Workshop

for the

Proposed Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling

December 1, 2009
Sacramento, CA

California Environmental Protection Agency
STATE WATER RESOURCES CONTROL BOARD

Our Goal

To develop a statewide policy to protect marine life from the adverse impacts of once-through cooling water intake structures, in compliance with CWA Section 316(b), while ensuring continuity of the State's electrical grid.

Existing Coastal Power Plants

The proposed Policy applies to the 19 power plants with the capacity to withdraw over 15 billion gallons per day of water from the State's coastal and estuarine waters using a single-pass system, also known as once-through cooling (OTC).

Substantial Impacts to Marine Life

- Impingement mortality (**fish only**) is over **2.6 million** annually, based on 2000-2005 data.
- Entrainment mortality is over **19 billion fish larvae** annually, based on 2000-2005 data. Many more benthic invertebrate larvae are entrained but not enumerated.
- Delta plants, estimated to annually entrain about **62,000 Delta Smelt.**
- Marine wildlife impacted – about **57** annually entrapped (seals, sea lions, sea turtles).

OTC has the largest impact to marine life of any activity regulated by the Water Boards

- Cumulative entrainment – all 12 So CA plants – causes **mortality of 0.8 - 1.4% of all fish larvae in the So CA Bight**

- Diablo Canyon on the Central Coast
  - impacts a source area of **93 square miles, ~ 10.8% mortality** for larvae of nine rockfish species
  - **296 - 593 acres of rock reef** would be needed to replace the larvae lost as a result of entrainment by this single power plant.

Relative impacts of OTC

- The MLPA Science Advisory Team (SAT), made up of 20 scientists, in 2009 identified three major water quality threats in the southern CA Bight with regard to placement of MPAs, in order of priority:
  1) intakes/discharges from power generating facilities, 2) storm drain effluents, and 3) wastewater effluents

- SAT : “Intakes from power generating facilities are the greatest threat because they operate year round or over many months and there is virtually complete mortality for any larvae entrained through the cooling water intake system.”

The Law

- **Clean Water Act Section 316(b):**
  requires “that the location, design, construction, and capacity of cooling water intake structures reflect the Best Technology Available for minimizing adverse environmental impact.”

- **California Water Code Section 13142.5:**
  requires new or expanded coastal power plants to use “the best available site, design, technology, and mitigation measures feasible . . . To minimize the intake and mortality of all forms of marine life.”

Overview - Proposed Policy

- The draft Policy proposes **Best Technology Available (BTA)** in order to minimize adverse impacts to aquatic life from once-through cooling water systems at power plants.
- The Policy would be implemented through an **adaptive management strategy** by which BTA can be achieved without disrupting the critical needs of the State's electrical generation and transmission system.
- The Policy would **reduce the permitting burden** on Regional Water Boards by providing statewide guidance and coordination.

Best Technology Available (BTA)

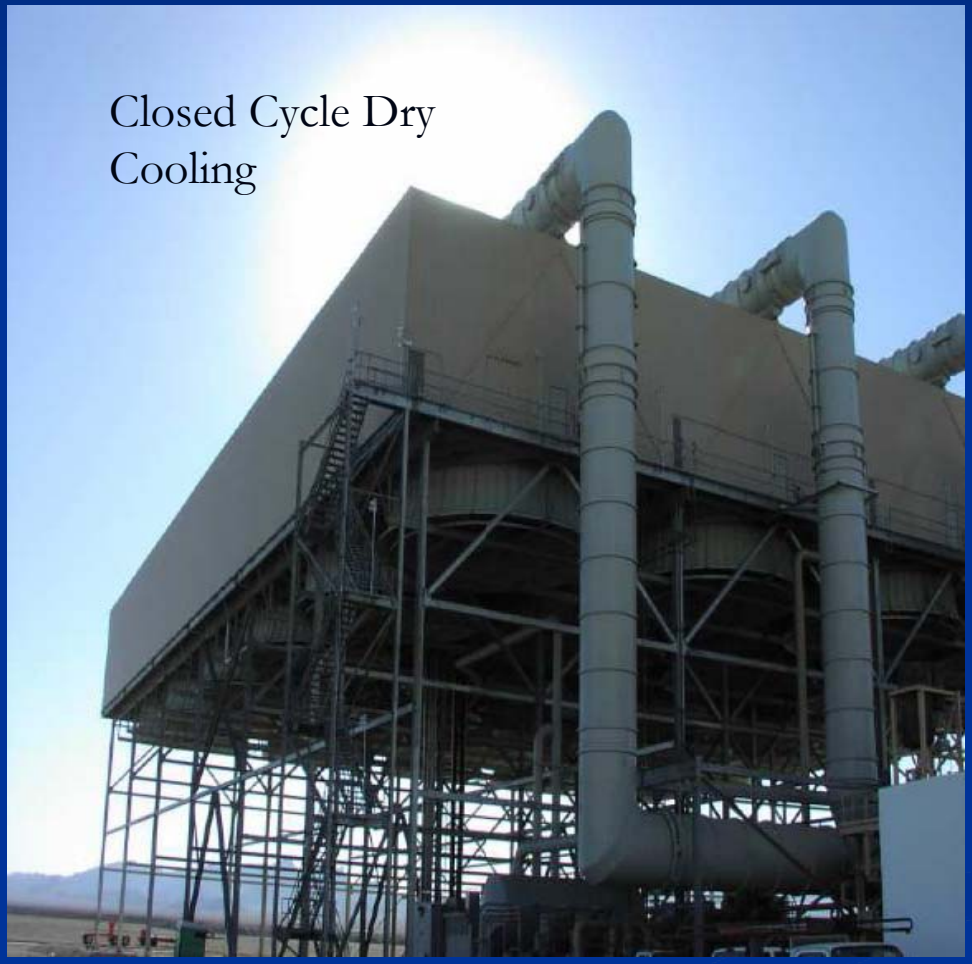
- Closed Cycle Wet Cooling is a proven technology that reduces flows substantially (93-96%)
- Cooling towers retrofits have occurred at various plants around the nation
  - One of theses retrofits has occurred in CA – Pittsburg Power Plant Unit 7
  - A nuclear plant in Michigan has been retrofitted with cooling towers
- Closed-cycle wet cooling is selected as BTA, based on staff's best professional judgment (BPJ)

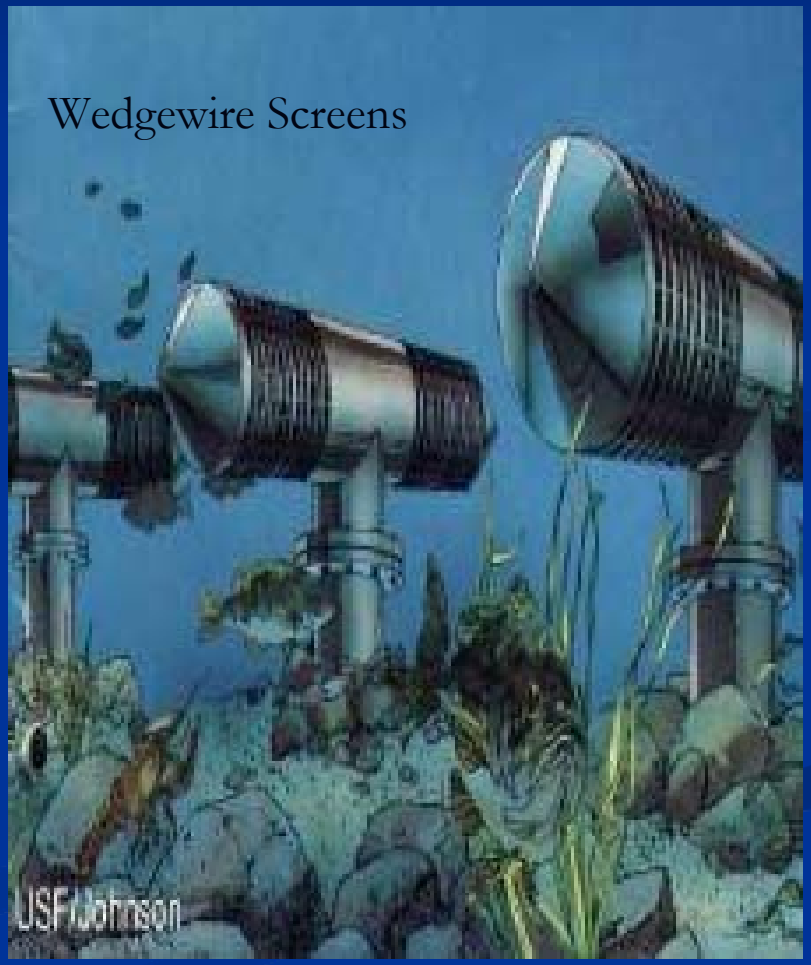
Retrofit at a Nuclear Plant

Best Technology Available

- **Track 1:** Reduction of **intake flow rate** at each power-generating unit to a level commensurate with that which can be attained with a closed-cycle wet cooling system. A minimum of **93% reduction** is required compared to the design intake flow rate.
- **Track 2:** If compliance with Track 1 is not feasible, the impingement mortality and entrainment for the **facility, as a whole**, must be reduced to a comparable level to Track 1, using operational or structural controls, or both.

Other Technologies





Implementation Strategy

- An implementation schedule has been proposed
  - using a geographic approach (local reliability areas) for fossil-fueled plants
  - linking implementation at nuclear plants with re-licensing

- **An adaptive management strategy** would be employed to avoid disrupting the electrical grid:
  - An advisory committee (SACCWIS) will be convened to review implementation progress and report back to the State Water Board
  - The State Water Board will consider SACCWIS's recommendations and make modifications to the Policy as appropriate.

- The Regional Water Boards will reissue or modify the NPDES permits to conform with the Policy.

Interim Requirements

- **No later than one year after the Policy's effective date:**
  - offshore intakes must install large organism exclusion devices.
  - power-generating units that are not directly engaging in power-generating or critical maintenance, shall cease intake flows, unless a demonstration is made that a reduced minimum flow is necessary for operations.

- **Beginning five years after the effective date of this Policy and continuing until final compliance:**
  - The permittee must implement or fund measures to mitigate interim impingement and entrainment impacts.

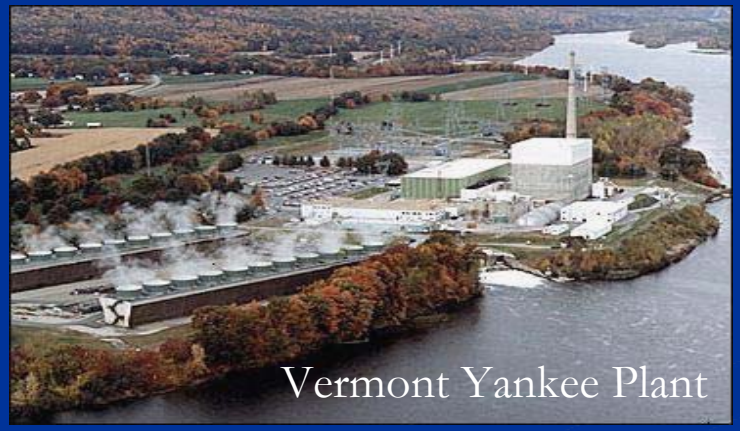
Recent Milestones

- A **Draft Policy** was released on **June 30, 2009.**
- The supporting **Substitute Environmental Document (SED)** was released on **July 15, 2009**, initiating the public comment period.
- A Public Hearing was held on **September 16, 2009**.
- The deadline for submitting comments was **September 30, 2009**.
- Staff has reviewed forty one (**41**) comment letters representing an estimated 440 individual comments, is developing responses to those comments, and is revising the SED.

Proposed Policy Revisions

- Based on consideration of comments received and direction from the Board

- Revisions are minor and intended to clarify the intent of the policy



Proposed Policy Revisions

The Policy revisions fall into seven broad categories:

- Correcting spelling, acronyms, and grammar;
- Adding background information;
- Improving readability;
- Defining terms;
- Clarifying intent;
- Specifying implementation provisions in further detail;
- Re-arranging sections of the proposed Policy; and
- Correcting dates.

Proposed Policy Revisions

Related to the Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS):

- Clarified the membership, structure, function, and meeting schedule
- Clarified public involvement and input
- Clarified how the adaptive management approach will work

  (Sections 1.I, 2.B(2), 3.B, and 3.C(1))

Proposed Policy Revisions

Related to the Review Committee for the nuclear power plant special studies:

- Clarified meeting schedule
- Clarified public involvement and input (Section 3.D)

Proposed Policy Revisions

Related to the Water Boards:

- Clarified the role of the Regional Water Boards in permitting the OTC power plants under the adaptive management approach

  (Section 3.C(1))

- Clarified the role of the State Water Board under the adaptive management approach

  (Sections 1.G, 1.I, and 2.B(2))

Proposed Policy Revisions

Related to the Wholly Disproportionate Determination:

- Deleted the entire section to avoid implementation burden due to lack of clarity
- The WDD section applied to two types of plants:
  - Fossil-fueled plants having units with a heat rate of 8500 BTUs or less (intended for combined-cycle units), and
  - nuclear power plants.
- Combined-cycle plants will be given credit under Track 2
- Compliance costs and feasibility for nuclear facilities will be considered by State Water Board after completion of the special studies

(Previous Section 4, now Sections 2.A(2)(d) and 3.D(7))

Proposed Policy Revisions

Related to the Best Available Technology (BAT) specified in Track 1 and Track 2:

- Defined “not feasible”
- Clarified “comparable level”
- Provided additional detail regarding compliance determination and monitoring
- Allowed credit for reductions in entrainment and impingement resulting from prior replacement of steam turbine units with combined-cycle units
- Defined “combined-cycle *power-generating units*”

(Sections 2.A(2) and 5 (definitions))

Proposed Policy Revisions

Related to the OTC Nuclear Power Plants:

- Clarified that the State Water Board shall consider cost and feasibility when considering the results of the special studies to investigate compliance options for the OTC nuclear facilities and evaluating the need to modify the proposed Policy

(Section 3.D(7))

Proposed Policy Revisions

Related to the Final Compliance Dates:

- Changed the final compliance date for Diablo Canyon Power Plant from December 31, 2021 to December 31, 2024
  - The intent was that nuclear plants would need to comply by their earliest re-licensing dates. Hence, the final compliance date for Diablo Canyon Power Plant was changed to be aligned with their earliest re-licensing date of November 2, 2024 for Unit 1

(Section 3.E)

Proposed Policy Revisions

Related to the Immediate and Interim Requirements:

- Clarified that an owner/operator may comply with mitigation requirements by providing funding to a third party
- Provided further implementation detail by stating that the “habitat production foregone” method (or a comparable method) should be used to determine the habitat and area for mitigation projects.

(Section 2.C(3))

Proposed Policy Revisions

Related to the Track 2 Monitoring Provisions:

- Clarified that only fish larvae and pelagic larvae of benthic invertebrates (e.g., crabs, lobsters, abalone, sea urchins, etc.) will require monitoring
- Changed the definition of zooplankton
- Changed the definition of meroplankton

(Sections 4.B and 5(definitions))