

**DRAFT DETERMINATION TO APPROVE MITIGATION MEASURES
FOR THE WATER QUALITY CONTROL POLICY ON THE USE OF
COASTAL AND ESTUARINE WATERS FOR POWER PLANT COOLING:**

**ENCINA POWER STATION
OCTOBER 1, 2017 THROUGH DECEMBER 11, 2018**

Interim Mitigation Requirements and Determinations

The State Water Resources Control Board's (State Water Board) Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (also known as the Once-Through Cooling or 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.

NRG Energy, Inc. (NRG) retired Encina Power Station's once-through cooling Units 2, 3, 4, and 5 on December 11, 2018. NRG elected to have the interim mitigation payment for the final months of operation of Encina Power Station's Units 2, 3, 4, and 5 included in this determination. Therefore, this determination contains the interim mitigation payment calculations for Encina Power Station from October 1, 2017, through December 11, 2018.

The State Water Board approved Encina Power Station's continued request to comply with the interim mitigation measures described in Section 2.C(3)(b) of the OTC Policy in the Final Determination¹ for the October 1, 2016 to September 30, 2017 interim mitigation period (2016-2017 Final Determination). Consistent with Resolution No. 2015-0057², the recommendations in the Expert Review Panel's Final Report³, and the Technical Memorandum⁴ submitted to the State Water Board by Dr. Peter Raimondi on October 29, 2017, the interim mitigation payment is comprised of an entrainment payment, an impingement payment, and a management and monitoring payment.

In the sections below, the State Water Board has calculated Encina Power Station's interim mitigation payment for October 1, 2017, through December 11, 2018. This calculation is consistent with the methods and calculations applied in the 2016-2017 Final Determination.

¹ State Water Board 2016-2017 Final Determination for Encina Power Station.

<https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/interim_mitigation/fdi1617_encina.pdf>

² State Water Board Resolution No. 2015-0057.

<https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/rs2015_0057.pdf>

³ Final Report from the Expert Review Panel.

<https://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/erp_intake052512.pdf>

⁴ Technical Memorandum from Dr. Peter Raimondi, University of California at Santa Cruz, to Rebecca Fitzgerald, State Water Resources Control Board. October 29, 2017.

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

Interim Mitigation Payment Calculation for Encina Power Station

Entrainment Payment Calculation - October 1, 2017, through September 30, 2018:

To calculate the portion of the interim mitigation payment to offset entrainment impacts, the State Water Board used the facility-specific cost of entrainment for Encina Power Station as determined in the Technical Memorandum. Consistent with Resolution No. 2015-0057, the Expert Review Panel's Final Report, and the Technical Memorandum, the State Water Board used a three percent escalator to update the facility-specific cost of entrainment from the 2016-2017 Final Determination to 2018 dollars to account for inflation. The resulting entrainment cost for October 1, 2017, through September 30, 2018, increased from \$4.79 per million gallons (MG) to \$4.93/MG:

$$(\$4.79/MG \times 0.03) + \$4.79/MG = \$4.93/MG$$

In its January 14, 2019 letter⁵, NRG provided the intake volume for Encina Power Station from October 2017 to September 2018, totaling 108,140 MG. The State Water Board verified intake volume with the data submitted in the National Pollution Discharge Elimination System permit monitoring reports for Encina Power Station.

To calculate the entrainment payment, the State Water Board multiplied the intake volume by the updated cost of entrainment:

$$\$4.93/MG \times 108,140 MG = \$533,130.20$$

Entrainment Payment Calculation - October 1, 2018, through December 11, 2018:

To calculate the portion of the interim mitigation payment to offset entrainment impacts during the final months of operation at Encina Power Station, the State Water Board used a three percent escalator to update the facility-specific cost of entrainment from the October 1, 2017 through September 30, 2018 interim mitigation period (calculated above) to 2019 dollars to account for inflation. The resulting entrainment cost for October 1, 2018, through December 11, 2018, increased from \$4.93 per million gallons (MG) to \$5.08/MG:

$$(\$4.93/MG \times 0.03) + \$4.93/MG = \$5.08/MG$$

In its January 14, 2019 letter, NRG provided the intake volume for Encina Power Station from October 1, 2018 to December 11, 2018, totaling 12,210 MG. The State Water Board verified intake volume with the data submitted in the National Pollution Discharge Elimination System permit monitoring reports for Encina Power Station.

⁵ Letter from George L. Piantka, NRG Energy, Inc., to Eileen Sobeck, State Water Board on January 14, 2019.
<https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa_april/enc_im1718.pdf>

To calculate the entrainment payment for October 1, 2018, through December 11, 2018, the State Water Board multiplied the intake volume by the updated cost of entrainment:

$$\$5.08/MG \times 12,210 MG = \$62,026.80$$

The total entrainment payment to offset entrainment impacts from October 1, 2017, through December 11, 2018, is \$595,157.00.

$$\$533,130.20 + \$62,026.80 = \$595,157.00$$

Impingement Payment Calculation

In its January 14, 2019 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 an impingement study conducted from June 2004 through June 2005, as discussed in the November 29, 2016 letter⁶ from NRG. The latter estimate is representative of the annual total fishes and shellfish impinged and is used for the impingement calculation. The impingement mass for fish was incorrectly converted from kilograms to pounds in the November 29, 2016, April 4, 2018, and January 14, 2019 letters from NRG. The correct converted mass of impinged fishes is 9,608 pounds. The total pounds of fish (9,608 pounds) and shellfish (304 pounds) impinged from October 2017 to September 2018 is 9,912 pounds.

$$9,608 \text{ pounds} + 304 \text{ pounds} = 9,912 \text{ pounds}$$

The State Water Board calculates that 2,065 pounds of fish and shellfish were impinged during the final months of Encina Power Station's operation (October 2018 to December 11, 2018), by multiplying the total yearly calculated pounds of fish and shellfish impinged by twenty-one percent, which is equivalent to the plant operating for the additional two-and-a-half months:

$$\left(\frac{2.5 \text{ months}}{12 \text{ months}}\right) = 21\%$$

$$9,912 \text{ pounds} \times 21\% = 2,081.52 \text{ pounds}$$

Therefore, the total amount of fish and shellfish impinged from October 1, 2017, through December 11, 2018, is 11,993.52 pounds.

$$9,912 \text{ pounds} + 2,081.52 \text{ pounds} = 11,993.52 \text{ pounds}$$

The State Water Board calculated the impingement payment using the total pounds of fish and

⁶ Letter from George L. Plantka, NRG Energy, Inc., to Thomas Howard, State Water Board on November 29, 2016. <https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/encina/docs/encina_imf16.pdf>

shellfish impinged from October 1, 2017, through December 11, 2018, as 11,977 pounds and multiplied by the average indirect economic value of the fisheries as determined in the Expert Review Panel's Final Report of \$0.80 per pound:

$$\$0.80/\text{pound} \times 11,993.52 \text{ pounds} = \$9,594.82$$

Management and Monitoring Payment Calculation

The State Water Board calculated the management and monitoring payment by taking twenty percent of the sum of the entrainment and impingement payments:

$$0.20 \times (\$595,157.00 + \$9,594.82) = \$120,950.36$$

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 to fulfill the interim mitigation obligation for NRG's Encina Power Station for the interim mitigation period of October 1, 2017, to December 11, 2018, is \$725,702.18.

$$\$595,157.00 + \$9,594.82 + \$120,950.36 = \$725,702.18$$