Practicing engineers, project stakeholders, policy makers and decision makers should be better informed about uncertainty
- Engineers need new paradigm for world in which climate is changing
- Critical infrastructure most at risk should be identified

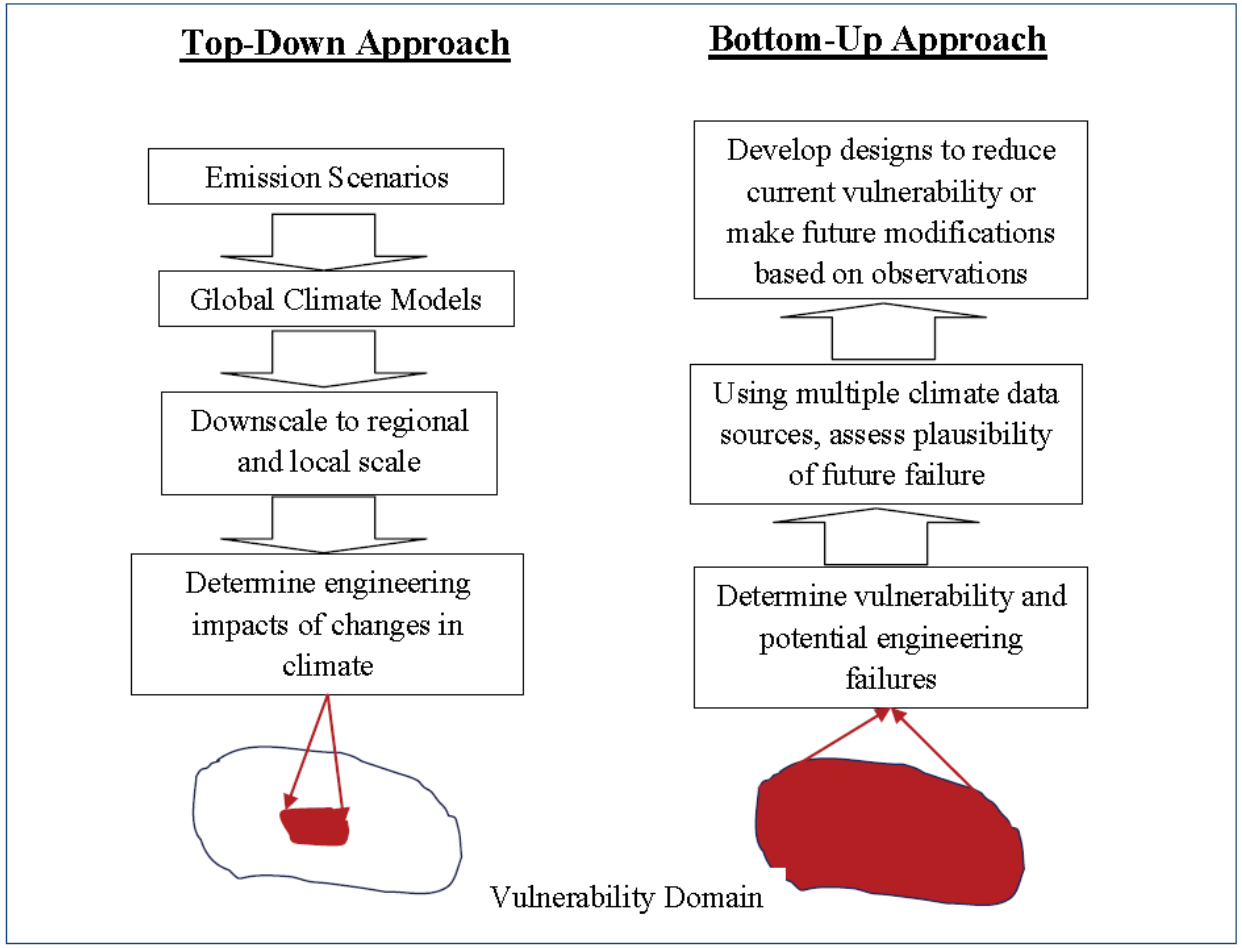
# NYC Preliminary Climate Resilience Design Guidelines

- Use New York City Panel on Climate Change (NPCC) climate projections
- Plan across *useful life* vs. *design life*
- Manage uncertainty through flexible adaptation pathways
- Project specific recommendations:
  - Financing requirements
  - Ongoing hazard mitigation projects
  - Interdependencies
  - Existing projects and risk studies



# Prioritization

- Need/state of good repair/status according to "deferred maintenance" list
- Exposure or vulnerability to climate change risks
- Capacity to fund
- Social equity
- Importance to local community/regional/state functioning (i.e., economics)




(ASCE 2015, p.21)

# Adoption / Implementation

- Institutions/actors involved
- Processes
- Certification
- Training
- Financial management and funding models to implement climate-safe infrastructure
- Other common barriers and evidence/examples/suggestions for overcoming them

# Ensure Delivery of Climate-Safe Infrastructure

- Common challenges in implementation/ adoption of new standards
- Workforce capacity building, e.g.:
  - skills in effective communication
  - engagement
  - economics/financial management
  - measuring performance/effectiveness
  - social equity
  - climate science and enhanced understanding / modeling skills
- Leadership development
- Non-standard strategies
- Others TBD

# Initial Reactions?

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# LUNCH
# 12:30-1:30pm

- On your own
- Discuss goals, discussion to date, gaps in literature with fellow members
- Save your receipts!

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# Bounding the Work of the CSIWG

- Gaps?
- Your go-to literature?
- What’s in, what’s outside the scope?
- What is needed?

# Opportunity for Public Comment

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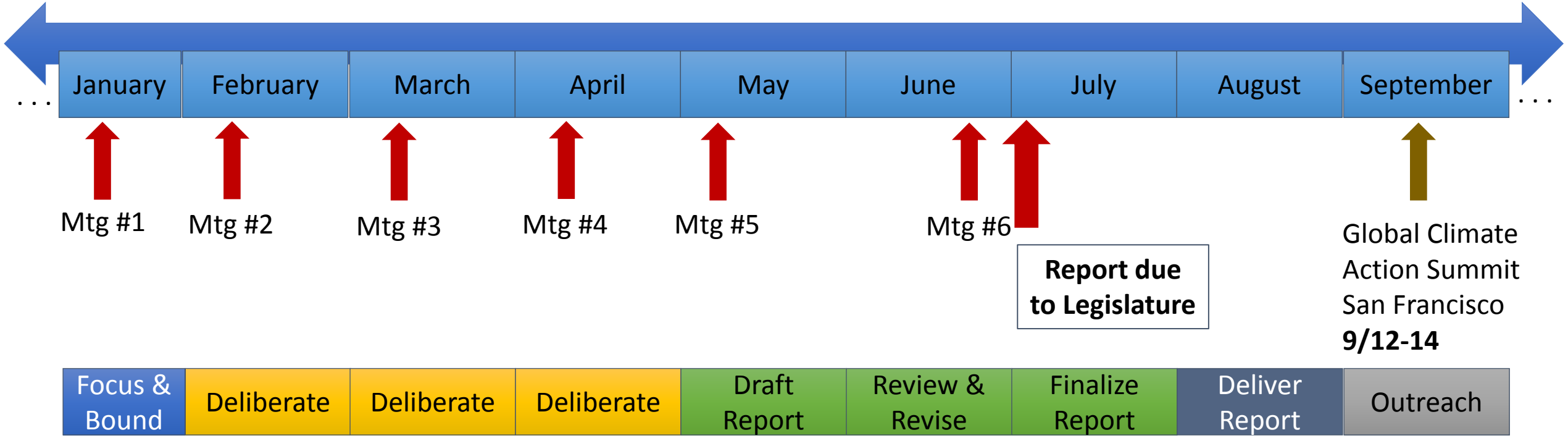
# Project Implementation – How to Get It Done

- Project timeline
- Meeting dates/locations & topics
- Webinar series
- Working Group process
  - Rules of engagement
  - Structure
- Role of project team, facilitators

# Project Timeline



# Meeting Dates, Locations, Topics & Tasks

| Mtg | Dates | Locations | Topics and Tasks |
|---|---|---|---|
| 1 | 1/18 | Sacramento | Determine project goals; WG structure and process |
| 2 | 2/12 | Los Angeles | Identify relevant infrastructure, sector-specific infrastructure standards, climate-sensitivity, information needs |
| 3 | 3/13 | Bay Area | Linking forward-looking climate science and impacts information with standards, codes, certifications throughout infrastructure design/implementation/ maintenance cycle |
| 4 | 4/11 | Sacramento | Sector-specific design standards and cross-sector interdependencies |
| 5 | 5/9 | San Diego | Governance of setting/changing design standards; non-standard strategies to ensure climate-safe infrastructure; deliberation of draft report; agree on refinement needs |
| 6 | 6/20 | Sacramento | Agree on final report revisions; delivery and outreach/promotion; project debrief |

# Webinar Series

**Purpose**

- Get to know WG members and share expertise.
- Educate about infrastructure issues.
- Effective use of WG meeting times.
- Maintain a constant drum beat on the topics of the WG.
- Bring in outside expertise and perspectives to enrich WG discussions.

**Launch**

January 30, 12pm

**Frequency**

Ca. every 2-3 weeks

**Approach**

Widely advertised

Open to interested public

CSIWG member participation

Recorded for public/CSIWG use

Educational and interactive

# Roles of Project Team

**Core Project Team**

- Keali'i Bright
- Joey Wall
- Guido Franco
- Elea Becker Lowe
- Susi Moser (facilitator)
- Juliette Finzi Hart (facilitator)

**State Roles**

- Ensure proper process & delivery
- Link to relevant processes internally
- Communicate externally with stakeholder network
- Assist with travel arrangements
- Assist with meeting logistics
- Serve as resources to WG

# Roles of Project Facilitators

- Support CSIWG deliberations in and between meetings
- Assist with background research, literature searches/review
- Develop meeting agendas and logistics
- Prepare meeting materials and notes
- Track and keep project on course, on time
- Draft/revise final report
- Develop outreach strategy and materials
- Design and facilitate webinar series
- Be accountable for project deliverables

Questions?
Clarifications?

# You Shape Your Own Process

- Capacity assessment
- Rules of engagement
- WG structure
- Other

# Revisiting Project Goals & Objectives

- [text from earlier CSIWG's discussion]

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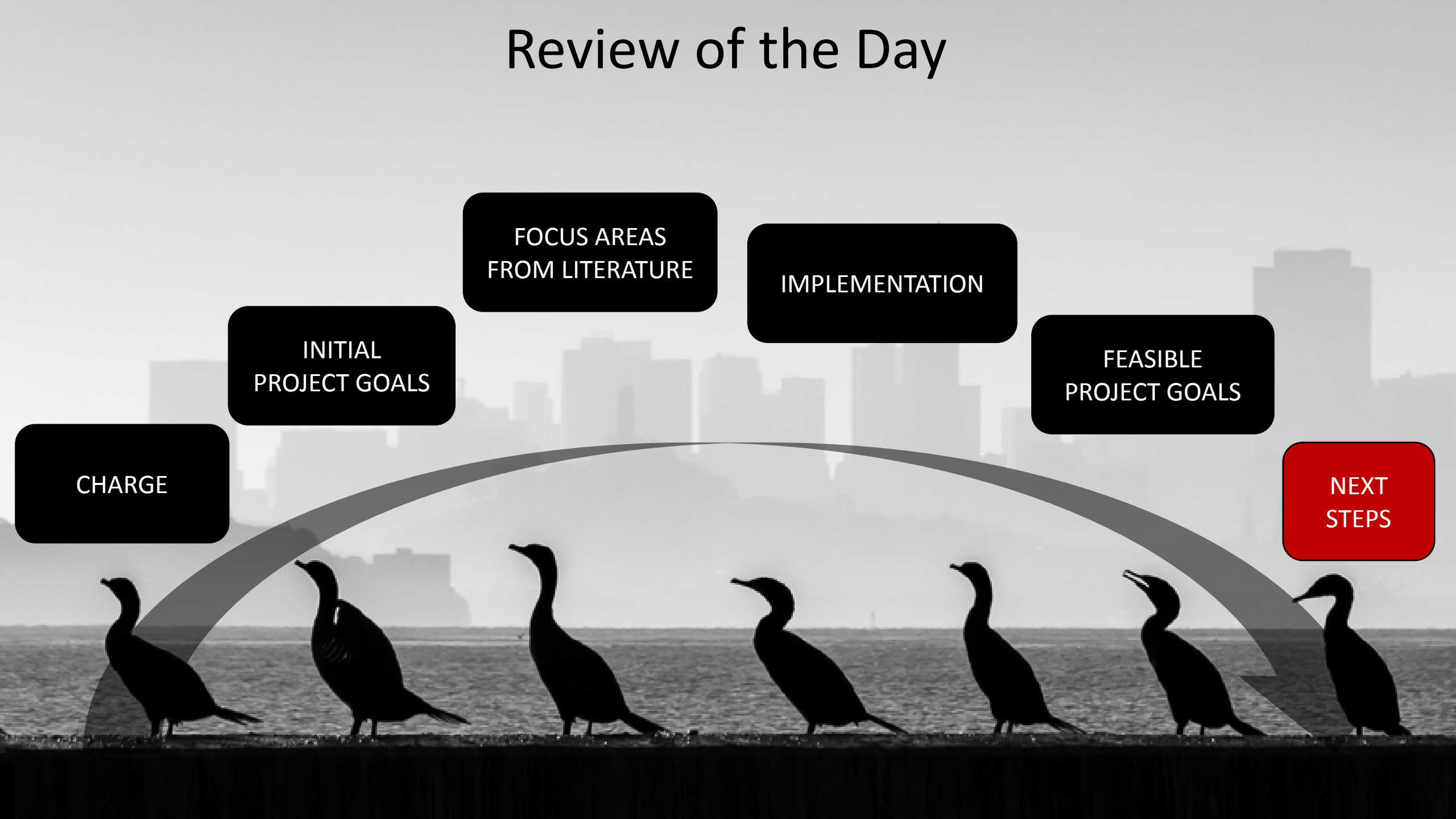

# What We Determined and Agreed on Today…

- Project goals
- CSIWG members' capacities
- Working Group structure & process
- Rules of engagement
- Project elements
- Timeline
- Project team & facilitators' roles

# Opportunity for Public Comment

# Next Steps

**We Will**

- Launch webinar series
- Prepare Meeting #2 (Los Angeles)
- [to be added over the course of the CSIWG meeting]
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-

**You Will**

- Make travel arrangements for LA meeting
- [to be added over the course of the CSIWG meeting]
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# Toward Climate-Safe Infrastructure

Thank you!