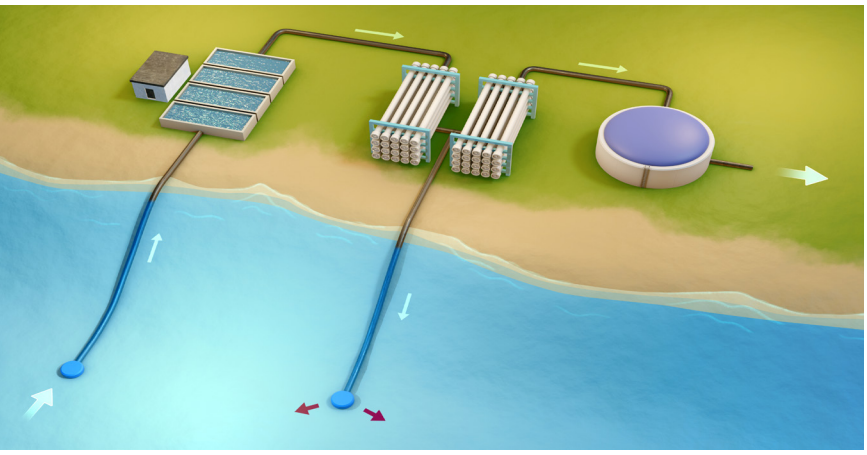
Seawater Desalination Along the Texas Coast
Considerations and Recommendations

TEXAS LIVING WATERS

The population and economy of Texas are growing at an unprecedented rate and to meet increasing water demands we must consider a diverse portfolio of durable supply sources. Meeting this demand need not compromise the health of Texas' productive and treasured bays and estuaries. Decision-makers need to make informed decisions that honor the natural heritage of our coast, protect the well-being of our communities, and implement solutions that will help all aspects of our economy grow well into the future.



MARINE DESALINATION EXPLAINED

Marine (or seawater) desalination refers to the treatment of water with high salinity levels - that is, water with elevated levels of total dissolved solids - in order to reduce that salinity to a level that is appropriate for the intended use. Desalination is used to treat brackish surface water and groundwater, as well as seawater. Higher salinity seawater desalination is the focus of this factsheet.

STATUS OF MARINE DESALINATION IN TEXAS

Currently, there are no operating seawater desalination plants along the Texas coast. However, TCEQ recently approved permits for the first municipal plant in Corpus Christi, and others are in the permitting process for the mid to lower coast. **As we consider installing seawater desalination - a very expensive and complex engineering undertaking - we should acknowledge that it is not a risk-free, silver bullet solution and requires a careful approach.**

$5.4 BILLION — **Coastal Tourism**

Tourist visits to see whooping cranes adds $6 million to our state's economy alone

Recreational Fishing — **$2 BILLION**

$200 MILLION — **Commericial Fishing**

VALUE OF TEXAS BAYS & ESTUARIES

The Texas coast is dotted with bays and estuaries that are vital for our state's economy, delivering billions for our economy each year and helping to make tourism the third largest industry in Texas. Estuaries - where freshwater from rivers and salt water from the ocean meet - are some of the most biologically productive places on earth. Our bay ecosystems filter municipal and industrial waste discharges; support oysters, shrimp, and a host of fish and other species; and sustain wetlands that help protect our communities from intense storms and hurricanes.

CONSIDERATIONS & RECOMMENDATIONS

Barrier Islands and Water Exchange

Unlike other parts of the world using marine desalination, Texas has an extensive system of barrier islands and peninsulas that reduces the rate of exchange between water in our bays and ocean water. Aquatic organisms move between these bodies of water during their life cycles by navigating narrow passages. **Significantly altering salinity levels or water circulation in the bays and through these passages could have big impacts, harming that aquatic life, and ultimately negatively impacting Texas' coastal economy as a result.**

Costs

While offshore infrastructure is costly, more expensive pretreatment would likely be required for waters from a bay or estuary compared to water from farther offshore due to variable levels of salinity and greater levels of sediment, nutrients and biological matter.

Freshwater Inflows

Most of the water flowing in Texas rivers is authorized to be diverted under an existing water right. Increasing utilization of these water rights and swings between flooding and severe drought impact how much freshwater reaches bays and estuaries that coastal communities and wildlife depend on. Marine desalination, if implemented carefully, can help reduce pressure on river flows or, if done poorly, can further impact water quantity and quality in these sensitive coastal areas.

Recommendations to Strengthen Texas' Approach to Seawater Desalination

1. Intake and discharge points should avoid bays and estuaries and be located seaward of barrier islands and peninsulas, particularly for large facilities relying on state funding.
2. TCEQ should study baseline salinity levels and develop numerical salinity standards to protect Texas bays and estuaries.
3. Developers of large desalination projects should be required to undertake preconstruction biological studies and ensure ongoing monitoring to improve understanding of environmental impacts.
4. If diversion or discharge facilities for seawater desalination are located in a bay or estuary, TCEQ, in issuing permits, should be required to assess and minimize potential interference with the benefits of freshwater inflows.
5. Easements or leases of state-owned land for seawater desalination facilities should incorporate location restrictions and design criteria to protect bay health.
6. TCEQ should be required to adopt rules ensuring that permits for desalination diversions include strong protections to limit the risk of marine organisms being sucked up with the water (impingement and entrainment).

SUMMARY

If implemented properly, seawater desalination has the potential to reduce pressure on precious freshwater resources and help meet Texas' future water needs. However, we also must prioritize strategies that advance water conservation practices, address aging infrastructure to reduce water loss, scale up water reuse efforts, and enhance stormwater capture capabilities. How and where seawater desalination plants are built must be thoroughly considered with clear requirements to protect our bays and estuaries and coastal ecosystems - the future of Texas depends on it.