Background

- Assembly Bill No. 32 (2006)

  "Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include... a reduction in the quality and supply of water to the state..."
Background

“The State and Regional Water Boards have a key role in the State’s implementation plan known as Safeguarding California.” – San Diego Water Board

• Safeguarding California (2016)

“We use a number of words, including adaptation, resilience, readiness, and safeguarding, to describe a simple concept: ensuring that people, communities, and natural systems are able to withstand the impacts of climate disruption.”
Adaptation and Mitigation

Mitigation
• Reduce Emissions
• Enhance Sinks

Adaptation
• Mitigate Impacts
• Promote Resiliency

Greenhouse gas concentrations

Climate change

Impacts

Responses

Mitigation

Adaptation
Potential Impacts on the Central Valley

• **Temperature**
  - More arid landscape
  - Projected 5-6°F increase
  - Increase in heatwave days
    - Sacramento: 90-140% increase
    - Fresno: 40-60% increase
  - Heat period twice as long (June – Sept)
  - Burned area from wildfires increase 41-69%
Potential Impacts on the Central Valley

- **Number of Heat Days**

- **Timing of Heat Days**
Potential Impacts on the Central Valley

• Precipitation and Snowpack
  – Decrease in Sierra Nevada snowpack
  – More precipitation to fall as rain rather than snow
  – Increased risk of extreme precipitation and flooding
  – Average winter rainfall decrease 15-30%
  – Decrease in “wet” years by 17%
Potential Impacts on the Central Valley

• Snowpack: 2010 2090
Potential Impacts on the Central Valley

- Agriculture
  - Increased evapotranspiration rates
  - Decrease in winter chill hours
Water Boards’ Climate Actions
Regional Board Actions to Date

• **Region 2—San Francisco Bay**
  - Basin Plan 2015 Triennial Review, Priority Item #2
    - Integrating Climate Change considerations into Basin Plan

• **Region 4—Los Angeles**
  - Framework for Climate Change Adaptation and Mitigation (2015)
    - Climate Change impacts on regional water supply and quality
    - Discusses issues to be considered and tackled by R4 programs
    - Region 5 plan will use similar format
Regional Board Actions to Date

• **Region 6—Lahontan**
  - Public Workshops & Stakeholder Participation
  - Board Meeting (Jan 2017)
    • Consolidated 25 potential adaptation concepts and/or actions
  - Currently developing a Climate Change Adaptation Strategy

• **Region 9—San Diego**
  - Climate Change Resolution for April Board Meeting
    • Addressing Threats to Beneficial Uses from Climate Change
State Board Climate Change Resolution

• **Greenhouse Gas Reduction**
  – Short lived climate pollutants, water and energy efficiency, renewable energy, recycling, storm water

• **Ecosystem resilience**

• **Response to Climate Impacts**
  – Drinking water, ground and surface water storage, wildfires, permit and regulatory changes

• **Modeling and Analysis**

• **Funding**

• **Direction to Divisions, Coordination with Regions**
State and Regional Board Actions

• Regional Climate Change Research
• Encourage stakeholder/public participation in developing Climate Change considerations
• Introduce Climate Change actions into regulatory programs
• Develop an overall Climate Change adaptation strategy
• Specific programmatic requirements
• Inter- and Intra-agency coordination
Work Plan Process

• March 2015 – Board Workshop
  – Generated basic ideas and areas of concern
• 2016 – Coordination on State Board Resolution
• 2017 – Region 5 efforts leading to Work Plan
  – Input from Programs
  – Public meetings, Stakeholder input
  – Board input and approval
Work Plan Time Line

- March 28: Stakeholder Meeting – Review work plan outline, Gather initial input
- April 21: Initial Comment Deadline
- May 12: Release of Initial Draft
- June 1: Board Workshop – Presentation of Initial Draft
- July 17: Comment Deadline on Initial Draft work plan
- August 30: Release of Proposed Work Plan
- September 29: Comment Deadline for Proposed Work Plan
- October 19: Board Hearing to Approve work plan
Work Plan: 1st Draft Structure

• Summary of Climate Change impacts and opportunities for Greenhouse Gas reduction
• Analysis of individual program response to climate adaptation & mitigation
  – Planning
  – Groundwater
  – Surface Water
• Prioritization of efforts and timeline
  – Short term (Eg.: Permitting, data collection)
  – Medium term (Eg.: Modeling, guidance)
  – Long term (Eg.: Basin Planning)
Discussion
Region 5 Climate Change Work Plan

• The Climate Change Work Plan will deliver...
  – A summary of Climate Change impacts to Central Valley
  – Summary of current and proposed efforts for each Region 5 program
  – Prioritization and time line for major efforts
    • Framework – regulatory efforts that can work in the face of Climate Change

• **Ultimate Goal**
  – Developing programmatic priorities and an overall framework that promotes resiliency in response to Climate Change
Adaptation & Mitigation Questions for Programs

1) Climate change impacts to the program?
2) Monitoring or research needs?
3) Current, ongoing efforts to address climate impacts
4) Future needs to address climate impacts?
5) Considerations needed in the Board’s permitting or regulatory actions?
6) GHG emissions reductions
7) Coordination opportunities w/ SWRCB & other agencies?
8) Other considerations?
Central Valley Water Board Programs

- Administration
- Basin Planning
- Confined Animals
- Forestry
- Irrigated Lands
- Cannabis
- Mining
- NPDES
- Non-Point Sources
- Oil Fields
- Site Cleanup
- Storm Water
- SWAMP
- Title 27
- UST
- WDRs (Non-15)
- Water Quality Certs
Selected Region 5 Considerations

1) Climate Change impacts to the program?
   - Title 27 & Mining
     • Facilities may no longer comply with siting criteria
   - Water Quality Certification
     • Increased flood control & water supply projects
   - Site Cleanup
     • Contention over ownership & rights to recycled water
   - Underground Storage Tanks (UST)
     • A shift toward greener fuels may reduce UST releases
Selected Region 5 Considerations

2) Monitoring or researching needs?

- Forest Activities
  - Compare carbon storage loss & GHG emissions from wildfires vs. prescribed burning

- Confined Animal Facilities
  - Optimize manure digester gas production
  - Optimize transportability of digester by-product

- NPDES Permitting
  - Research & develop policies for unregulated pollutants
Selected Region 5 Considerations

3) Current Efforts?

– CAFO
  • Digester General Order

– Forest Activities
  • Watershed Based Planning – Battle Creek

– NPDES
  • Delta Regional Monitoring Program

– SWAMP
  • Trend monitoring

– Non-15
  • Wastewater Recycling
Selected Region 5 Considerations

4) Future needs to address climate impacts?

- NPDES Permitting
  - Require Dischargers to develop Climate Change action plan

- Waste Discharge to Land
  - Develop less energy intensive sludge process for WTWs

- Oil Fields
  - Use high-quality wastewater to aid reclamation

- Confined Animal Facilities
  - Shift to solid manure to decrease methane production
Selected Region 5 Considerations

5) Considerations for permitting/regulatory actions?

– NPDES Permitting
  • Permits to include weather-dependent conditions

– Irrigated Lands
  • Sediment and erosion requirements to promote cover crops

– Oil Fields
  • Facilitate the permitting of wastewater reuse by expanding certain limits based on science

– SWAMP (Monitoring Program)
  • SWAMP data could be used in decision-making process
Selected Region 5 Considerations

7) GHG emission reductions?
   - Stormwater
     • Use of Low Impact Development techniques
   - Site Cleanup & Waste Discharge to Land
     • Incentivize alternative energy use
   - Irrigated Lands
     • Healthy Soils Initiative to sequester carbon
   - Forest Activities & Planning Programs
     • Conservation and restoration projects to convert environmental areas into GHG sinks
Selected Region 5 Considerations

6) Coordination with other agencies?

- Nonpoint Source
  - Interagency input need to oClimate Changeur earlier in the development of Orders and programs

- Title 27 & Mining
  - Work with ARB & air districts to increase collection and treatment of landfill gases

- Planning Programs
  - Coordinate with State Board’s DDR for FERC licensing requirements and reservoir management
8) Other considerations?

– Planning Program
  • Water management needs to more closely align with seasonal water patterns

– Stormwater
  • Regulatory involvement should not inadvertently contribute to Climate Change impacts

– Nonpoint Source
  • Climate Change task force composed of one person from each program to provide input
Recurring Considerations

- Changes to background conditions
- Shifts in land use may affect program operations
- Challenges existing regulations
- Adds complexity to future regulatory actions
- Challenges existing infrastructure design
- Increased noncompliance & cost of compliance
- Extra capital (human, monetary, etc.) may be required
Review Matrix