

DRAFT DETERMINATION TO APPROVE MITIGATION MEASURES FOR THE WATER QUALITY CONTROL POLICY ON THE USE OF COASTAL AND ESTUARINE WATERS FOR POWER PLANT COOLING (ONCE-THROUGH COOLING POLICY):

ENCINA POWER STATION

Interim Mitigation Requirements of the Once-Through Cooling Policy

The Once-Through Cooling (OTC) Policy requires owners or operators of existing power plants to implement measures to mitigate interim impingement and entrainment impacts resulting from their cooling water intake structures. The interim mitigation period commenced on October 1, 2015, and continues up to and until owners or operators achieve final compliance with the OTC Policy. Section 2.C(3) of the Policy provides the following information for demonstrating compliance with interim mitigation:

- (a) Demonstrate to the satisfaction of the State Water Resources Control Board (State Water Board) that the owner or operator is compensating for the interim impingement and entrainment impacts through existing mitigation efforts, including any projects that are required by state or federal permits as of October 1, 2010; or
- (b) Demonstrate to the State Water Board's satisfaction that the interim impacts are compensated for by the owner or operator by providing funding to the California Coastal Conservancy which will work with the California Ocean Protection Council to fund an appropriate mitigation project; or
- (c) Develop and implement a mitigation project for the facility, approved by the State Water Board, which will compensate for the interim impingement and entrainment impacts.
- (d) Use the habitat production foregone (HPF) method, or comparable alternate method approved by the State Water Board in order to determine the habitat and area, based on replacement of the annual entrainment, for funding a mitigation project.
- (e) The State Water Board preference is that funding be provided to the California Coastal Conservancy, working with the California Ocean Protection Council, for mitigation projects directed toward increases in marine life associated with the State's Marine Protected Areas (MPA) in the geographic region of the facility.

In its April 1, 2011 Implementation Plan for compliance with the OTC Policy, NRG Energy, Inc. (NRG) proposed to comply with interim mitigation for its Encina Power Station by providing funding for mitigation projects directed towards increasing marine life in marine protected areas in the geographic region of the facility.

On August 18, 2015, the State Water Board adopted [Resolution No. 2015-0057](#) (2015 Resolution), delegating to its Executive Director the authority to approve proposed measures for power plant owners or operators to comply with interim mitigation on a case-by-case basis. The 2015 Resolution also includes procedures for calculating a mitigation payment for the power plants that have selected the interim mitigation option of providing funding to the

Coastal Conservancy for appropriate mitigation projects. As described in the 2015 Resolution and consistent with the recommendations of the Expert Review Panel on minimizing and mitigating intake impacts from power plants and desalination facilities, the State Water Board calculated interim mitigation payments to equal the sum of three components: an entrainment payment, an impingement payment, and a management and monitoring payment.

Estimate of Interim Mitigation Payment for NRG's Encina Power Station

Site-Specific Entrainment Cost

To calculate the interim mitigation payment to offset entrainment impacts, staff used a facility-specific payment. The State Water Board contracted Dr. Peter Raimondi to evaluate the information provided in NRG's information response letter¹ dated November 29, 2016, and to ensure current information was used to develop a site-specific entrainment cost for Encina Power Station. On October 29, 2017, Dr. Peter Raimondi submitted a Technical Memorandum² to the State Water Board, which included an entrainment cost that reflects current costs for mitigation.

Dr. Raimondi calculated the facility-specific entrainment cost using two different site-specific entrainment cost estimates for Encina Power Station. One estimate was based on the restoration by Southern California Edison at San Dieguito Lagoon within the past ten years, and included an annual escalator of 3 percent per year, resulting in \$3.32 per million gallons (MG). The other entrainment cost estimate was based on a current estimate for simple wetland restoration, resulting in \$5.98 per MG. In the Technical Memorandum, Dr. Raimondi clarified that the differences between the two entrainment cost estimates likely reflect that the cost of restoration is increasing more rapidly than 3% per year and the restoration project at San Dieguito Lagoon was a relatively simple project in scope and effort. Since the two cost estimates bracket the likely cost of wetland restoration, it is appropriate to average the two entrainment cost estimates.

Entrainment Payment Calculation

The site-specific entrainment cost is calculated to be \$4.65 per MG as the average of two entrainment cost estimates, as shown below:

$$(\$3.32 \text{ per MG} + \$5.98 \text{ per MG}) \div 2 = \$4.65 \text{ per MG}$$

To determine the intake volume, staff used the actual intake volume required for power generation and critical system maintenance at Encina Power Station, per the Encina Power

¹ Letter from George L. Piantka, NRG Energy, to Executive Director Thomas Howard, State Water Board. November 29, 2016.

https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/encina/docs/encina_imf16.pdf

² Technical Memorandum from Dr. Raimondi, University of California at Santa Cruz, October 29, 2017
https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/encina/docs/encina_technical_memo.pdf

Station's Final Determination³ posted on February 16, 2017 (2017 Determination). In their November 29, 2016 letter, NRG provided an intake volume of 80,125 MG used for power generation and critical system maintenance for the period of October 1, 2015, to September 30, 2016. The State Water Board verified the intake volumes through consultation with NRG.

$$80,125 \text{ MG} \times \$4.65 \text{ per MG} = \$372,581.25$$

Impingement Payment Calculation

In the November 29, 2016 letter, NRG provided two estimates for fish impingement, one impingement value based on the maximum design flow and one based on the actual intake flows from the period of the study. The latter estimate is representative of the annual total fishes impinged and is used for the impingement calculation. Staff calculated the impingement payment using the estimated total pounds of fish impinged during the impingement and entrainment study and the average indirect economic value of the fisheries as determined in the Expert Review Panel's final report of \$0.80 per pound.

Therefore, the impingement calculation is as follows:

$$\$0.80/\text{pound} \times 11,373 \text{ pounds} = \$9,098.40$$

Management and Monitoring Payment Calculation

Staff calculated the management and monitoring fee by taking twenty percent of the sum of the entrainment and impingement payments.

$$0.20 \times (\$372,581.25 + \$9,098.40) = \$76,335.93$$

State Water Board's Draft Determination for Encina Power Station

Based on the sum of the entrainment, impingement, and management and monitoring payment calculations, the total payment is \$458,015.85 to fulfill the interim mitigation obligation for NRG's Encina Power Station for the operating period of October 1, 2015, to September 30, 2016.

$$\$372,581.25 + \$9,098.40 + \$76,335.93 = \$458,015.58$$

³ Final Determination of the State Water Resources Control Board. February 16, 2017.
<https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/eps_final_determination.pdf>