

JULY 2015

California Water Commission  
**Water Storage Investment Program**  
Public Meeting

# Welcome and Introductions

# Questions to be Answered Today

- What are the project eligibility criteria for the Water Storage Investment Program?
- What will the process be for reviewing and selecting projects for funding?
- What is the schedule for project selection?

# Proposition 1

## Water Quality, Supply, and Infrastructure Improvement Act of 2014

# Proposition 1 Chapter 8

Proposition 1 continuously appropriates \$2.7 billion to the Commission for *“public benefits associated with water storage projects that improve the operation of the state water system, are cost effective, and provide a net improvement in ecosystem and water quality conditions...”*

# Public Benefits of Storage

- Ecosystem
- Water quality
- Flood control
- Emergency response
- Recreation



# Eligible Storage Projects

- Surface storage projects identified in the CALFED ROD
- Groundwater storage projects
- Groundwater contamination prevention or remediation projects with storage benefits
- Conjunctive use projects
- Reservoir reoperation projects
- Local surface storage projects
- Regional surface storage projects

# Measurable Improvements to Delta

§79752

A project shall not be funded pursuant to this chapter unless it provides measurable improvements to the Delta ecosystem or to the tributaries to the Delta.

# Competitive Process

§79750(c)

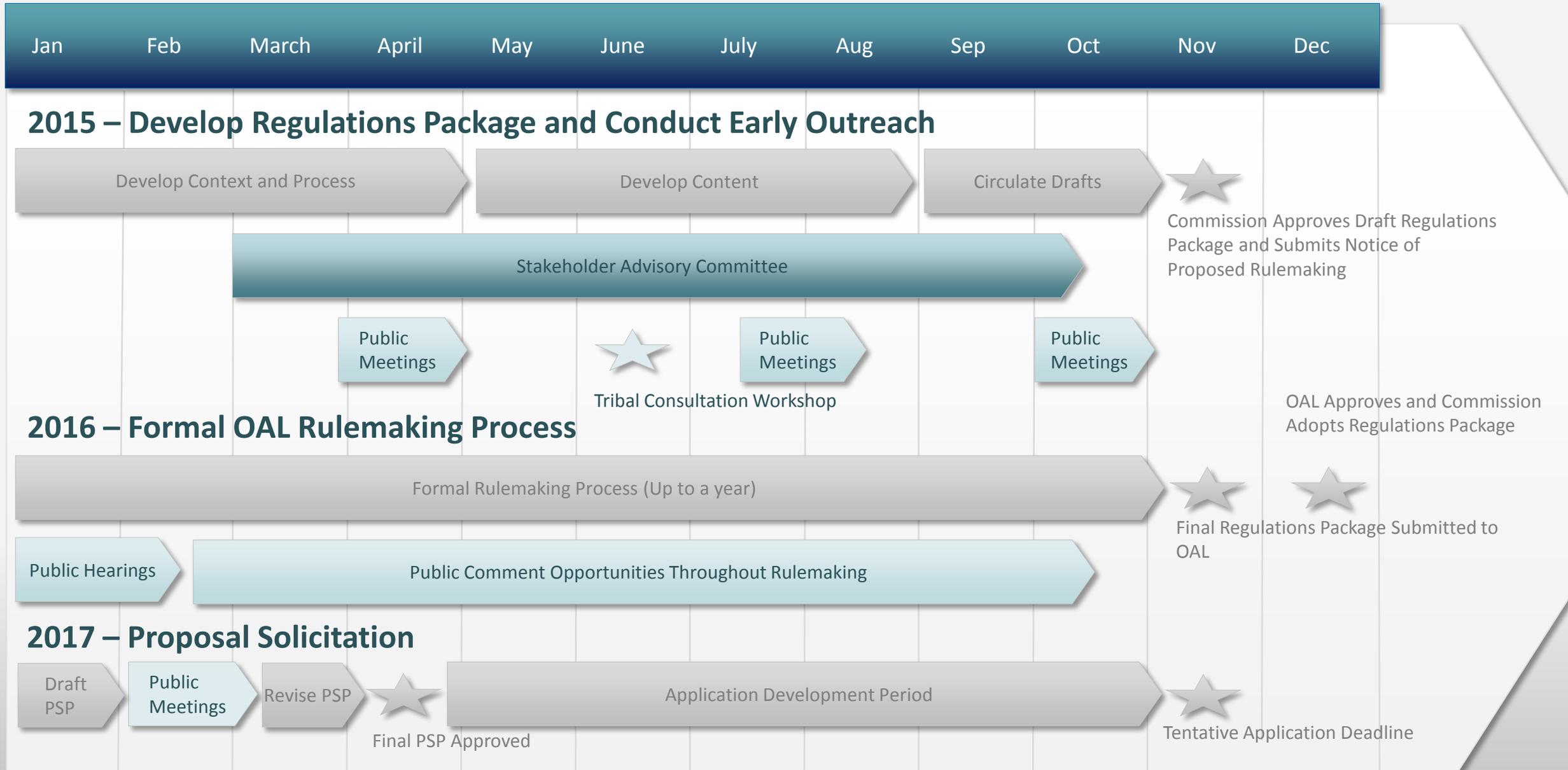
Projects shall be selected by the commission through a competitive public process that ranks potential projects based on the expected return for public investment as measured by the magnitude of the public benefits provided, pursuant to criteria established under this chapter.

# Water Storage Investment Program Overview

# Water Storage Investment Program

- The Commission is implementing the requirements of Proposition 1 through the Water Storage Investment Program
- The program will help achieve the desired outcomes of the Water Action Plan
- Program implementation is guided by a Goals, Objectives, and Principles document
- The Commission will adopt program regulations by December 15, 2016

# WSIP TIMELINE PROJECT PLANNING



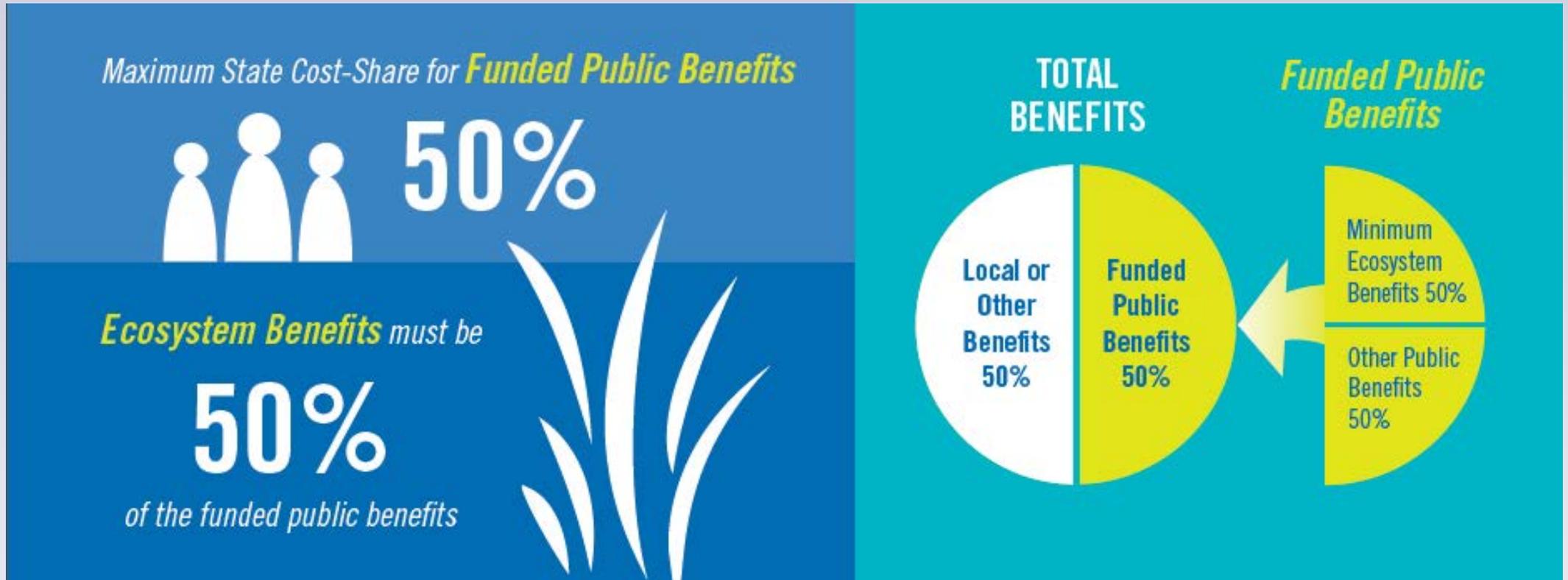
# Basic Eligibility Requirements

- Applicant eligibility
- Project eligibility
- Feasibility studies are complete and project is feasible – engineering, environmental, economic, financial
- Cost share requirements
- Draft environmental documentation is available for public review

# §79712 Eligible Applicants

- Public agency
- Nonprofit organization
- Public utility
- Federally recognized Indian tribe
- State Indian tribe listed on the Native American Heritage Commission's California Tribal Consultation List
- Mutual water company

# Public Benefit Cost Share Requirements

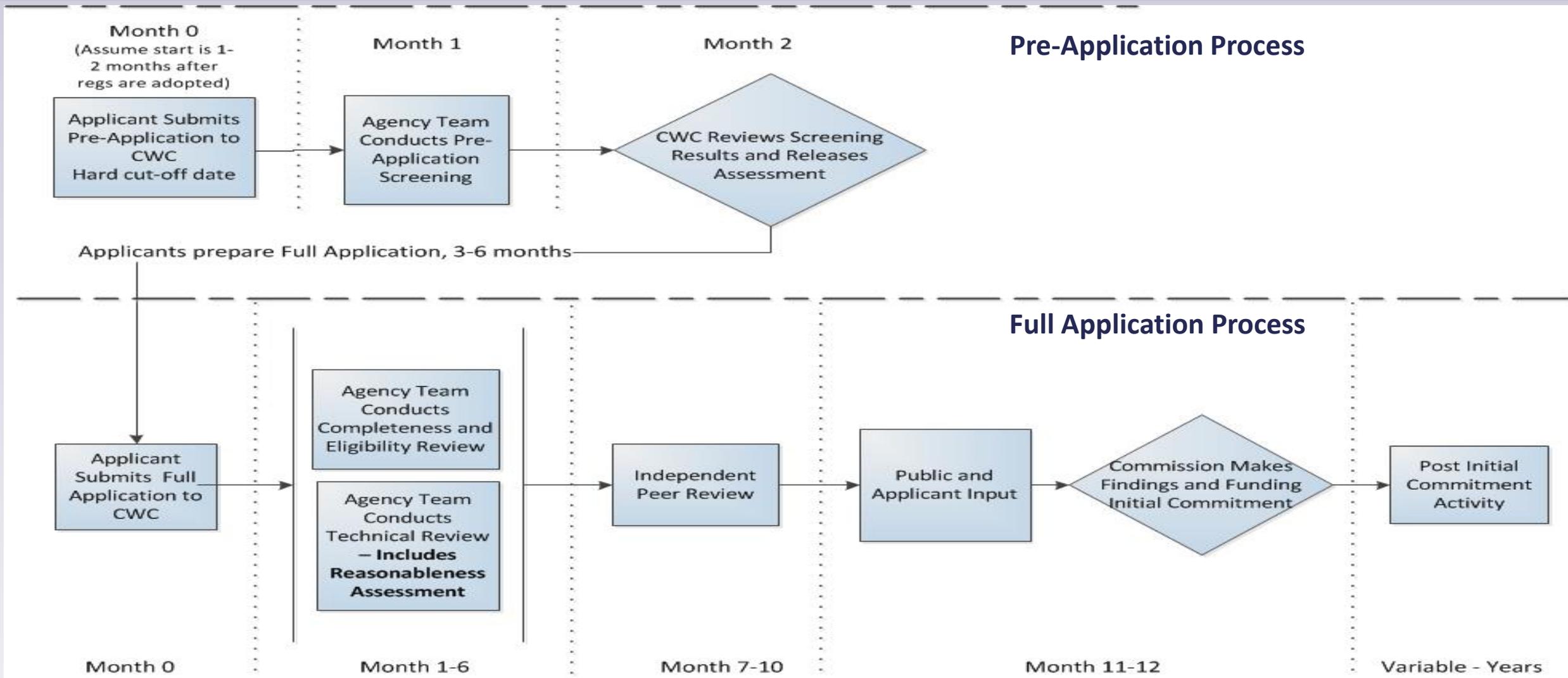


# Expected Major Components of Applications

- Eligible applicant information
- Statement of no impact to Wild and Scenic Rivers
- Public Draft CEQA document (EIR), including but not limited to
  - Project description
  - Project impact analysis
- Final feasibility study documentation, including, but not limited to
  - Description and quantification of public benefits, including supporting models (e.g., water operations) and economic analysis
  - Cost estimate and allocation
  - Feasibility analyses – technical, environmental, economic, financial
- Others to be determined...

# Application Review Process

# Application Process Flow Chart



# Quantification of Public Benefits

# What is a Benefit Provided by a Storage Project?

- A product or service provided by the project for which people are willing to pay
  - Normally measurable in physical units
- Measured as:
  - A physical change (with-project vs. without-project futures)
  - Converted to a common measurement unit where possible
  - A sequence over the life of the project

# Why Monetize Benefits?

- All benefits measured in same unit allows for direct comparison
- Dollar to dollar comparison of benefits to costs
- Provides for a more direct ranking, e.g., return on public investment
- Can account for important differences in timing, location for the same physical benefit

# Typical Benefits Quantification/Cost Allocation Method

1. Define future conditions without project
2. Assess future condition with project
3. Calculate physical benefits created by or caused by the project
  - a. Quantify as change relative to without project
  - b. Spread over the project life
4. Estimate the economic value of physical benefits
5. Compare present value of benefits and costs
6. Allocate costs to beneficiaries

# Importance of Using Common Assumptions for Evaluating Projects

- Ensures project benefits and costs are comparable across projects
- Supports determination of how a storage project may improve operation of the system – also allows for comparison of potential improvements for projects with benefits in the same area
- Supports determination of “net” and “measurable” improvements
- Supports accounting of benefits and costs – ensures calculations are complete and considers all potential physical changes
- Supports assurances for providing public benefits over time

# What is the Scope of the Common Assumptions Development Effort?

- Develop appropriate **with and without project common conditions/assumptions** for determining physical changes and calculating monetized benefits and impacts
- Develop common **physical** conditions/assumptions, such as hydrology, water operations, hydrodynamics, water quality, environmental conditions, etc.
- Develop common **economic** conditions/assumptions, such as discount rate, dollar year of analysis, energy costs, etc.

# Ecosystem and Water Quality Priorities

# California Water Code §79754

CWC, in consultation with the CDFW, State Water Board, and DWR, to develop and adopt, by regulation, methods for quantification and management of public benefits by December 15, 2016. The regulations must include:

- Priorities and relative environmental value of **ecosystem benefits** as provided by the CDFW
- Priorities and relative environmental value of **water quality benefits** as provided by the State Water Board

# Water Storage Investment Program

## CDFW Ecosystem Priorities

# Outline of Presentation

- Ecosystem priorities
- Relative environmental values
- Current status and next steps

# Proposition 1 Chapter 8

Proposition 1 continuously appropriates \$2.7 billion to the California Water Commission (CWC) for:

“public benefits associated with water storage projects that improve the operation of the state water system, are cost effective, and ***provide a net improvement in ecosystem and water quality conditions...***”

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# Draft CDFW Ecosystem Priorities

1. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations
2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species
3. Enhance commercial and recreational opportunities
4. Reduce the negative impacts of non-native species on native species and natural communities
5. Prevent or reduce negative impacts from in-river structures on anadromous fishes
6. Increase quality and quantity of aquatic and riparian habitat and managed and unmanaged wetlands

# Draft CDFW Ecosystem Priorities

1. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following:
  - a) Provide cold water at the appropriate time and location to improve water temperatures for egg survival and fry rearing of salmon and steelhead in Central Valley tributaries.
  - b) Provide flows at the appropriate time and location to maintain adequate dissolved oxygen in redds and to prevent dewatering of salmon and steelhead redds in Central Valley tributaries.
  - c) Provide flows to reduce juvenile stranding of salmon and steelhead in Central Valley tributaries.

# Draft CDFW Ecosystem Priorities

1. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following (continued):
  - d) Operate facilities to avoid stranding of immigrating adult salmonids and sturgeons in floodways and bypasses.
  - e) Provide increased spring flows to improve conditions for juvenile and smolt rearing and out migration.
  - f) Provide summer flows to improve conditions for in-river rearing of juvenile salmonids.
  - g) Provide attraction flows at the appropriate time and location to benefit anadromous species during upstream migration to improve passage and reduce straying

# Draft CDFW Ecosystem Priorities

1. Promote the recovery of endangered, threatened, and other at-risk native fish species and native fish assemblages through water project operations to achieve one or more of the following (continued):
  - h) Increase Delta outflow in spring, summer, or fall for pelagic fishes including Delta smelt and Longfin smelt; to increase survival of emigrating juvenile salmonids.
  - i) Restore and enhance seasonal patterns of flow and temperature to benefit life stage specific requirements of green sturgeon and white sturgeon including increased outflow to improve juvenile recruitment.
  - j) Operating as an integrated and coordinated system, use operational flexibility and water exchanges between state, federal and local storage projects to achieve goals and objectives described in this section.

# Draft CDFW Ecosystem Priorities

2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following :
  - a) Provide pulse flows to activate fluvial geomorphological processes, including accretion and erosion, channel form and function, and sediment transport.
  - b) Enhance habitat complexity and quality including run-riffle-pool complexes, large wood introduction, and increased escape cover.
  - c) Restore historic salmonid habitat in channels or sloughs, including re-watering channels.

# Draft CDFW Ecosystem Priorities

2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following (continued):
  - d) Increase the frequency, magnitude and duration of floodplain inundation to achieve multi-objective benefits of wetland habitat, primary productivity and food web support, juvenile fish rearing habitat, and alternative migration corridors.
  - e) Provide groundwater recharge and improve sediment quality and environmental water quality.
  - f) Restore access to anadromous fish habitat by improving fish passage.

# Draft CDFW Ecosystem Priorities

2. Restore physical processes and flow regimes to improve native habitats and natural communities to promote the recovery of endangered, threatened and other at-risk native species through achieving one or more of the following (continued):
  - g) Enhance salmonid habitat through implementation of sediment management plans.
  - h) Restore riparian communities to increase shading and reduce water temperatures for aquatic species and to support terrestrial species.
  - i) Enhance habitat through removal or modification of flood infrastructure, including levees and weirs.

# Draft CDFW Ecosystem Priorities

3. Enhance commercial and recreational opportunities through achieving one or more of the following:
  - a) Provide reservoir-based recreation, both consumptive and non-consumptive uses, including fishing, hunting, boating, swimming, nature observation, and education.
  - b) Increase populations of economically valuable commercial or recreational species.
  - c) Increase wildlife habitat on refuges or provide increased water supply to refuges.

# Draft CDFW Ecosystem Priorities

4. Reduce the negative impacts of non-native species on native species and natural communities by achieving one or both of the following :
  - a) Develop and implement invasive species management plans.
  - b) Develop and implement water project operations plans which use methods such as flushing flows and thermal control to suppress non-native species abundance and distribution and promote restoration of natural communities

# Draft CDFW Ecosystem Priorities

5. Prevent or reduce negative impacts from in-river structures on anadromous fishes by achieving one or more of the following:
  - a) Remediate unscreened or poorly screened diversions that entrain fish.
  - b) Remediate existing barriers to improve fish passage
  - c) Construct and operate facilities to reduce stranding and mortality of adult salmonids and sturgeons in floodways and bypasses.

# Draft CDFW Ecosystem Priorities

6. Increase quality and quantity of aquatic and riparian habitat and managed and unmanaged wetlands by achieving one or both of the following :
  - a) Provide water to enhance wetlands and riparian habitat for the benefit of aquatic and terrestrial species.
  - b) Enhance managed seasonal wetlands on wildlife refuges and other lands being managed for public ecosystem values.

# Ecosystem – Relative Environmental Values

1. Number of ecosystem priorities addressed
2. Consistency with existing conservation/recovery plans
3. Water use efficiency
4. Measurable rather than descriptive benefits
5. Proximity to existing resources
6. Expected magnitude of the measurable benefits
7. Clear performance measures
8. Certainty of achieving the benefits

Continued...

# Ecosystem – Relative Environmental Values

9. Immediacy of benefits provided
10. Duration or permanence of the benefits
11. Climate change adaptability and resilience

# Next Steps

- Refine ecosystem priorities
- Develop an approach to consider the relative environmental values of ecosystem public benefits
- Prepare draft regulation and guidelines language for incorporation to benefits evaluation criteria by August 2015

# Water Storage Investment Program

## State Water Board Water Quality Priorities

# Draft State Water Board Water Quality Priorities

1. Improve **water temperature** conditions in water bodies on California's Clean Water Act (CWA) Section 303(d) list that are impaired for temperature.
2. Improve **dissolved oxygen** conditions in water bodies on California's CWA 303(d) list that are impaired for dissolved oxygen.
3. Improve **nutrient** conditions in water bodies on California's CWA 303(d) list that are impaired for nutrients.
4. Improve **mercury** conditions in water bodies on California's CWA 303(d) list that are impaired for mercury.
5. Improve **salinity** conditions in water bodies on California's CWA 303(d) list that are impaired for sodium, total dissolved solids, chloride, or specific conductance/electrical conductivity.

# Draft State Water Board Water Quality Priorities

6. Protect and/or clean up **groundwater** in DWR's CASGEM high- and medium-priority basins.
7. Achieve **Delta tributary stream flows** that resemble natural hydrograph patterns or other flow regimes that have been demonstrated to improve conditions for aquatic life.
8. Reduce current or future **water demand** on the Delta watershed by developing local water supplies.

# Draft State Water Board Water Quality Priorities

1. Improve water **temperature** conditions in water bodies on California's Clean Water Act (CWA) Section 303(d) list that are impaired for temperature:

*Provide measurable improvements in temperature levels to reduce or eliminate exceedances of water quality objectives for temperature downstream of reservoirs.*

Achieving this priority may involve:

- a) Design and operate reservoirs so the manner of releasing water, both physically and temporally, results in achieving water quality objectives for temperature.

# Draft State Water Board Water Quality Priorities

2. Improve **dissolved oxygen (DO)** conditions in water bodies on California's CWA Section 303(d) list that are impaired for dissolved oxygen:

*Provide measurable improvements in DO levels to reduce or eliminate exceedances of water quality objectives for DO in and downstream of reservoirs.*

Achieving this priority may involve:

- a) Design and operate reservoirs so the manner of releasing water, both physically and temporally, results in achieving water quality objectives for DO.

# Draft State Water Board Water Quality Priorities

3. Improve **nutrient** conditions in water bodies on California's CWA Section 303(d) list that are impaired for nutrients:

*Provide measurable improvements in nutrient levels to reduce or eliminate exceedances of water quality objectives for nutrients in and downstream of reservoirs.*

Achieving this priority may involve one or more of the following strategies:

- a) Managing nutrient loading, including maintenance activities.
- b) Managing sediment.
- c) Restoring wetlands.
- d) Managing recycled wastewater.
- e) Regulating quantity and timing of freshwater flow (including from the Delta).

# Draft State Water Board Water Quality Priorities

3. Improve nutrient conditions in water bodies on California's CWA Section 303(d) list that are impaired for nutrients (continued):

Potential strategies (continued):

- f) Aerating bottom waters.
- g) Capping or dredging bottom sediments.
- h) Increasing flushing or circulation rates.
- i) Harvesting aquatic plants.
- j) Managing biological communities.
- k) Inactivating nutrients.
- l) Biological control.

# Draft State Water Board Water Quality Priorities

4. Improve **mercury** (and methylmercury) conditions in water bodies on California's CWA Section 303(d) list that are impaired for mercury:

*Provide measurable improvements in mercury/methylmercury levels in water or sediment to reduce or eliminate exceedances in water quality objectives for mercury in and downstream of reservoirs.*

Achieving this priority may involve one or more of the following strategies:

- a) Preventing or cleaning up contamination from mine sites (e.g., acid mine drainage).
- b) Aerating anoxic bottom sediment and waters.
- c) Managing water levels, nutrients, dissolved oxygen, and other factors that affect production of methylmercury in reservoirs and bioaccumulation of methylmercury in fish.
- d) Changing the timing and location of reservoir discharges.

# Draft State Water Board Water Quality Priorities

4. Improve mercury (and methylmercury) conditions in water bodies on California's CWA Section 303(d) list that are impaired for mercury (continued).

Potential strategies (continued):

- e) Managing fisheries to control bioaccumulation.
- f) Reducing the source of mercury before flooding.
- g) Limiting the extent of flooded areas.
- h) Communicating health risks associated with fish consumption.
- i) Capping or dredging bottom sediment.

# Draft State Water Board Water Quality Priorities

5. Improve **salinity** conditions in water bodies on California's CWA Section 303(d) list that are impaired for sodium, total dissolved solids, chloride, or specific conductance/electrical conductivity:

*Provide measurable improvements in salinity levels to reduce or eliminate exceedances of water quality objectives for salinity in the Delta or San Joaquin River, or any other waters downstream of reservoirs.*

Achieving this priority may involve one or more of the following strategies:

- a) Releasing stored water to meet salinity objectives.
- b) Operational or physical changes at the Delta export pumps.
- c) Operational or physical changes to Delta channels.
- d) Treating or reusing agricultural drainage.
- e) Re-operation of agricultural drainage (e.g., real-time salinity management).

# Draft State Water Board Water Quality Priorities

6. Protect and/or clean up **groundwater** in DWR's CASGEM high- and medium-priority basins.

Achieving this priority may involve one or more of the following strategies:

- a) Capture and infiltration of storm water runoff, emphasizing low impact development and green infrastructure technologies.
- b) Increasing percolation of low-nitrate/low-salt waters.
- c) Developing and implementing Salt and Nutrient Management Plans (per State Water Board's Recycled Water Policy).
- d) Establishing or enhancing local groundwater management efforts (e.g., Integrated Regional Water Management planning) that include performance standards for maintaining groundwater quality and quantity.

# Draft State Water Board Water Quality Priorities

6. Protect and/or clean up groundwater in DWR's CASGEM high- and medium-priority basins (continued).

Potential strategies (continued):

- e) Using recycled water to improve or protect groundwater quality in manner that also offsets overdraft and increases surface water storage.
- f) Providing large-scale groundwater cleanup where there is not a readily identifiable or viable responsible party.
- g) Constructing and using barrier wells to prevent or reduce seawater intrusion.
- h) Preventing contamination in groundwater from spreading, especially to groundwater used as drinking water.

# Draft State Water Board Water Quality Priorities

7. Achieve **Delta tributary stream flows** that resemble natural hydrograph patterns or other flow regimes that have been demonstrated to improve conditions for aquatic life.

Achieving this priority may involve:

- a) Designing to divert and store (in surface impoundments or groundwater basins) high flows that exceed established instream flow criteria caps or other levels that are demonstrated to exceed flows needed for aquatic habitat, or to cause human or environmental harm.

# Draft State Water Board Water Quality Priorities

8. Reduce current or future **water demand** on the Delta watershed by developing local water supplies.

Achieving this priority may involve one or more of the following strategies:

- a) Maximizing use of recycled water.
- b) Increasing storm water capture and reuse, emphasizing low impact development and green infrastructure technologies, that provide multiple benefits (e.g., water quality, supply, habitat, flood control, etc.).
- c) Conjunctive use or other groundwater storage that result in measurable improvements to Delta flows or flow variability conducive to enhancing conditions for native aquatic life.

# Next Steps and Future Engagement

# Near-Term Next Steps

- Develop draft regulations language
- Continue to define application requirements and develop guidance for applicants
- Provide draft regulations for early review and informal comment
- Initiate formal rulemaking process and 45-day public comment period
- Hold public hearing in early 2017

# Public and Stakeholder Participation is Key

- Commission Meetings – 3<sup>rd</sup> Wednesday
- Public Meetings – October
- Stakeholder Advisory Committee Meetings – 1<sup>st</sup> Wednesday
- Commission's Website and Listserve
- Respond to future project information surveys

# Questions?

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# Public Comment Period