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REGULATION AND SAFETY

California moves to ban once-through cooling

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Californian regulators have adopted a policy requiring coastal power plants - including the state's two nuclear power plants - to phase out the use of once-through cooling systems.

California's State Water Resources Control Board (SWRCB) voted on 4 May in favour of adopting the *Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling*. The policy applies to 19 existing power plants - including Pacific Gas & Electric's (PG&E's) Diablo Canyon and Southern California Edison's (SCE's) San Onofre nuclear power plants - that currently withdraw over 15 billion gallons per day from the state's coastal and estuarine waters to cool their turbines and then return the water at higher temperatures. The new regulations require such plants to stop this "once-through" practice and install equipment to reduce their impact on marine life.



Diablo Canyon (Image: PG&E)

Most plants will have until at least 2015 to phase out their once-through cooling systems. Plants in the Los Angeles area will have until 2020 because of the region's "more complex and challenging" power needs. The policy allows plants to choose between implementing a closed-cycle cooling system, such as a cooling tower, or other unspecified operational or structural changes. The SWRCB estimates that the upgrades will cost on average some 1 cent per kilowatt-hour, excluding lost revenue while the plants are offline for the modifications.

The policy will require plant owners to submit details over the next six months of their plans to comply with the new regulations. Some plants will be required to comply with the regulations as soon as one year after the policy goes into effect.

The state has given SCE until 2022 to ensure the cooling system at San Onofre complies with the new regulations, while PG&E will have until 2024 to make sure those at Diablo Canyon comply.

SCE claims that the use of innovative features in San Onofre's water intake systems already prevents harm to some 94% of local marine life. Meanwhile, two marine enhancements projects being developed by the company - an artificial reef and a wetlands project - will more than replace the 6% of fish adversely affected by the plant's cooling system, according to SCE.

The SWRCB said that the new policy would provide "clear standards and consistency" in implementing requirements under the Federal Clean Water Act in California's National Pollutant Discharge Elimination System (NPDES) permit program. The Clean Water Act requires power plants to use the "best technology possible" in the interest of protecting marine life.

It added that the new policy is intended to "protect marine and estuarine life from the impacts of once-through cooling without disrupting the critical needs of the state's electrical generation and transmission system."

The new policy will now be studied by California's Office of Administrative Law, which reviews administrative regulations proposed by state agencies.

Two states on the USA's east coast - New York and New Jersey - have also introduced draft policy requiring certain industrial facilities, including nuclear power plants, to construct cooling towers. In New York, six nuclear reactors - which supply almost one-third of the state's electricity - may require some \$2 billion in investment to continue operating should the policy be adopted. Meanwhile, Exelon has warned that it might have to close its Oyster Creek nuclear power plant after New Jersey officials issued a draft permit requiring cooling towers to be constructed.

Currently, of the USA's total of 104 nuclear power reactors, 60 use once-through cooling from rivers, lakes or the sea, while 35 use wet cooling towers. Nine units use dual systems, switching according to environmental conditions.

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